



The nexus between financial inclusion and economic well-being in South Africa

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ABSTRACT

Purpose of the study: Financial inclusion contributes to resource and income distribution, leading to an overall stimulation of economic well-being through providing quality access to financial services. Access to financial services in the low-income household population helps to elevate their economic well-being through an increase in consumption, savings, and investment.

Design/methodology/approach: This paper examines the relationship between financial inclusion and economic well-being in South Africa by using quarterly time-series data for the 1992-2020 period. An Autoregressive Distributed Lagged (ARDL) approach and the Granger causality test were used. An F-bounds test was used to test the long-run cointegration among the variables.

Findings: The results revealed that holding a bank account and having access to credit are fundamental in enhancing economic well-being in the long run. At the same time, insurance and inflation factors explained economic well-being in the short run.

Recommendations/value: Banks should focus more on relaxing the requirements of opening a Bank account, accommodating low-income people and accelerating the expansion of access to credit. Furthermore, insurance should be offered at lower transactional costs and management fees, especially for low-income households in South Africa.

Managerial implications: Managers and recruiters should consider putting the compensation of employment above the minimum income criteria for workers to qualify for lending facilities. Education on finance should be provided to low-income members of society in order for them to be able to deal with financial matters such as managing credit.



Keywords: Access to credit; Bank account holders; Financial inclusion; GDP per capita; Insurance.

JEL Classification: C32, E21

1. INTRODUCTION

Governments view economic well-being as a common problem across many nations (McGregor & Pouw, 2017). Economic well-being occurs because of opportunities for members of society to rise in social mobility and improve their level of living (Council of the European Union, 2019). The Organisation for Economic Co-operation and Development (2019) defined economic well-being as the ability of community members to build their economic prosperity, a stable standard of living, and be more resilient. Economic well-being is also considered as the level of wealth, economic satisfaction of needs, and community members' living standards (Bhushan & Manjunath, 2021). In any economy, economic well-being relates to how well people can support their material living conditions. Moreover, an increase in economic well-being is characterised as reducing poverty, which translates to a prosperous, happy, and satisfying living standard (Sethi & Acharya, 2018).

The high income level can determine healthy living conditions, consumption, and the wealth that members of society possess (Sakyi-Nyarko *et al.*, 2022). The latter should translate to improved economic well-being. A society with improved economic well-being should be comfortable and able to fund their current consumption, such as food, clothing, education, health, housing, and leisure activities, using their current income (Sakyi-Nyarko *et al.*, 2022). Also, they save and invest their income to increase wealth for future consumption (Osberg & Sharpe, 2002). Hence, GDP per capita (GDPPC) is used to measure economic well-being. On the other hand, poor economic well-being could be derived from low levels of wealth, income reduction, and financial difficulties.

Financial inclusion is an imperative mechanism that governments and policymakers may use to address poor economic well-being (Silue, 2021). According to the Alliance for Financial Inclusion (2017), financial inclusion is defined as a mechanism in which all individuals and businesses have access to an array of quality and affordable financial products and services that satisfy their needs. These financial products and services may include bank accounts for savings and deposits, credit, and insurance (Simatele & Maciko, 2022). In the case of South Africa, Matsebula and Sheefeni (2022) measured financial inclusion with commercial bank branches per 100,000 adults and the number of ATMs per 100,000 adults. Simatele and

Maciko (2022) utilised eligibility, affordability and proximity factors to measure financial inclusion. Meanwhile, Njanike and Mpofo (2024) used savings and investment, borrowing, and bank penetration indicators to measure financial inclusion. Furthermore, Mhlanga and Denhere (2020) opted for a bank account as an appropriate measure of financial inclusion.

Financial inclusion indicators are crucial in solving the persistent problem of poor economic well-being (Gul *et al.*, 2018). For instance, access to financial services commences by opening a bank account at any formal financial institution. The opened bank account is used to conduct personal and business transactions. A bank account helps account holders save, send and receive money, buy goods and services, and make payments (Babajide *et al.*, 2021). All these are possible through debit cards, making it easy to conduct business transactions. According to Sethi and Acharya (2018), more access to credit helps to diminish the problem of high unemployment and persistent poverty in the economy. They can be reduced through an increase in individuals' self-employment. Additionally, increased access to insurance products would reduce the helplessness of low-income households in unforeseen circumstances (Sethi & Acharya, 2018).

There are alternatives to formal financial services; for instance, some people in South Africa, especially in most remote rural areas, make use of stokvels. This informal financial service is created through individuals or businesses mobilising for a common purpose to save, invest, credit and insure (Matuku & Kaseke, 2014). Stokvels services underserved communities through formal financial services by assisting them in financing planned events and unforeseen events (Mashigo, 2020). These finances come from accumulated savings or borrowing from the group. During times of uncertainty, low-income households rely on stokvels for borrowing because the formal financial institutions do not cater for them through qualifying criteria and affordability (Mashigo & Schoeman, 2012).

