FINANCIAL DEVELOPMENT AND INCOME INEQUALITY NEXUS IN SOUTH AFRICA: AN EMPIRICAL INVESTIGATION

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Abstract

The South African government has faced a persistent struggle in reducing income inequality over the years, despite notable advancements in certain sectors, including the financial sector. This study examined the asymmetric impact of financial development on income inequality in South Africa using data from 1980 to 2017. The results show that positive shocks to financial development are associated with higher income inequality in both the short and long term. However, negative shocks to financial development exhibit an inverse relationship with income inequality in the long run, while in the short run, the two move in the same direction. This study differs from previous research by analysing the impact of financial development on income inequality using nonlinear autoregressive distributive lag (NARDL) and the financial development index, a composite measure that integrates bank-based and market-based indicators of financial development.

Keywords: sustainable development, income levels, developing country, autoregressive distributed lag

JEL Classification: G21, D63, D31

1. Introduction

Globalisation has brought numerous benefits to most economies that have opened their economies. The accrued benefits have resulted in most countries, including developing countries, fast-tracking liberalisation of all sectors in the economy. However, there are growing studies that have also examined the empirical evidence of the benefits obtained from globalisation. It is emerging that

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globalisation has worsened income inequality in some countries participating in globalisation. This makes income inequality not only a challenge for South Africa alone, but a global challenge. Global inequality has found an expression in the Sustainable Development Goals – Goal 10 – reduce inequality and Goal 5 - achieve gender equality and empower all women and girls. South Africa has a legacy of high inequality that was inherited from the apartheid era. In South Africa, globalisation and internal policies pursued from 1994 failed to redress past inequality and provide a tangible solution to current inequality trends, making South Africa a highly unequal country with a GINI coefficient of 0.63 (World Bank, 2025a). Slow economic growth has contributed to slow job creation, resulting in high unemployment.

National Development Plan (NDP) 2030- a national blueprint for South Africa, captures poverty, inequality and unemployment as the triple challenge, with most policies rolled out aimed at reducing the triple challenge. The deepening inequality in South Africa has developed in parallel with financial development. South Africa has a relatively advanced financial sector in Africa, and the question this study would like to answer: Can South Africa use financial development to reduce income inequality?

Several studies have attempted to empirically test the impact of financial development on income inequality. The studies found mixed results. Some found a positive relationship between financial development and income inequality (see Karis and Cil, 2024; Alshubiri, 2021; Bittencourt et al., 2019; de Haan & Sturm, 2017); while some studies found a negative impact of financial development on income inequality (for example, Umit & Eyuboglu, 2024; Chisadza & Biyase, 2022; Bolarinwa & Akinlo, 2021), yet others found no relationship between the two (Ahmed & Masih, 2017). In addition, most studies assumed a linear relationship between financial development and income inequality despite growing evidence that positive and negative shocks to the independent variable may not have the same impact on the dependent variable. This study, therefore, provides a new insight into the nature of the relationship between financial development and income inequality, incorporating the asymmetric impact. The results from the study provide guidance on income inequality policies.

This study departs from previous empirical studies by examining the asymmetric impact of financial development on income inequality in South Africa, using the Financial Development Index (FD) developed by the International Monetary Fund (IMF). Income inequality

is captured by the pre-tax GINI coefficient. South Africa was selected for the study because it is among the highly unequal countries in the world, yet also among the countries in Africa with the most advanced financial system. The country also acknowledges in the NDP 2030 the inequality challenges. Further, South Africa is a signatory to the SDGs, showing commitment to achieving the SDGs. The results from this study provide guidance to policymakers in South Africa on what could work to alleviate income inequality and put the country on the path to achieve SDG10 and part of the NDP2030 objectives.

The study is structured as follows: Section 2 is subdivided into two parts; the first subsection covers financial development and income inequality dynamics in South Africa, and the second subsection provides an empirical literature review. Section 3 highlights the estimation techniques, and Section 4 covers data analysis and discussion of results. The last section, Section 5, concludes the study.

2. Literature review

2.1. Income Inequality and Financial Development Dynamics

South Africa has an advanced financial system in comparison to some developing countries in Africa (Bank of International Settlements 'BIS', 2012). Prior to independence, the financial sector in South Africa was exclusive to some categories of the population. After 1994, the financial liberalisation gradually opened the financial sector to all South Africans. Liberalisation of various sectors started in the 1990s, setting a tone for a gradual transition from isolation to integration into the international global economy. Liberalisation in the financial sector included the removal of restrictions on capital inflows and outflows (SARB, 2025). The Financial Services Charter was a bold move towards an inclusive and liberalised financial sector. The South African Reserve Bank (SARB) plays a crucial role in regulating the financial sector. The SARB was operational in 1921, created through the Currency and Banking Act No. 31 of 1920. After the South African Reserve Bank Act of 1989 was signed into law, the mission of the SARB was defined as the protection of the internal and external value of the rand (SARB, 2025). Over the years, the financial sector has grown in breadth and depth of its offerings. The liberalisation of the financial sector was backed by a legal overhaul and financial regulations that ensure all market players work towards the advancement of a financial sector that incorporates quality, diverse

