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FINANCIAL FRICTION, DOMESTIC CREDIT AND INCOME INEQUALITY IN EMERGING ECONOMIES: COMPARATIVE IV-GMM AND THRESHOLD ANALYSES FROM NIGERIA AND SOUTH AFRICA

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ABSTRACT

This study comparatively investigates the intrinsic nexus of financial friction (proxied by interest rate spread), domestic credit and income inequality in emerging economies using quarterly time series data on Nigeria and South Africa from 1980 to 2015. It also investigates whether interest spread and domestic credit independently reduce inequality and if inequality responds to domestic credit and interest spread when interest spread is below or above its threshold. Findings revealed that (1) domestic credit aggravates inequality in both countries; (2) the impact of interest spread is asymmetric; (3) interest spread reduces the devastating effect of credit on inequality; and (4) the behavior of inequality with respect to domestic credit and interest spread is mixed given the interest spread threshold. Based on the results, a policy mix approach should be pursued since credit and financial friction exert a heterogeneous impact.

Contribution/Originality: This study contributes to the existing literature by using an overlapping generation model to elucidate the role of interest rate spread in shaping income inequality in Nigeria and South Africa. Empirical findings provide evidence that the finance approach can be deployed to reduce income inequality in both countries.

1. INTRODUCTION

The finance inequality theory highlights how direct and indirect changes in financial mechanisms can either worsen or reduce the inequality of pecuniary opportunities (Demirguc-Kunt & Levine, 2008; Demirgüç-Kunt & Levine, 2009; Levine, 2004; Levine, 2008). Financial friction refers to when financial markets are imperfect, evidenced by tighter credit constraints (Adeleye, Osabuohien, Bowale, Matthew, & Oduntan, 2018; Adusei & Adeleye, 2020), which perpetuates consistent poverty (Ehrlich & Seidel, 2016; Galor & Moav, 2004, 2006; Galor & Zeira, 1993; Sun, Sen, & Jin, 2013). For instance, financial friction can distort human capital investments, skew proportions of physical capital stock, change the economic growth rate, and alter production inputs, especially labor force, and has a negative impact on poverty and income distribution (Adeleye et al., 2020; Allub & Erosa, 2017; Godechot, 2020; Levine, 2008; Weychert, 2020). Regarding the relationship between finance and inequality, some studies (Cepni, Gupta, & Lv, 2020; Demir, Pesqué-Cela, & Murinde, 2020; Swamy & Dharani, 2021) suggest that the relationship is non-linear. Others have examined the problem of income inequality in a finance inequality context (Adeleye, 2020; Delis, Hasan, & Kazakis, 2014; Ehrlich & Seidel, 2016; Merlin & Teles, 2014; Sun et al., 2013), and using the institution inequality