Mobile money services have changed the livelihood of low-income households. It was a breakthrough for low-income households' limited access to formal banking. For instance, Islam *et al.* (2022) argued that an increase in mobile money significantly reduces the poverty rate. Some researchers noted that mobile money services enable low-income households to improve access to credit and deposit facilities and boost financial inclusion (Osabutey & Jackson, 2024). Microfinance institutions aim to offer low-income households access to financial services to smooth their consumption and alleviate poverty (Bharti & Malik, 2022). Microfinance service providers extend choices of financial services targeting to accommodate low-income households who cannot afford the costs of servicing loans from formal financial service providers like banks (Malhotra & Kumar, 2024). It provides low-income households access to savings, credit, insurance, and money transfers. Adeola and Evans (2017) argued

that microfinance should be used as a vehicle to promote financial inclusion. Malhotra and Kumar (2024) posit that microfinance enabled financial access by low-income households without any certainty.

These banking alternatives are used mainly by low-income households due to the problem of affordability. Financial services are available to low-income households, but at prices these users cannot afford. Therefore, they opt not to have them (Beyene *et al.*, 2024). It is because of costs linked with access to financial services, such as monthly account fees, minimum account balance, required income, processing fees and changing lending interest rates (Simatele & Maciko, 2022). Beyene *et al.* (2024) argued that low-income households are faced with the challenge of affordability, which is a significant obstacle to accessing financial services. It is further argued that charges of sustaining and performing a few transactions on a bank cheque account can surpass about 5% of the monthly income of low-income households.

Poor economic well-being is an everyday problem that disturbs societal living conditions (Graham *et al.*, 2018), as it disturbs people's living conditions (McGregor & Pouw, 2017). The Organisation for Economic Co-operation and Development (OECD) (2019) stressed that the world economies have been systematically doing below average in addressing the socio-economic challenges that impede people from living a good life. Poor economic well-being is overly fuelled by the falling Gross Domestic Product (GDP), where the world economies recorded an average of -4.3% GDP per capita in 2020, OECD members in 2020 recorded -3.64%, and Sub-Saharan Africa recorded -7.21% in 2020 (OECD, 2022). In South Africa, GDP per capita experienced a decline as a measure of economic well-being while the unemployment rate, poverty, and inequality continued to rise (Mosala *et al.*, 2017). For instance, the World Bank data for 2021 recorded negative GDP per capita growth of 1.03% and 7.11% in 2019 and 2020, respectively. Despite implemented policies by the government, the falling GDPPC continues to worsen the economic well-being of South African people (Mosala *et al.*, 2017).

According to some scholars, a significant portion of the population in South Africa still lives in poverty (Makaringe & Khobai, 2018; Francis & Webster, 2019). South Africa is still struggling to address poor economic well-being, with unemployment, destruction in human capital, protests, increased crime rates, drug usage, social exclusion and weak health conditions being the main drivers of poverty (Francis & Webster, 2019). Makaringe and Khobai (2018) highlighted that the economic well-being of South Africans is declining due to these social ills.

In the empirical literature, many studies focused on the link between financial inclusion, economic growth and poverty, few on factors of financial inclusion, and some on financial inclusion and financial health in the case of South Africa (Sethi & Acharya, 2018; Mhlanga *et al.*, 2021; Machili, 2021; Ndaba *et al.*, 2022). However, the above shows that the empirical literature has neglected the debate about the relationship between financial inclusion and economic well-being in South Africa. Hence, there is limited evidence. Due to the limited evidence, this paper intends to add significance to the available empirical literature on whether financial inclusion translates to an improved economic well-being of households. The paper contributes to the literature by utilising three variables as proxies for financial inclusion: access to credit, bank account holders and insurance. Another contribution comes from adding the inflation rate as a controlling variable and using the financial inclusion proxies to estimate the ARDL approach. In efforts to maintain and control inflation within a targeted range, the South African Reserve Bank (SARB) utilises monetary policy tools such as short-term interest rates. Monetary policy influences and controls the inflation rate to keep it revolving within the 3-6% range. For example, an increase in the inflation rate will result in an interest rate as a response from the central bank through trying to control and maintain the inflation rate within the acceptable range (Van Der Merwe *et al.*, 2014). Later, high interest rates will lead to a decline in credit demand, which could negatively impact financial inclusion.

2. LITERATURE REVIEW

The review of literature helps in gaining an understanding of relevant theories and previous studies on the subject. Literature further assists in identifying the research gap, definitions and concepts and the methodologies used in the past.