products and accessibility to South Africans. The Financial Sector Regulation Act of 2017, which has been implemented in incremental steps since 2018, aim to establish a Twin Peaks model of financial regulation – financial sector soundness and consumer protection. The Twin Peaks model aims to maintain and uphold financial stability (van Heerden, 2018). This has led to the creation of the Prudential Authority tasked to regulate system-wide safety and financial sector soundness, and the Financial Sector Conduct Authority that oversees efficiency, customer protection and financial sector integrity (van Heerden, 2018). Despite having made progress in financial development, South Africa still struggles with market concentration in the banking sector, where there are a few dominant banks.

Following an overhaul of the financial sector and embracing liberalisation, the South African financial sector has experienced an increase in the number of banks operating in the financial sector and customers accessing the financial sector (World Bank, 2025b). The trends in financial sector development captured by the Financial Development Index are reported in Figure 1.

On the income inequality dynamics, South Africa is ranked among one of the most unequal countries (World Bank, 2025b; Statistics South Africa 'StatsSA', 2020) - the inequality in South Africa between racial groups and intra-racial differences. The persistent inequality can be traced back to the apartheid era, and social and economic factors post the apartheid period. According to the World Bank (2015b) and the International Monetary Fund (IMF, 2020), inequality in South Africa is not only evident in income distribution but also manifests in unequal access to opportunities in education, housing, jobs, health, and among provinces.

After independence in 1994, the government rolled out policies aimed at redressing the inequalities of the apartheid era. It is evident that these measures were insufficient to eliminate inequality in South Africa, given the country's current high level of inequality. The Reconstruction and Development Programme (RDP) aimed to address past injustices in healthcare, housing, land reform, and sanitation. A notable improvement in access to social services was recorded; however, over the years, government interventions have failed to eliminate the growing inequality among racial and intra-racial inequality (World Bank, 2015b). The government rolled out several programmes to alleviate inequality and integrate all social classes. South Africa has one of the largest social safety nets in Africa that caters for different

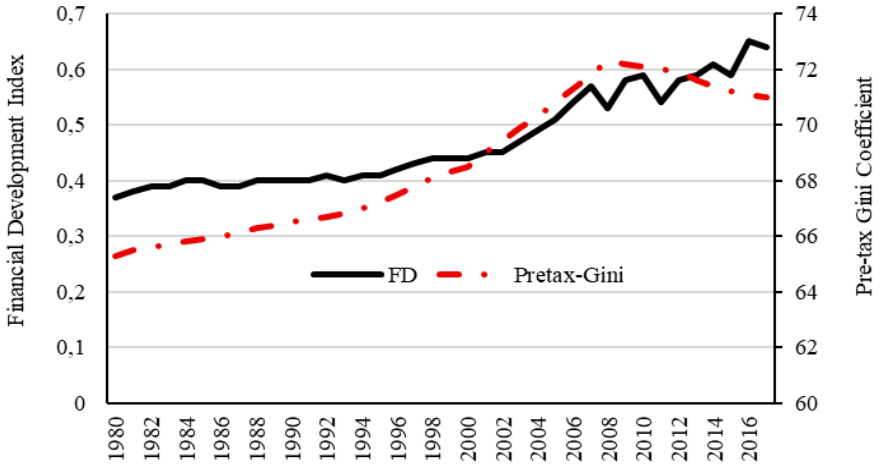
categories in society. The transfers include Old Age Grant, Child Support Grant, Disability Grant, Foster Care Grant, War Veterans Grant, Care Dependency Grant and Social Relief of Distressed Grants. The grants availed by the government provide relief to different categories in society (World Bank, 2025b); however, the transfers are not sufficient to transform the recipients into creating independence from government support.

Apart from social grants, the government has transformed social services like education and health to make them accessible to less privileged families. There are schools and clinics that provide free education and free primary health care, respectively. The government also provides funding for tertiary education. Several government interventions to reduce inequality have placed a constraint on the fiscal budget; coupled with depressed economic growth, government fiscal space to roll out programmes has been limited. Slow economic growth has failed to absorb a growing labour force, resulting in high unemployment in general and youth unemployment in particular (World Bank, 2015c). Thus, it reduces the chances of emancipation from the vicious cycle of inequality and dependence on government support.