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framework (Adeleye, Osabuohien, & Bowale, 2017; Gupta, Davoodi, & Alonso-Terme, 2002; Law, Tan, & Azman-Saini, 2014; Lee, Nielsen, & Alderson, 2007). Interest rates – deposit, lending, and spread – are synonymously used as the proxy for financial friction (Adeleye, 2020; Adusei, Adeleye, & Okafor, 2021; Allub & Erosa, 2019; Bengui & Phan, 2015; Fernandez-Villaverd, Hurtado, & Nu˜no, 2019; Karpowicz, 2014). The deposit rate is used to incentivize depositors to bring in loanable funds, while the real interest rate, which is adjusted for inflation, is what financial intermediaries use to lend out depositors' funds. Both rates enhance financial sector efficiency and, to put this into perspective, the conjecture is that when economic growth occurs, the demand for loans and advances rise causing banks to increase the deposit rate for savers in a bid to pool more loanable funds, which increases the operating costs of financial intermediation (Adeleye et al., 2022). This cost is eventually passed on to the borrowers, hence interest rate is an indispensable instrument of economic activities (Bozik, 2019; Piketty, 2014). Money market rate volatility can drive up both lending and deposit interest rates (Adusei, Adeleye, & Sarpong-Danquah, 2022; Were & Wambua, 2014). The link between interest rate and inequality using an overlapping generation framework is detailed in Section 2. The study focuses on the emerging economies of Nigeria and South Africa. Comparative research on Nigeria and South Africa is vital and justified. For instance, Nigeria is the largest open economy in Sub-Saharan Africa and a leading economic powerhouse in the Economic Community of West African States (ECOWAS) (Adeleye, Ogundipe, Ogundipe, Ogunrinola, & Adediran, 2019), while South Africa is a dominant economic player in the Southern African Development Community (SADC). While the average Gini index (measure of inequality) for Nigeria is 56.57, South Africa's is 66.82 (Lahoti, Jayadev, & Reddy, 2016), and income inequality is rising sharply in both countries (UNU-WIDER, 2021). This comparative investigation is germane as both countries are Africa's economic powerhouses with developing financial systems and rising inequality. Also, this study differs from related studies in several ways. First, rather than use deposit, lending or real interest rate, this study uses the interest rate spread as the proxy for financial friction. This is because high spread implies that the lending rate is higher than the deposit rate, a low spread implies that the margin between both rates is quite small, and a negative spread implies that the deposit rate is higher than the lending rate. Second, it shows whether interest spread moderates the impact of finance on inequality, and third, it determines the interest spread threshold in the relationship between finance and inequality. To the best of our knowledge, this is the first study to use the interest rate spread to weigh the impact of credit on income inequality. Additionally, a linear relationship is hypothesized, and we add a new line to the argument by testing the Greenwood & Jovanovic (1990) (henceforth known as the GJ theory), whose non-linear inverted U-shaped hypothesis states that the relationship between domestic credit and inequality may not be linear as domestic credit may influence inequality when interest rate spread is above or below a certain threshold. Importantly, defining a threshold of interest rate spread regarding its effect on income inequality via domestic credit could help regulatory authorities guide the financial sector towards attaining an optimal level that reduces inequality. Hence, the documented evidence on the effect of finance on inequality reveals a gap in the literature in relation to emerging economies. Thus, this study uses the Gini Index (proxy for income inequality), domestic credit, and interest rate spread (financial friction variable) to address this gap and achieve the following objectives: for the *linear* model, we aim to evaluate whether domestic credit and interest rate spread independently impact inequality[1]; and gauge whether the moderating impact of interest rate spread on domestic credit significantly reduces or exacerbates inequality. For the *non-linear* threshold model, this paper's contribution to the literature is to show how inequality responds to domestic credit and interest spread when interest spread is below or above its threshold; and whether interest spread moderates the impact of domestic credit on inequality when interest spread is below or above its threshold. The empirical investigation employs the bootstrapping technique for the instrumental variables to control for endogeneity and threshold regressions proposed by Hansen (1999). The findings, for the most part, align with previous studies, but the novel contribution is that interest spread attenuates the impact of domestic credit on inequality for the linear model andwhen spread is below

[1] For simplicity, *inequality* refers to income inequality.

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its threshold. The rest of the paper is structured as follows: Section 2 reviews the extant literature; Section 3 presents the data and the empirical approach; Section 4 discusses the results, and Section 5 concludes with policy recommendations.

2. FRAMEWORK AND APPROACH

2.1. Theoretical Framework

The theoretical framework used in this study is confined within the financial markets imperfections theory (Galor & Zeira, 1993; Loury, 1981) and the extensive margin theory (Becker & Tomes, 1986; Becker & Tomes, 1979; Greenwood & Jovanovic, 1990). The protagonists of these theories (Becker & Tomes, 1986; Becker & Tomes, 1979; Becker, 1957; Galor & Zeira, 1993; Greenwood & Jovanovic, 1990; Stiglitz, 1969) draw the conjecture that extending the availability and use of financial services to those who were initially excluded due to price, impediments or discriminatory factors can expand the economic opportunities of these groups and reduce the cross-dynasty persistence of income inequality. The theories also draw direct and indirect mechanisms through which credit allocation can exacerbate income inequality. In other words, shocks to credit can directly influence output and the employment of skilled and unskilled labor, so credit allocation improvement will lead companies to employ more low-skilled labor for production thus equalizing economic opportunities for those workers and reducing the inequality gap (Berisha, Gupta, & Meszaros, 2020; Kavya & Shijin, 2020; Weychert, 2020).