2.1 Theoretical literature

The asymmetric information theory noted that the asymmetric problem exists because no side knows of the conduct of bank account holders, borrowers' capabilities or even their intentions to pay back their credit, and the behaviour of insurance holders (Matagu, 2018). Asongu and Odhiambo (2018) indicated that information-sharing channels positively and significantly affect financial access. This means that it reduces asymmetric information and increases financial access (Asongu & Odhiambo, 2018). Matagu (2018) argued that in a perfect market where information is available, perfect, and costs less to all parties, all present and future activities in the financial institutions will be specific, and the problem of asymmetric information will not exist. Regarding Sen's capability approach, Storchi and Johnson (2016) argue that people can achieve great economic well-being if options for access and availability of financial services are increased and strengthened (Storchi & Johnson, 2016). Albiman and Bakar (2021) stated

that an increase in bank services like account holdings and the number of ATMs and bank branches in rural areas stimulates new businesses, brings motives to saving and investment, and increases the level of productivity. Under endogenous growth theory, Romer (1986) argued that any boost in the level of productivity could be a result of faster technological change and more human capital investment by the public sector as well as the private sector, which improves the household's economic well-being in the long run.

2.2 Overview of empirical studies

Several studies were conducted on how financial inclusion may contribute to improved economic well-being. Using two-stage least squares regression analysis, Mukong and Amadhila (2021) found a significantly positive relationship between financial inclusion and household well-being in Namibia. Evans and Osi (2017) employed the Bayesian VAR model. They indicated that GDP per capita does translate to financial inclusion. Ajide (2017) used the Generalised Method of Moments (GMM) and revealed GDP per capita as a significant driver of financial inclusion. Sonkar and Sarkar (2020) employed a stepwise multiple linear regression, and the results found that only credit accounts per 1000 residents have a positive relationship with GDP per capita. Bashier *et al.* (2022) used autoregressive distributed lag (ARDL) in Saudi Arabia and revealed that financial inclusion positively and significantly impacted GDP per capita in the long run.

Simatele (2015) investigated the effect of access to financial services on income poverty and argued that access to credit has a significant effect on the reduction of poverty compared to access to savings and payment services. Kumar and Jie (2023) asserted that financial inclusion effectively reduces poverty in countries where women and low-income households have access to formal finance. Damiyano and Mago (2023) stressed the importance of women's financial education and employment, which results in excellent access to formal financial services as well as a reduction in poverty (Damiyano & Mago, 2023). Some researchers highlighted that financial inclusion plays a significant role in creating jobs, eradicating poverty and inequality, and promoting inclusive economic growth (Ratnawati, 2020; Mhlanga & Denhere, 2020; Uzoma *et al.*, 2020).

In summary, few scholars investigated how the GDP per capita, household economic well-being, financial inclusion and other access to financial services affect economic well-being (Simatele, 2015; Evans & Osi, 2017; Ajide, 2017; Mukong & Amadhila, 2021; Kumar & Jie, 2023). In the case of South Africa, a few studies, like Ndaba *et al.* (2022), focused on the relationship between financial inclusion and financial health, and Mhlanga and Denhere (2020) focused on the determinants of financial inclusion. However, in the case of South Africa, the

empirical literature shows limited research focusing on the relationship between financial inclusion and economic well-being.

3. METHODOLOGY

3.1 Model specification

This paper adopted and modified the estimation methods developed by Ali et al. (2019) and Chiad *et al.* (2021) to investigate the relationship between financial inclusion and economic well-being in South Africa. A quarterly time-series data for the period 1992 to 2020 is used. The concentration is on the relationship between gross domestic product per capita (GDPPC) and each of the four explanatory variables as provided in equation (1).

$$GDPPC_t = \beta_0 + \beta_1 Ba_t + \beta_2 Ac_t + \beta_3 In_t + \beta_4 Ir_t + \mu_t \dots \dots \dots (1)$$

Where variables are explained as follows:

(GDPPC) is the measure of economic output per individual residing in a country and is found by dividing the GDP of a country by the number of individuals in the population. (Ba) is the bank account holder, which is defined as a person or organisation identified as holding a bank account with a financial institution. (Ac) is the access to credit, which is described as ensuring that lending is available to all and is offered prudently (Schwarcs, 2021). (In) is the insurance which is defined as a protection against any potential financial losses. This is also considered as contingent risk management used to hedge against uncertain potential losses (Makeleni & Sheefeni, 2022).

The above three variables are used as proxies for financial inclusion, namely, bank account holders and access to credit and insurance, which are supported by the empirical literature. For instance, despite a lack of consensus on what proxies to use as a measure of financial inclusion, this paper only excluded ATMs for 100,000 adults and banking branches for 100,000 adults from the variables used by Bkwayep and Tsafack (2020) to measure financial inclusion due to the availability of data in South Africa. However, researchers like Wakdok (2018) used the number of depositors with commercial banks per 1000 adults as a proxy for financial inclusion. Moreover, Bashier *et al.* (2022) used access (the number of commercial bank branches per 100,000 adults), penetration (number of deposit accounts per 1000 adults) and usage (outstanding deposits with commercial banks) to measure financial inclusion. (Ir) is the inflation rate defined as a progressive increase in the overall price level of goods and services in an economy (Van Der Merwe *et al.*, 2014). In this model, μ explains other variables not incorporated in the equation.