South Africa recorded a GINI coefficient of 0,67 in 2006, and it dropped to 0.65 in 2015 before decreasing again in 2024 to 0.63 (World Bank, 2025b). Although there was a decline in the GINI coefficient, income inequality levels remain high and far from achieving equality. When inequality is measured by other metrics, such as the Palma ratio, 10% of the population spent 8.6 times more than the bottom 40% in 2006. Although a decline was recorded to 7.9 in 2015, the difference remains significant (StatsSA, 2020). Inequality varies across provinces in South Africa, with some provinces like Eastern Cape, Western Cape and Mpumalanga registering relatively high inequality levels compared to Gauteng (StatsSA, 2020). The dynamics in financial development and income inequality are reported in Figure 1.

Figure 1

Trends in Financial Development and Income Inequality



Source: SWIID (2023) and IMF (2025)

Figure 1 reports the trends in financial development captured by the Financial Development Index and the pre-tax Gini coefficient from 1980 to 2017 (SWIID, 2023; IMF, 2025). The two series trend together show a steady increase through the study period. The upward trend in both series suggests a positive association between financial development and income inequality. This may be one of the reasons why income inequality has remained stubbornly high, as this trend has been associated with advancement in financial development, which has earned South Africa credit as one of the countries with an advanced financial sector.

2.2 Empirical literature review

The theoretical link between financial development and income inequality is fostered in several channels. Firstly, financial development creates jobs that provide income to the workers. Secondly, financial development plays a crucial role in intermediation, allowing deficit units to borrow for consumption and investment. Thus, providing a channel through which households and firms can get credit during times of credit crunch and investment funds, respectively. Access to investment funds allows firms to expand their operations and create more jobs. Given that income inequality in South Africa is closely linked to wage

earnings, this provides an alleviation of income inequality. On the other hand, the ability of families to access financing from the bank allows households to consume more social services like health and education, housing, and smooth consumption. Lastly, the drive for financial inclusion allows access to financial institutions for previously unbanked individuals. Thus, expanding the possibility of household consumption and investment. In this study, empirical literature on financial development and income inequality is reviewed, consisting of studies that found a positive impact, those that found mixed results, studies that found a negative impact and some studies that found an insignificant impact.

Karis and Cil (2024) examined the impact of financial development on income inequality for 13 OECD member countries using data from 1993 to 2017. Using the GINI coefficient as a measure of income inequality and banks' domestic credit to the private sector, the study found financial development to have a positive impact on income inequality. Alshubiri (2021) examined the effects of financial deepening on income inequality for 32 Organisation for Economic Co-operation and Development (OECD) and ASIAN countries using data from 2002 to 2018. Using GMM estimation and pooled OLS, the study found financial depth proxies for informal and formal financial sectors to have a positive impact on income inequality. Excessive expansion of the formal financial sector compared to other sectors was found to result in an unequal impact on income inequality. In the same spirit, Bittencourt et al. (2019) in a study on 50 United States using data from 1976 to 2011, found the impact of financial development on income inequality to be non-linear. They separated their sample into above-average and below-average inequality groups. An increase in financial development was found to increase above-average income inequality in states, and an inverted U-shaped relationship was found for average income inequality in states. de Haan and Sturm (2017) found the same results as Karis and Cil (2024) in a separate study on 121 countries using panel data from 1975 to 2005. Adams and Klobodu (2016), in a study on 21 Sub-Saharan African countries (SSA) using data from 1985 to 2011, found that financial development increases income inequality.

Apart from studies that have found a positive impact of financial development on income inequality, there are also studies that have found mixed results. For example, Bolarinwa and Akinlo (2021) examined a non-linear relationship between financial development and

inequality in Africa using a sample of 40 countries: 7 high-income countries, 20 low-income countries and 13 low-middle income countries. The study found that aggressive financial development worsens inequality in high-income countries and reduces inequality in low- and middle-income countries. Nguyen et al. (2019), in a separate study on 21 emerging countries, using data from 1961-2017, found an inverted U-shaped relationship between financial development and income inequality, meaning inequality responds differently depending on the stages of financial development. Early stages were found to be characterised by an increase in income inequality, and after a certain stage, income inequality decreases with an increase in financial development.

Altunbaş and Thornton (2019), in a study on a panel of 121 countries using quantile regression, found financial development to promote equality across inequality quantiles in upper-middle-income countries, while for low and high-income countries, financial development was found to promote inequality. Chiu and Lee (2019) explored the non-linear effects of financial development and country risks on income inequality for 59 countries using data from 1985 to 2015. Using panel smooth transition regression, the study found that financial development improves income inequality in high-income countries and worsens income inequality in low-income countries.