2.2. Analytical Approach

We adapted the analytical approach taken by Li & Yu (2014), which uses an overlapping generation framework. The model includes two people, one is a professional and the other is not. During two separate periods, both can decide to either work or invest in education in the first year or be a non-professional worker in both periods. Also, both people have the same characteristics but they have received different amounts of ancestral inheritance (assets). They can also appropriate infinite amounts to fund education in the first period in order to gain the experience needed to achieve higher income levels in the second period. Both get satisfaction from consumption and inheritance that can only happen in the second period.

For the non-professional worker, the income function is stated in Equation 1 as:

$$Y_t^a = w^a L_t^a \quad (1)$$

While that of the professional is indicated in Equation 2 as:

$$Y_t^e = A(L_t^e)^{\propto}(K_t)^{1-\propto} \quad (2)$$

Where Y_t^a and Y_t^e are the total incomes of both people in time t; w^a is the wage rate earned per unit labor for the non-professional (i.e., marginal productivity); A represents value-added skill, which is an outcome of education; L_t^a and L_t^e represent man-hours for both people, respectively; and K_t is physical capital stock (assuming no depreciation) employed at time t. Given that A is a function of human capital investment stock in the economy, (H^{φ}) such that $\varphi \geq 1$, Equation 2 is therefore re-specified as:

$$Y_t^e = H^{\varphi}(L_t^e)^{\propto}(K_t)^{1-\propto} \quad (3)$$

Equation 3 argues that the income of the professional worker is equal to the human capital investment and the proportion attributed to labor and capital such that, in a stable state, the marginal productivity of labor for the professional worker equals the wage:

$$\frac{\partial Y}{\partial L} = w$$

Then, the wage rate of the professional in time t equals its marginal product by differentiating Equation 3 with respect to labor results:

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$\frac{\partial\left[H^{\varphi}(L_t^e)^{\propto}(K_t)^{1-\propto}\right]}{\partial L} = H^{\varphi} \propto (L_t^e)^{\propto-1}(K_t)^{1-\propto}$, and this is stated as the wage rate for the professional worker, as represented in Equation 4:

$$w_t^e = Y_L(L_t^e, K_t) = H^{\varphi} \propto \left(\frac{K}{L}\right)^{1-\propto} \quad (4)$$

It is assumed that utility is directly related to consumption (p) and legacy motive (q), which are functions of total wealth (T). Equation 5 explains that a worker's utility is derived from consuming a proportion of his total wealth and the proportion of total wealth left as legacy for his offspring:

$$\begin{aligned} U_{i,t} &= \delta log p + (1-\delta)q \\ &= \delta log \delta T + (1-\delta) log(1-\delta)T \end{aligned} \quad (5)$$

So, if the non-professional decides not to invest in schooling but continues to work and earn low wages in order to augment livelihood with his inheritance, the utility function is:

$$U^a(M) log = [w^a + (M + w^a)(1+r)] + \mu \quad (6)$$

Where, μ is the error term, M is the worth of the inheritance and r is the deposit rate of interest.

The non-professional then bequests his offspring a certain amount, which is the amount not consumed, as indicated in Equation 7:

$$b^a(M) \equiv (1-\delta)T = (1-\delta)[w^a + (M + w^a)(1+r)] \quad (7)$$

The cost of acquiring schooling is denoted by s, and if the non-professional with an inheritance $M > s$ chooses additional education in order to gain more expertise to become a professional worker and earn a higher income in the second period, his/her utility is:

$$U^e(M) = log[w^e + (M-s)(1+r)] + \mu \quad (8)$$

Equation 8 explains that that the worth of inheritance for the non-professional worker who decides to go to school reduces by $(M-s)$ and leaves:

$$b_t^e(M) \equiv (1-\delta)T = (1-\delta)[w_t^e + (M-s)(1+r)] \quad (9)$$

Last, if an individual with $M < s$ chooses to invest in education, they will have to borrow funds from the financial market, which becomes:

$$U_t^e(M) = log[w_t^e + (M-s)(1+i)] + \mu \quad (10)$$

Where i denotes the borrowing rate and leaves a bequest of:

$$b_t^e(M) \equiv (1-\delta)T = (1-\delta)[w_t^e + (M-s)(1+i)] \quad (11)$$

Equations 10 and 11 explain that since $M < s$, the differential, which is required to fund education, will be obtained from the financial system at the prevailing borrowing rate. From above, it can be seen that an individual with $M > s$ will be incentivised to get more schooling if $(7) \geq (5)$. That is,

$$w_t^e \geq s(1+r) + (2+r)w^a \quad (12)$$

Equation 12 explains that a non-professional will seek education if the wage rate of a professional is greater than or equal to the future cost of investing in education and the value of wages earned as a non-professional. Also, individuals who resort to borrowing to finance schooling will only make the investment if $(9) \geq (5)$. That is,

$$w_t^e \geq (s-M)(1+i) + M(1+r) + (2+r)w^a \quad (13)$$

Equation 13 explains that funding education from the financial market will be worthwhile if the wage rate of a professional is greater than or equal to the future cost of borrowing to fund education and value of wages earned as a non-professional. Clearly, if Equation 13 holds, then Equation 12 holds automatically, since $s > M$ for borrowers. That is:

$$(s-M)(1+i) + M(1+r) + (2+r)w^a > s(1+r) + (2+r)w^a$$

From Equation 13, we know that for individual j who accesses the credit market for funds will choose to work as an experienced person in the second period if:

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$$w_t^e \geq (s - M_j)(1 + i) + M_j(1 + r) + (2 + r)w^a \quad (14)$$

As a result of financial reform, the borrowing rate (i) falls, and more individuals can access credit to fund schooling, which increases human capital stock in the economy. Thus, the supply curve for borrowers' slopes upwards since higher wages (w^e) is the precursor that attracts more borrowings.

This study concludes the framework by depicting income inequality $(INEQ)$ as:

$$INEQ = \frac{w_t^e}{w^a} \equiv \frac{H^{\varphi \propto}\left(\frac{K}{L}\right)^{1-\propto}}{w^a} \quad (15)$$

Equation 15 depicts income inequality between the rich and poor, which is the ratio of wage rate between professional and non-professional workers. It also equates to the initial income position with respect to human capital stock. However, as individuals have access to credit to fund more schooling to gain expertise, and the borrowing rate falls, the stock of human capital increases (to L') and Equation 15 becomes:

$$INEQ = \frac{w_t^e}{w^a} \equiv \frac{H^{\varphi \propto}\left(\frac{K}{L'}\right)^{1-\propto}}{w^a} \quad (16)$$

The decline in income inequality $(INEQ^D)$ is given by:

$$INEQ^D = \frac{w_t^e}{w^a} \equiv \frac{H^{\varphi \propto}\left(\frac{K}{L}\right)^{1-\propto}}{w^a} - \frac{H^{\varphi \propto}\left(\frac{K}{L'}\right)^{1-\propto}}{w^a}$$

$$= \frac{H^{\varphi \propto K^{1-a} L^{a-1}}}{w^a} - \frac{H^{\varphi \propto K^{1-a} L'^{a-1}}}{w^a} \quad (17)$$

$$= \frac{H^{\varphi \propto K^{1-a}}}{w^a}\left[L^{a-1} - L'^{a-1}\right] \quad (18)$$

From Equation 18, $INEQ^D > 0$ an indication that income inequality can be reduced when the borrowing interest rate is low (evidence of financial frictions) as individuals now have access to credit which invariably increases their earning abilities in subsequent periods.

Also, from Equation 18 the differential of $INEQ^D$ with respect to H, yields:

$$\frac{\partial INEQ^D}{\partial H} = \frac{\varphi H^{\varphi - 1} \propto K^{1-a}}{w^a}\left[L^{a-1} - L'^{a-1}\right] \quad (19)$$

Therefore, as H increases $INEQ^D$ falls since $\varphi \geq 1$. Equation 19 suggests that income inequality falls as individuals get access to credit (due to a fall in interest rate).

3. DATA AND METHODOLOGY

3.1. Data and Sources

The main source for the Gini index data (a measure of income inequality) is the Global Consumption Income Project (GCIP) dataset (Lahoti et al., 2016), which is one of the latest datasets on income inequality and covers 162 countries from 1960 to 2015. The scope of the GCIP is larger than those covered by Solt (2014) and Milanovic (2014). Domestic credit to the private sector, interest rate spread (the financial friction variable), GDP per capita, and primary school enrolment rate are sourced from the World Bank (2017) World Development Indicators. Variables' descriptions and the *a priori* signs are listed in Table 1.