The model is linear as logarithms of the variables, except for access to credit, which was established to ensure that coefficients could be standardised to allow for acceptable estimates of the model. Therefore, the logarithmic model is as follows in equation (2):

$$\ln GDPPC_t = \beta_0 + \beta_1 \ln Ba_t + \beta_2 \ln Ac_t + \beta_3 \ln In_t + \beta_4 \ln Ir_t + \mu_t \dots \dots \dots (2)$$

with the variable description the same as in equation (1).

3.2 Estimation techniques

To examine the relationship between financial inclusion and economic well-being in South Africa using quarterly data from 1992 to 2020, using the autoregressive distributed lags (ARDL) approach (Pesaran *et al.*, 1999). The ARDL approach has several advantages over other conventional approaches. For instance, in this approach, the first advantage is that all variables are assumed to be endogenous. The second advantage is that it can be implemented even if variables are integrated of order zero $I(0)$ or order one $I(1)$, or mixed integration. The third advantage is that it accommodates different variables with a different number of lags and small sample sizes (Pahlavani *et al.*, 2005). It is also important to note that this approach only applies if some variables are stationary at level series, while some are at first difference (Pesaran *et al.*, 2001).

The bound testing approach for co-integration is used, with the ARDL approach to examine the long-run and short-run relationships concerning variables. The Granger causality test was used to identify directional causality amongst the variables because this model overcomes all the limitations mentioned of alternative approaches.

The ARDL approach is represented in the equation as formulated below:

$$\begin{aligned} \ln GDPPC = & \beta_0 + \sum_{i=1}^k \alpha_i \Delta \ln GDPPC_{t-i} + \sum_{i=0}^k \alpha_1 \Delta \ln Ac_{t-i} + \sum_{i=0}^k \alpha_2 \Delta \ln Ba_{t-i} + \sum_{i=0}^k \alpha_3 \Delta \ln In_{t-i} \\ & + \sum_{i=0}^k \alpha_4 \Delta \ln Ir_{t-i} + \beta_1 \ln GDPPC_{t-1} + \beta_1 \Delta \ln Ac_{t-1} + \beta_2 \Delta \ln Ba_{t-1} \\ & + \beta_3 \Delta \ln In_{t-1} + \beta_4 \Delta \ln Ir_{t-1} + \psi ECMr_{t-1} + \mu_t \dots \dots \dots (3) \end{aligned}$$

Hence, in equation (3), Δ signifies the first difference of the operator of the variables of interest; k is the ideal lag length; and from α_1 through α_4 and from β_1 through β_4 denote the short-run and long-run coefficients of variables, respectively. This shows that the ECM measures the quickness of an adjustment returning to the long-run equilibrium following a shock, hence relating the short-run deviations to the long-run equilibrium. However, ψECM_{t-1} is the error correlation term and ψ is a disequilibrium coefficient. Then, the μ symbol represents other variables not included in the equation. Therefore, the ARDL approach was selected after conducting unit root tests and found that other variables were stationary at level series, while others were stationary at first difference. Variables should be stationary only if the probability value is below 10%, 5% and 1% level of significance. Based on the latter, the data meet the ARDL approach requirement. Overall, the order of integration indicated different orders of integration at level series and at first difference, which warranted the utilisation of the ARDL approach. Since the order of integration has been identified, the top 20 models were conducted to identify the lowest Akaike Information Criteria (AIC) to select the best lag order model for the ARDL approach. The lowest value of AIC is negative (-4.405); it is selected based on the ARDL approach (4, 3, 1, 3, 3). The model selection was also validated by the F-statistic value of 4.481, which is greater than the upper critical bound value at a 1% level of significance. Thus, the presence of cointegration between the dependent variable and explanatory variable is evident.

4. FINDINGS AND DISCUSSION

4.1 Correlation test

Before conducting the analysis, it is always advisable to test for the presence of correlation and to find out whether an association exists between explanatory variables. In most cases in a regression model, variables are expected to be independent of each other, but they happen to be highly correlated with each other. Therefore, Table 1 shows the correlation test results.

Table 1: Correlation results

Correlation Probability	$\ln(GDPPC)$	$\ln(BA)$	AC	$\ln(IN)$	$\ln(IR)$
$\ln(GDPPC)$	1.000000 -----				
$\ln(BA)$	0.730883	1.000000			
AC	-0.410011	-0.513561	1.000000		
$\ln(IN)$	0.755437	0.956576	-0.436195	1.000000	
$\ln(IR)$	0.737033	0.959735	-0.458508	0.990054	1.000000

The correlation analysis between financial inclusion (bank account holder, access to credit and insurance) and economic well-being measured by GDP per capita in South Africa is presented in Table 1. The presentation displays the sample correlation coefficient, which measures the direction and strength of the linear relationship among the variables.

The sample correlation coefficients of 0.73 and 0.76 for bank account holders and insurance, respectively, are positive and significant at the 1% significance level. This signifies a significant positive correlation between account holders, insurance, and GDP per capita, which means that higher bank account holders and insurance levels are strongly associated with increased GDP per capita. These results conform to Babajide *et al.*'s (2021) and Kjosevski's (2011) findings.