There are also some studies that found financial development to reduce income inequality or to have an insignificant impact. Among the studies that found a financial development to reduce income inequality, Umit and Eyuboglu (2024) investigated the impact of financial development on income inequality for China, Turkey, Brazil, India, Argentina, Russia, Indonesia and Mexico. Using data from 1989 to 2021, the study found financial development to reduce income inequality in Russia, India and Argentina. Chisadza and Biyase (2022), in a study on financial development and income inequality for 148 countries using data from 1980 to 2019, found financial development to reduce inequality across emerging and least developed countries, but it was found to be insignificant for advanced countries. The study also found banking sector development to have income inequality-reducing effects for emerging and least developed countries. Bolarinwa and Akinlo (2021) in a study on 40 African countries from high-income, middle- and low-income countries found the existence of a threshold levels of financial development that reduce inequality. Aggressive financial development was found to promote inequality in high-income

countries and reduce inequality in low- and middle-income countries. Thornton and Di Tommaso (2020) found the same results as Umit and Eyuboglu (2024) and Chisadza and Biyase (2022) in a study on 119 advanced and developing countries.

Ahmed and Masih (2017) examined the impact of financial development on income inequality for Malaysia using data from 1970 to 2007 and employing autoregressive distributed lag (ARDL). The study found financial development to be insignificant in influencing income inequality.

The results from the studies that have been reviewed show inconclusive results, with some studies pointing to the financial development worsening income inequality (see, Karis and Cil ,2024; Alshubiri, 2021; Bittencourt et al., 2019) and some studies findings mixed results (Bolarinwa & Akinlo, 2021; Nguyen et al., 2019) and yet another strand of literature found financial development to have an insignificant impact on income inequality (Ahmed & Masih, 2017). The commitment to reduce inequality was made by most developed and developing countries by being signatories to the SDGs, and South Africa is not an exception. Given the inconclusive results from the literature, coupled with the persistently high income inequality in South Africa, another study on financial development and income inequality offers policymakers more insight.

3. Research Methodology

The asymmetric impact of financial development on income inequality is examined using the non-linear autoregressive distributed lag (NARDL) developed by Shin et al (2014). The approach was selected because of numerous advantages. For instance, the NARDL approach departs from the traditional ARDL by decomposing the impact of the independent variable into negative and positive partial sums. In addition, the results obtained are in the short and long run, providing guidance to policies that attach timeframes. Thus, it allows policymakers to design policies that focus on short-run interventions and those that focus on long-term impact on income inequality.

Variables

The primary variables in this study are income inequality (INEQ), proxied by the pre-tax GINI coefficient, and financial development, measured by the Financial Development Index (FD) developed by the IMF. To fully specify the model and minimise model

specification error, other control variables that were included in the model are total export and imports divided by GDP (TRADE), Gross Fixed capital Formation (GFCF), GDP per capita (YPC) and population growth (POPGR). Table 1 reports variable definition and data sources.

Table 1

Variable definition

Variable Name	Variable Definition	Data Source
FD	Financial Development Index	IMF
GINI	Pre-tax GINI coefficient	SWIID
TRADE	[Exports plus imports]/GDP	WDI
GFCF	Gross Fixed Capital Formation (% of GDP)	WDI
YPC	Economic Growth (GDP per capita growth)	WDI
POPGR	Population growth	WDI

WDI = World Bank Development Indicators online database, IMF = International Monetary Fund, SWIID = Standardised World Income Inequality Database

Model specification and data

Equation (1) provides the general model specification.

$$\mathrm{INEQ} = \mathrm{f}(\mathrm{FD}, \mathrm{TRADE}, \mathrm{GFCF}, \mathrm{YPC}, \mathrm{POPGR}) \quad (1)$$

Where: INEQ = Inequality measured by the pre-tax GINI coefficient; FD = Financial Development Index; TRADE = [Export + Imports]/GDP; GFCF = Gross Fixed Capita Formation (% of GDP); YPC = per capita GDP; POPGR = population growth

The positive and negative partial sums of the Financial Development Index (FD) are given in equation (2) and further decomposed in equations (3) and (4).

$$\mathrm{FD_t} = \rho_0 + \mathrm{FD_{nt}^{+}} + \mathrm{FD_{nt}^{-}} \quad (2)$$

Where:

$$\mathrm{FD_{nt}^{+}} = \sum_{\mathrm{J=1}}^{\mathrm{t}} \Delta \mathrm{FD_{nt}^{+}} = \sum_{\mathrm{j=1}}^{\mathrm{t}} \max\left(\Delta \mathrm{FD_{nj}}; 0\right) \quad (3)$$

$$\mathrm{FD_{nt}^{-}} = \sum_{\mathrm{J=1}}^{\mathrm{t}} \Delta \mathrm{FD_{nt}^{-}} = \sum_{\mathrm{j=1}}^{\mathrm{t}} \min(\Delta \mathrm{FDn}; 0) \quad (4)$$