Regarding access to credit, it shows that a sample correlation coefficient of -0.41 is negative and significant at the 1% significance level. This means that access to credit has a negative link with GDP per capita. Thus, higher access to credit is associated with lower GDP per capita. Ansari and Javaid (2024) concur that access to credit can hinder economic growth, especially in developing countries. This is because access to credit can cause uncertainty in international markets, reducing local growth. High credits can increase a country's default risk, limiting access to financial markets (Valencia *et al.*, 2023). However, the relationship between debt and economic growth depends on many factors.

The sample correlation coefficient of 0.74 reveals a positive and significant association of GDP per capita and inflation rate at the 1% significance level. A substantial correlation exists among these variables since their relationship is positive and significant. The outcome agrees with what Kankpeyeng *et al.* (2021) found, who argued that inflation and economic growth grow together.

4.2 Unit root test result

The Augmented Dickey Fuller test and the Philip Peron tests were used to check the stationarity of the data. Table 2 shows the results.

Table 2: ADF and PP unit root tests for level series and first difference of the variable

Variable	Augmented Dickey-Fuller (ADF)			Phillips- Perron (PP)			
	Intercept	Intercept & trend	None	Intercept	Intercept & Trend	None	Order of integration
$\ln(GDPPC)$	-4.02*** 0.0019	-4.09*** 0.0086	-4.05*** 0.0001	-4.10*** 0.0015	-4.18*** 0.0067	-4.12*** 0.0001	$I(1)$
$\ln(BA)$	-1.66 0.4514	-6.89*** 0.0000	2.13 0.9920	-1.75 0.4032	-7.09*** 0.0000	3.60 0.9999	$I(0)$
AC	-2.88* 0.0507	-3.23* 0.0846	-1.46 0.1339	-2.95** 0.0429	-3.11 0.1085	-1.79* 0.0702	$I(0)$
$\ln(IN)$	-10.74***	-10.87***	-5.27***	-10.75***	-10.87***	-9.46***	$I(1)$

	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
<i>Ln(IR)</i>	-6.14***	-6.42***	-3.18***	-6.14***	-6.46***	-3.18***	<i>I(1)</i>
	0.0000	0.0000	0.0017	0.0000	0.0000	0.0017	

Note***significant @ 1% level, **significant @ 5% level, *significant @ 10% level

GDPPC-Gross domestic product per capita; BA- Bank account holders, AC-access to credit; IN-Insurance, IR-Inflation rate

A unit root test on the quarterly time-series data was employed to estimate the model to avoid spurious regression. Table 2 presents the Augmented Dickey Fuller test and Philip Peron unit root tests conducted in level series and the first difference, respectively, to determine if the variables are stationary or non-stationary. Each test is conducted at intercept, trend and intercept and lastly, at none. Therefore, since other variables are stationary at level series while others are stationary at first difference, the data meets the ARDL approach requirement, and an ARDL approach was used.

4.3 F-statistic bound test for co-integration

Table 3 presents the ARDL bound test. The bound testing is carried out to check the existence or non-existence of the long-run association between the dependent variable and the explanatory variables of the model. The specifications for bound testing of the $I(0)$ and $I(1)$ components are selected according to one lag, which is chosen based on the smallest value of AIC and Schwarz Information Criteria (SIC).

Table 3: Bounds test for co-integration relationships

Null Hypothesis: No long-run relationships exist.

Test Statistic	Value	K
F-statistic	4.481	
Critical Value Bounds		
Significance	$I(0)$ Bound	$I(1)$ Bound
10%	2.2	3.09
5%	2.56	3.49
2.5%	2.88	3.87
1%	3.29	4.37

The findings in Table 3 show that the calculated F-statistic value of 4.481 is higher than the upper critical value limit of 4.37 at a 1% significance level. As a result, a co-integration relationship between the variables of interest and the long-run relationship is estimated by selecting ARDL (4, 3, 1, 3, 3) based on the AIC.

4.4 The long-run ARDL approach

The bound testing approach found a co-integration association between the dependent and explanatory variables in the long run. Therefore, it is necessary to continue with the establishment of empirical evidence of the long-run relationship between GDPPC and all

explanatory variables, which are BA, AC, IN and IR. In this, the estimates of long-run coefficients are carried out on a selected number of lags (4, 3, 1, 3, 3), which are based on AIC. The ARDL approach is conducted to validate the established long-run co-integration relationship between variables by the f-statistic bound testing approach, as shown in Table 4.

Table 4: Long-run ARDL approach selected Model
Dependent Variable: GDPPC

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
GDPPC(-1)	1.383306	0.100682	13.73936***	0.0000
BA	0.018856	0.009911	1.902497*	0.0603
AC	0.010740	0.003632	2.956658***	0.0040
IN	-0.004790	0.054747	-0.087496	0.9305
IR	-0.920004	0.405833	-2.266950**	0.0258

In Table 4, the t-statistic value of the one-year lagged GDP per capita indicates a positive and significant relationship with economic well-being in the long run at a 1% significance level. This result means that the previous year's performance or output on GDP per capita positively influences the level of economic well-being of South African citizens. For example, if the one-year lagged GDP per capita increases by 1%, holding all other variables constant, economic well-being will increase by about 1.38%. This discovery is confirmed by Bashier *et al.* (2022), who argued that the previous year's performance of GDP per capita positively and significantly affects the current performance of GDP per capita. On theoretical review, these results are supported by the Endogenous Growth Theory, due to the notion that stimulating new businesses and new investments could increase productivity and promote people's economic well-being.

- *Bank account holders*

The t-statistic value for the bank account holders in Table 4 is indicated to be positive 1.90, and according to the rule of thumb, when the t-value is below 2, it is deemed insignificant. The coefficient of bank account holders' value at 0.018856 is positive and significant at 10%. The positive and significant coefficient reveals that if the bank account holders increase by 1% , ceteris paribus, the GDPPC increases by about 0.018856% in the long run. These findings are supported by Babajide *et al.* (2021) and Gul *et al.* (2018), who argued that bank account ownership significantly influences GDP per capita. According to Babajide *et al.* (2021), the first level of financial inclusion commences with opening bank accounts with a formal financial establishment to conduct personal or business transactions. The results align with an efficient

market hypothesis and Asymmetric Information theory, which argues that information is the primary driver of bank account ownership.

- *Access to credit*

In Table 4, access to credit has a significant positive relationship with GDP per capita, with a coefficient of 0.010740 at a 1% significance level. The result means, ceteris paribus, that a rise in access to credit by 1% will significantly increase GDP per capita by about 0.010740% in the long run. Therefore, the results revealed a positive relationship between access to credit and GDP per capita in the long run. These outcomes are supported by Banu (2013), who argued that credit provided to households contributes to the development of economic growth. Moreover, Timsina (2014) and Diallo and Al-Titi (2017) argued that access to credit positively influenced economic growth. The argument of the prior literature is in line with the efficient market hypothesis, the Asymmetric Information theory, and Sen's Capability Approach. These theories believe that offering the poor options and choices of credit access should boost their economic well-being. These theories argue that credit access depends strictly on information available to financial institutions.

- *Insurance*

The insurance in Table 4 indicated a negative but insignificant association with GDP per capita in the long run. These outcomes contradict the expectations but agree with the findings of Fadun and Oluwaleye (2023), which suggested a significant negative relationship between life insurance and economic growth.

- *Inflation rate*

The inflation rate as a controlling variable in Table 4 is indicated as having a negative and significant coefficient of -0.920004 at the 5% significance level. This suggests that the inflation rate has a negative and significant relationship with economic well-being in the long run. For instance, if the inflation rate increases by 1% , ceteris paribus, the GDP per capita, such as economic well-being in South Africa, should decline by about -0.920004 in the long run. The findings conform to prior expectations. These outcomes are supported by the findings of Jayathileke and Rathnayake (2023) and Ahmad (2022), who also found a negative relationship between the inflation rate and economic growth in the long run. These results are in line with the inflation-targeting monetary policy framework adopted by South Africa to maintain and control the inflation rate.

4.5 Short-run ARDL approach

Table 5 represents the estimations of the short-run coefficients and the error correlation term model. The ARDL Error correction model was estimated on selected lags (4, 3, 1, 3, 3) based on AIC.

Table 5: ARDL Error Correction Regression Selected Model

Dependent Variable: GDPPC

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
$D(GDPPC(-1))$	0.411614	0.095432	4.313158***	0.0000
$D(BA)$	0.004683	0.009114	0.513794	0.6087
$D(AC)$	-0.013165	0.003302	-3.987592***	0.0001
$D(IN)$	0.135061	0.053228	2.537426**	0.0129
$D(IR)$	1.029489	0.381474	2.698712***	0.0083
$CointEq(-1)$	-0.028308	0.005314	-5.327488***	0.0000

In Table 5, it is indicated that the one-year lagged GDP per capita has a positive and significant t-statistic. This means that the previous GDP per capita values influence the current economic well-being performance. If the previous year's GDP per capita increased by 1% , it would lead to a 0.411% significant increase in the current year's GDPPC in the short run, ceteris paribus. These findings are supported by Chaid *et al.* (2021), who asserted that current GDP per capita is influenced mainly by its past performance.

- *Bank account holders*

In Table 5, the bank account holders show a positive but insignificant relationship with GDP per capita in the short-run results. If the bank account holders increase by 1%, holding all other variables unchanged, the GDPPC will increase by about 0.0047%. These results agree with the a priori expectation, except that the relationship is insignificant (Gul *et al.*, 2018).