Based on equation (2), (3) and (4), the NARDL model can be expressed as:

$$\begin{aligned}\Delta \mathrm{INEQ}_t = \sigma_0 &+ \sum_{i=1}^{p} \sigma_{1i} \Delta \mathrm{INEQ}_{t-i} + \sum_{i=0}^{q1} \sigma_{2i}^{+} \Delta \mathrm{FD}_{nt-i}^{+} \\ &+ \sum_{i=0}^{q2} \sigma_{3i}^{-} \Delta \mathrm{FD}_{nt-i}^{-} + \sum_{i=0}^{q3} \sigma_{4i} \Delta \mathrm{TRADE}_{t-i} \\ &+ \sum_{i=0}^{q4} \sigma_{5i} \Delta \mathrm{GFCF}_{t-i} + \sum_{i=0}^{q5} \sigma_{6i} \Delta \mathrm{YPC}_{t-i} \\ &+ \sum_{i=0}^{q6} \sigma_{7i} \Delta \mathrm{POPGR}_{t-i} + \rho_1 \mathrm{INEQ}_{t-1} + \rho_2^{+} \mathrm{FD}_{nt-1}^{+} \\ &+ \rho_3^{-} \mathrm{FD}_{nt-1}^{-} + \rho_4 \mathrm{TRADE}_{t-1} + \rho_5 \mathrm{GFCF}_{t-1} \\ &+ \rho_6 \mathrm{YPC}_{t-1} + \rho_7 \mathrm{POPGR}_{t-1} + \gamma_{1t}\end{aligned} \tag{5}$$

Where: σ_0 = constant; $\sigma_1 - \sigma_7$= short-run coefficients; $\rho_1 - \rho_7$ = long-run coefficients; and γ_{1t} = error term.

The NARDL error correction representation of equation (5) is given in equation (6).

$$\begin{aligned}\Delta \mathrm{INEQ}_t = \sigma_0 &+ \sum_{i=1}^{p} \sigma_{1i} \Delta \mathrm{INEQ}_{t-i} + \sum_{i=0}^{q1} \sigma_{2i}^{+} \Delta \mathrm{FD}_{nt-i}^{+} \\ &+ \sum_{i=0}^{q2} \sigma_{3i}^{-} \Delta \mathrm{FD}_{nt-i}^{-} + \sum_{i=0}^{q3} \sigma_{4i} \Delta \mathrm{TRADE}_{t-i} \\ &+ \sum_{i=0}^{q4} \sigma_{5i} \Delta \mathrm{GFCF}_{t-i} + \sum_{i=0}^{q5} \sigma_{6i} \Delta \mathrm{YPC}_{t-i} \\ &+ \sum_{i=0}^{q6} \sigma_{7i} \Delta \mathrm{YPOPGR}_{t-i} + \lambda \mathrm{ECM}_{t-1} + \gamma_{2t}\end{aligned} \tag{6}$$

Where ECM = Error correction term.

4. Results and discussion

Stationarity of the variables included in the model was tested using the Phillips-Perron and the Augmented Dickey-Fuller test, and the results are presented in Table 2. It reports stationarity of all variables included in the model in levels or in first difference. The next step is to test for a long-run relationship among the variables.

Table 2

Unit Root Test Results

	Augmented Dickey (ADF)		Phillips-Perron (PP)	
Variable	Level	Δ	Level	Δ
Gini	-1.348367	-2.704091*	-0.992893	-3.416702***
FD	-1.231077	-6.794090***	1.045329	-9.141020***
TRADE	-1.803790	-4.687731***	-0.384826	-6.227622***
GFCF	-2.166147	-4.020321***	-0.896242	-3.7386***
YPC	-3.4185**	-	-3.4222***	-
POPGR	-1.268083	-3.509178***	-1.340478	-3.509178***

*Notes: *, ** and *** denote statistical significance at 10%, 5% and 1% levels, respectively. Δ denotes first difference.*

The results reported in Table 3 confirm that the variables included in the model are cointegrated. This is confirmed by comparing the calculated F-statistics of 9.297350 to the critical values also provided in the table. The calculated F-statistic is greater than the upper bound at 1% level of significance, confirming the presence of cointegration.

Table 3

Cointegration Results

Dependent variable	**F-Statistic**		**Cointegration Status**			
FD	9.297350***		Cointegrated			
Asymptotic critical values						
	10%		5%		1%	
	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)
	2.977	4.260	3.576	5.065	5.046	6.930

*Notes: *, ** and *** denote statistical significance at 10%, 5% and 1% levels*

Table 4 reports the asymmetric test.