- *Access to credit*

The results show that access to credit has a negative and significant association with GDPPC in the short run at a 1% significance level. The short-run findings indicated an inconsistency with the long-run results. The findings indicate that if access to credit increases by 1% the performance of GDP per capita should decline by about 0.0132%, holding all other variables constant. These results are contrary to expectations, as the findings of Timsina (2014) and Diallo and Al-Titi (2017) found a positive link. Also, these results contradict the efficient market hypothesis, asymmetric information theory, and Sen's capability approach. However, these findings are supported by Maku *et al.* (2022), who also argued that an increase in credit

reduces GDP per capita in the short run (Maku et al., 2022). Furthermore, according to Ansari and Javaid (2024), access to credit may hinder the capability to plan for long-term goals, particularly in developing nations, thereby hindering the growth prospects of the economy.

- *Insurance*

In the short run, insurance is found to have a positive and significant coefficient with a value of 0.1351 at a 5% level of significance. This means a positive relationship exists between insurance and GDP per capita. If all other variables are kept unchanged, a 1% rise in insurance should lead to a rise in GDP per capita by about 0.14%. These results agree with expectations and are supported by Kjosevski (2011).

- *Inflation rate*

The results indicated a positive and significant short-term relationship with GDP per capita. Moreover, these findings agree with the findings of Gowda (2020), who found a significant positive relationship between GDP and inflation in the short run. According to the results, if the inflation rate increases by 1% , holding all other variables unchanged, the GDP per capita should increase by about 1.029% . Contrary to the results, Kankpeyeng *et al.* (2021) reveal that GDP grows positively at a general level of inflation.

4.6 The error correction model (ECM)

The short-run results have incorporated the error correction term (ECM) represented by $\psi ECMr_{t-1}$ which is the lagged value of the residuals of equation (4.1) of the long-run relationship (Gujarati, 2004). The ECM outcomes are represented in Table 5. As shown in Table 5, the coefficient of the lagged ECM is - 0.028308, which is negative and significant at a 5% level. The result of the ECM supports the long-run cointegration between the variables found by the f-bound statistics test. The results suggest that the short-run deviations from the long-run equilibrium are corrected by 2.8% towards the long-run equilibrium each year. In addition, the R-square is 0.676, meaning that the ECM can only explain a 67.6% variation in economic well-being.

4.7 Diagnostic test

After conducting the long-run and short-run dynamics of the model, it is crucial to perform diagnostic checks on the ECM to establish if it is the best-fit model. Performing diagnostic checks is essential because they can validate the estimated model. The results of this test are demonstrated in Table 6. These tests incorporated the Breusch-Godfrey test, which is responsible for checking the presence of serial correlation; the Breusch-Pagan-Godfrey test is employed to check if residuals are heteroscedasticity, and the Ramsey RESET test is used

to check for misrepresentation. Therefore, Table 6 indicates that all the model assumptions are met as expected. This means that the null hypothesis of no serial correlation, residuals are homoscedasticity and no misrepresentation, cannot be rejected.

Table 6: ARDL-ECM model diagnostic tests

Test	H0	Test Statistics	P-Value	Conclusion
Breusch-Godfrey	There is no serial correlation	$nR^2(2) = 7.049575$	0.1333	There is no serial correlation.
Breusch-Pagan-Godfrey	Residuals are homoscedasticity	$nR^2 = 23.16269$	0.1844	Residuals are free from heteroscedasticity
Ramsey RESET Test	No misrepresentation	T-statistics = 0.682799	0.4965	No misrepresentation

4.8 Stability test

The stability test is carried out to examine the stability of the long-run coefficients alongside the short-run dynamics. The stability of the long-run parameters was examined by employing the cumulative sum of recursive residuals (CUSUM) and CUSUM of recursive squares (CUSUMSQ). The CUSUM and CUSUMSQ tests are plotted in Figures 1 and 2.

Figure 1: Cumulative sum (CUSUM)