Table 4

Asymmetric Test Results

FD as dependent variable			
Test	**F-statistic**	**P-value**	**Decision**
W_{LR}	42.95464***	0.000	Asymmetric
W_{SR}	7.744158**	0.0155	Asymmetric

*1) ** and *** denote statistical significance at 5% and 1% levels, respectively. 2) WLR = long-run asymmetric test. 3) WSR = short-run asymmetric test*

The asymmetric test results reported in Table 4 reveal the presence of asymmetry in the short and the long run. This indicates that the analysis can be done using the non-linear autoregressive distributed lag. The asymmetric long and short-run results are presented in Table 5.

Table 5

Asymmetric Long and short-run results

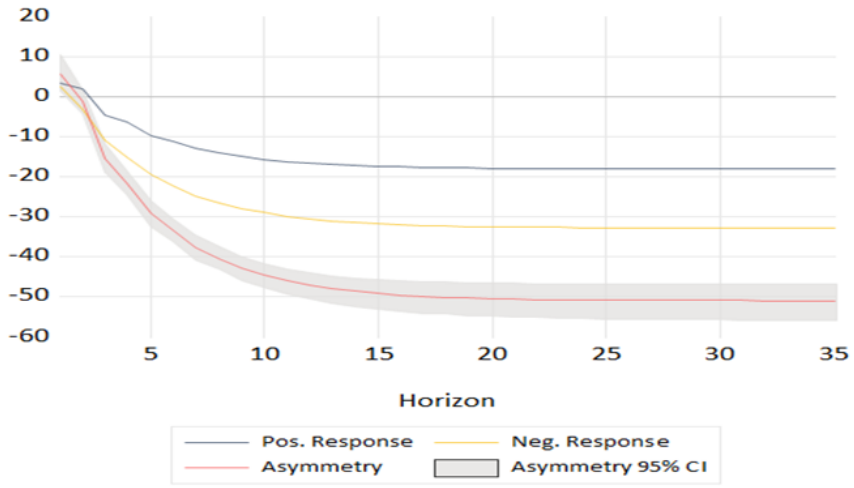
FD as a proxy of financial development		
Panel A: Long-Run Results		
Regressor	**Coefficient**	**T-ratio [p-value]**
C	19.52195***	9.814531 [0.0000]
$TREND$	0.129783***	9.4314482 [0.0000]
FD^{+}	18.11925**	-2.437483 [0.0212]
FD^{-}	32.79921***	3.718455[0.0009]
$TRADE$	0.033208	1.601867 [0.1200]
$GFCF$	-0.002506	-0.029458 [0.9767]
YPC	0.001541***	3.575413 [0.0012]
$POPGR$	-0.038141	-0.247704 [0.8061]
Panel B: Short-Run Results		
Regressor	**Coefficient**	**T-ratio [p-value]**
$\Delta INEQ(-1)$	-0.446439**	-3.357063 [0.0033]
ΔFD^{+}	3.214991**	2.695174 [0.0143]
$\Delta FDI^{+}(-1)$	7.684075***	5.298891 [0.0000]
ΔFD^{-}	-2.532358**	-2.554773[0.0194]
$\Delta FD^{-}(-1)$	-7.693451***	-4.406894[0.0003]
$\Delta TRADE$	0.005887*	2.074898 [0.0518]
$\Delta TRADE(-1)$	0.001837	0.654654 [0.5205]
$\Delta GFCF$	0.028137**	2.281568[0.0342]
$\Delta GFCF(-1)$	0.009271	0.969936[0.3443]
ΔYPC	0.000389***	3.236435 [0.0043]
$\Delta YPC(-1)$	-0.000230	-1.360339 [0.1896]
$\Delta POPGR$	-0.032257	-0.751081[0.4618]
$\Delta POPGR(-1)$	-0.067622	-1.458218 [0.1611]
$ECM(-1)$	-0.350282***	-9.752899[0.0000]
Panel C: Test statistics and diagnostics		
R- Squared	0.978738	
R-Bar-Squared	0.961952	
F-statistics [Prob]	58.30643 [0.000000]	

*Notes: *, ** and *** denote statistical significance at 10%, 5% and 1% levels, respectively.* Δ *denotes first difference*

The results reported in Table 5, Panels A and B, confirm a positive association between positive shocks to financial development and income inequality in both the long run and the short run. This is evidenced by the coefficients of FD^+ , ΔFD^+ and $\Delta FD^+(-1)$, all of which are statistically significant at either the 5% or 10% level. The results also indicate an inverse relationship between negative shocks to financial development and income inequality in the long run, whereas in the short run, they move in the same direction. The dynamic multiplier graph in Figure 2 also confirms that, overall, negative shocks to financial development have a more pronounced and lasting impact on income inequality over time than positive shocks. The findings from this study point to the importance of intentional policies to guide financial development and complementary policies and programmes, such as a comprehensive social safety net and employment creation.

Figure 2

Dynamic Multiplier Graph



Source: Computation from E-views

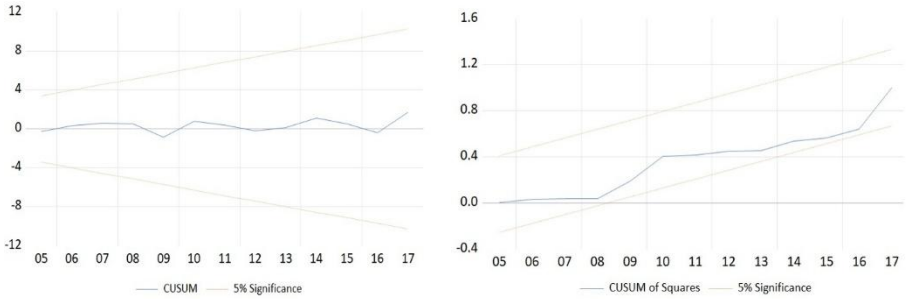
Other results presented in Panels A and B confirm that trade openness (TRADE) and gross fixed capital formation (GFCF) have a positive impact on income inequality, but only in the short run. Gross Domestic Product per capita (YPC) was found to worsen income inequality in both the short and long run. Population growth (POPGR),

on the other hand, had an insignificant effect on income inequality in South Africa, regardless of the time horizon considered.

The model demonstrates a good fit, with an explanatory power of 97%. The error correction term (ECM), with a coefficient of –0.350282, has the expected negative sign, confirming the model's convergence toward equilibrium whenever there is a disequilibrium in the economy. Additionally, the model passed the stability tests, as evidenced by the cumulative sum (CUSUM) and cumulative sum of squares (CUSUMSQ) plots reported in Figure 3.

Figure 3

Stability Test



Stability test at 5% level of significance

Source: Computation from E-views

5. Conclusion

The study explored the asymmetric impact of financial development on income inequality in South Africa using data from 1980 to 2017. The study was motivated by the struggle that the South African government has faced in reducing income inequality in the country since its independence. This is despite advancements in some sectors, like the financial sector. The study investigated if South Africa could benefit from financial development in reducing income inequality in the country. The Financial Development Index (FD) was used as a proxy for financial development to examine the impact of financial development on income inequality, using the non-linear autoregressive distributed lag (NARDL) approach.

The study found positive shocks to financial development to be positively associated with income inequality in both the long run and the short run. However, the negative shocks to financial development

were found to have an inverse relationship with income inequality in the long run, whereas in the short run, they move in the same direction. The dynamic multiplier graph confirms that negative shocks to financial development have a more pronounced and lasting impact on income inequality over time. The findings from the study confirmed that financial development cannot be taken as a panacea for income inequality reduction without complementary programmes and intentional policies**.** Based on the results, it is recommended that the South African government implement a multidimensional policy intervention specifically tailored to address and reduce income inequality.

As the country continues to advance financial sector development, a balanced approach is required to ensure that the South African financial sector remains competitive and responsive to domestic needs, while also contributing to the alleviation of income inequality—one of the key goals of the National Development Plan. This may entail a gradual and steady advancement in financial development, supported by policies and programmes specifically aimed at reducing income inequality—such as promoting financial inclusion and improving access to financial services, particularly for marginalised populations. Other interventions include programmes aimed at job creation and the expansion of social services such as education, housing, and healthcare, to help reduce the gap between the rich and the poor. These programmes can be complemented by a comprehensive social safety net as a short-term relief measure.

Although an effort was made to ensure the scientific rigour of the study, it is not without limitations. Firstly, the availability of data restricted the study period. Future studies can benefit from the use of extended data. Secondly, the study used the financial development index as a measure of financial development. The financial development index combines bank-based and market-based financial indices; future studies can explore the nature of the relationship between income inequality and bank-based and/or market-based measures of financial development separately. Lastly, inequality is multidimensional; future studies can benefit from investigating the impact of financial development using multidimensional measures of inequality.