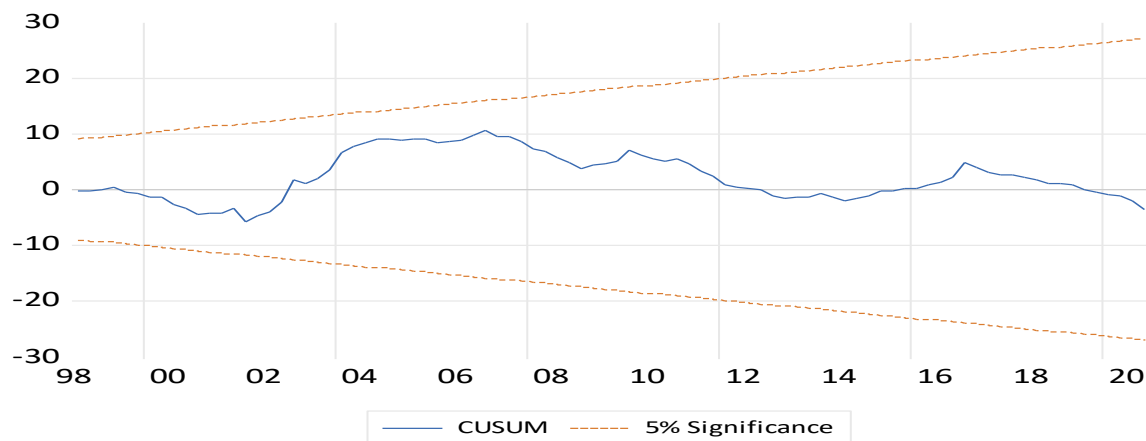
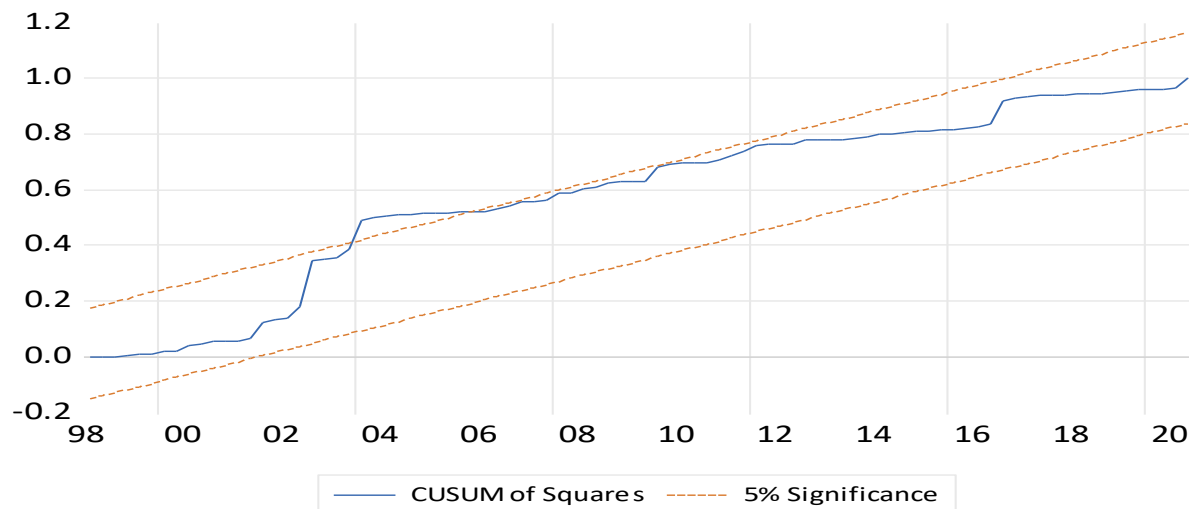


Figure 2: Cumulative sum of squares (CUSUMSQ)



Both Figures 1 and 2 show that CUSUM and CUSUMSQ statistics fall within the critical limits of the 5% confidence interval. Therefore, these outcomes revealed no instability in the coefficients, apart from 2004 and 2005, where instability was recorded. Based on these plots, long-run and short-run estimates are effective and consistent since they fall within the upper and lower critical limits.

5. MANAGERIAL IMPLICATIONS

The managerial implications posit that financial inclusion may lead to greater economic growth and well-being. A bank account serves as a doorway to other financial services; hence, ensuring that individuals can access a transaction account continues to be an area of focus. As account holders, individuals can gain access to other financial services to improve the overall quality of their lives. This includes credit and insurance to meet individual needs, such as transactions, payments and further plans for long-term goals.

When employing new staff, recruiters should be mindful of the costs associated with financial services. For instance, compensation must be above the minimum income criteria to qualify for lending facilities. Also, to ensure that the income offered exceeds the costs of basic needs. Financial education should be provided to low-income members of society so that they can be able to deal with financial matters such as managing credit. This education, especially on digital banking, can alleviate the infrastructure requirement while accommodating a larger population. Furthermore, governments should reduce the cost of data to increase mobile and online access to financial services.

Conducting more studies that include more variables and different methodologies will expand knowledge on the subject and further give arguments and policies targeted at enhancing

financial services access where these do not meet the needs of the impoverished. Other limitations were the availability of data and the limited studies on the subject. Furthermore, financial education for low-income households and mobile money services variables were not considered. The latter will be considered for future research.

6. CONCLUSION

There is a significant positive relationship between financial inclusion and economic well-being, and the research gathered recommends that the financial service sector make efforts to accelerate the expansion of access to their its services to low-income households in South Africa. Financial service providers should consider the extensive use of digital banking and technology as an inclusive banking system. Consideration should be made to achieve high bank accounts and access to credit and insurance services for the poor people with low incomes, which could also help to boost competition in the financial system. Competition in the financial sector may reduce costs associated with financial service access. The partnership should also facilitate financial education programmes that upskill low-income households. This should also give them sustainable options for financial services through lower-cost transactional accounts and management fees. Lower premiums should help them change improve their economic well-being. This could allow low-income households to participate in the economy. The relationship between bank account holders, access to credit, insurance, and economic well-being should take place in an inflation framework-sensitive environment. To achieve improved economic well-being, great efforts are needed to solve the problem of exclusion in the formal financial services, especially for low-income households

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