Reference

1. Adams, S., & Klobodu, E.K.M. (2016). Financial development, control of corruption and income inequality, *International Review of Applied Economics*, 30(6), 790-808. DOI: 10.1080/02692171.2016.1208740.
2. Ahmed, A.R., & Masih, M. (2017). What is the link between financial development and income inequality? evidence from Malaysia, *MPRA Paper* 79416.
3. Alshubiri, F. (2021). Financial deepening indicators and income inequality of OECD and ASIAN countries. *The Journal of Economic Asymmetries*, 24(e00211). https://doi.org/10.1016/j.jeca.2021.e00211.
4. Altunbaş, Y. & Thornton, J. (2019). The impact of financial development on income inequality: A quantile regression approach. *Economics Letters*, 175, pp. 51–56.
5. Bittencourt, M., Chang, S., Gupta, R., & Miller, S.M. (2019). Does financial development affect income inequality in the US States? *Journal of Policy Modelling*, 41(6), pp. 1043–1056. http://dx.doi.org/10.1016/j.jpolmod.2019.07.008.
6. Bolarinwa, S.T., & Akinlo, A.E. (2021). Is there a nonlinear relationship between financial development and income inequality in Africa? Evidence from dynamic panel threshold. *The Journal of Economic Asymmetries*, 24(e00226). http://dx.doi.org/10.1016/j.jeca.2021.e00226.
7. Chisadza, C., & Biyase, M. (2022). Financial Development and Income Inequality: Evidence from Advanced Emerging and Developing Economies, *University of Pretoria, Department of Economics Paper Series*, Working Paper 2022-21, April.
8. Chiu, Y.B., & Lee, C.C. (2019). Financial development, income inequality, and country risk. *Journal of International Money and Finance*, 93, pp. 1–18. doi: 10.1016/j.jimonfin.2019.01.001.
9. de Haan, J., & Sturm, J. (2017). Finance and income inequality: A review and new evidence. *European Journal of Political Economy*, 50(C), pp. 171–195. DOI: 10.1016/j.ejpoleco.2017.04.007.
10. IMF (2020). South Africa: Bridging the Income Divide. Available from https://www.imf.org/en/Blogs/Articles/2020/02/07/south-africa-bridging-the-income-divide. [Accessed 3 June 2025].
11. IMF (2025). Financial Development Index Database. Available from https://legacydata.imf.org/?sk=f8032e80-b36c-43b1-ac26-493c5b1cd33b. [Accessed 28 May 2025].

12. Karış, C. & Çil, D. (2024). The Impact of Financial Development on Income Inequality: Evidence from OECD Countries. *Istanbul Business Research*, 53(1), pp. 103–118.
13. Nguyen, C.T., Ngoc Vu, T., Hong Vo, D., & Thi-Thieu Ha, D. (2019). Financial development and income inequality in emerging markets: a new approach. *Journal of Risk and Financial Management*, 12(4), 1-14. http://dx.doi.org/10.3390/jrfm12040173
14. SARB, (2025). History. Available from https://www.resbank.co.za/en/home/about-us/history. [Accessed 2 June 2025].
15. Shin, Y., Yu, B., & Greenwood-Nimmo, M. (2014), Modelling asymmetric cointegration and dynamic multipliers in a nonlinear ARDL framework. Festschrift in Honor of Peter Schmidt, Springer, New York, NY, 281-314.
16. Stats SA, (2020). How Unequal is South Africa? Available from https://www.statssa.gov.za/?p=12930. [Accessed 3 June 2025].
17. SWIID, (2023). (Version 9.6) [Solt, Frederick. 2020. "Measuring Income Inequality Across Countries and Over Time: The Standardized World Income Inequality Database." Social Science Quarterly 101(3):1183-1199].
18. Thornton, J., & Di Tommaso, C. (2020). The long-run relationship between finance and income inequality: Evidence from panel data. *Finance Research Letters*, 32(101180). http://dx.doi.org/10.1016/j.frl.2019.04.036.
19. Umit, A.O., & Eyuboglu, S. (2024). Re-investigation of financial development on income inequality: An empirical analysis for G-20 emerging economies. *Scientific Annals of Economics and Business*, 71(41), DOI: https://doi.org/10.47743/saeb-2024-0027.
20. Van Heerden, C. (2018). Twin Peaks Model of Financial Regulation for South Africa Seelk to Promote and Maintain Financial Stability. University of Pretoria: Mercantile Law, 20 July. Available from https://www.up.ac.za/mercantile-law/news/post_2705235-twin-peaks-model-of-financial-regulation-for-south-africa-seeks-to-promote-and-maintain-financial-stability#:~:text=The%20essence%20of%20the%20South,Conduct%20Authority%2C%20tasked%20with%20overseeing. [Accessed 2 June 2025].
21. World Bank (2025a). Gini index- South Africa. Available from https://data.worldbank.org/indicator/SI.POV.GINI?locations=ZA. [Accessed 16 June 2025].

22. World Bank. (2025b). Country Brief- Inequality in South Africa: An assessment of the Southern African Customs Union. https://documents1.worldbank.org/curated/en/099125003072240961/pdf/P1649270b73f1f0b5093fb0e644d33bc6f1.pdf. [Accessed 3 June 2025]
23. World Bank. (2025c). World Development Indicators. Available at: https://databank.worldbank.org/source/world-development-indicators. [Accessed 16 June 2025].

Data sources:

- World Income Inequality Database (WIID). Available from https://www.wider.unu.edu/project/world-income-inequality-database-wiid. [Accessed 12 June 2025].