Table 1. Variables, descriptions and expectations.

Variable and Measurement	Short Description	Sign
Gini index	The measure of income inequality. Ranges from 0 (perfect equality) to 100 (perfect inequality).	N/A
Domestic credit provided by banks (% of GDP)	Credit to the private sector by financial institutions. It excludes credit to the public sector.	-
Interest rate spread	Difference between lending and deposit rates.	+
GDP per capita (current US$)	GDP per capita is the gross domestic product divided by mid-year population.	-
Primary enrolment (% total)	Percentage of primary enrolment to total enrolment.	-

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3.2. Methodology

Following the theoretical framework, a reduced form model is built where income inequality represented by the Gini index is a function of domestic credit, interest rate spread and other inequality determinants frequently used in the literature. The model is specified as:

$$\ln GINI_t = \delta_0 + \delta_1 \ln DCB_t + \delta_2 SPR_t + \delta_3 \boldsymbol{K'}_t + e_t \quad (20)$$

Equation 20 addresses the objective of whether domestic credit and interest rate independently impact income inequality such that $\ln GINI_t$ is the proxy for income inequality; $\ln DCB_t$ is domestic credit; SPR_t is interest rate spread; $\boldsymbol{K'}_t$ is the vector of control variables (*PC* and *PRY*) in the natural logarithm; δ_i are the parameters to be estimated; and e_t is the general error term.

To address the second objective regarding whether the interaction of interest rate credit aggravates or attenuates the impact of domestic credit on income inequality, Equation 20 is augmented with the inclusion of the interaction term (*DCB*SPR*), and the equation becomes:

$$\ln GINI_t = \omega_0 + \omega_1 \ln DCB_t + \omega_2 SPR_t + \omega_3 \ln(DCB * SPR)_t + \omega_4 \boldsymbol{K'}_t + v_t \quad (21)$$

Where the characteristics of Equation 21 are analogous to those of Equation 20.

From Equation 21, the net impact of domestic credit on inequality is obtained by taking the first derivative as stated in Equation 22:

$$\frac{\partial \ln GINI}{\partial \ln DCB} = \omega_1 + \omega_3 SPR \quad (22)$$

With the expectation that $\omega_1 < 0$, ω_3 is influential if the effect of *SPR* on *DCB* improves or worsens inequality. If $\omega_3 < 0$, it implies that *SPR* improves the net impact of *DCB*. But if $\omega_3 > 0$, the net impact depends on the magnitude of a positive ω_3. If the positive sign of ω_3 is more than the negative sign of ω_1, then *SPR* erodes the positive impact of *DCB* and thereby exacerbates inequality. On the contrary, if the positive sign of ω_3 is lower than the negative sign of ω_1, it implies that the improving influence of *DCB* on inequality is sustained. Finally, if $\omega_3 = 0$, this is an indication that the interaction between *SPR* and *DCB* has no significant impact on income inequality.

For non-linearity of the relationships, a threshold model is deployed, which allows the slope coefficients to be regime-dependent. By adapting Hansen (1999) and Seo & Shin (2016), the following static threshold equation is specified:

$$\ln GINI_t = \beta_1 \ln DCB_t \boldsymbol{I}(SPR_t \leq \gamma) + \beta_2 \ln DCB_t \boldsymbol{I}(SPR_t > \gamma) + \varphi \boldsymbol{Z}'_t + \tau_t \quad (23)$$

Where, $GINI_t$ = the stochastic variable of interest; DCB_t = the main explanatory variable and a regime-dependent regressor; $\boldsymbol{Z}'_t$ = the set of income inequality determinants that are regime-dependent, which in this study are PC_t and PRY_t; $1\{.\}$ is an indicator function; SPR_t is the threshold or transition variable; γ is the threshold parameter that divides the model into different regimes; β_i and φ are the slope parameters associated with different regimes; and τ_t is independent and identically distributed with a zero mean and finite variance.

However, it is important to determine whether a threshold effect exists. To this end, the likelihood ratio test suggested by Hansen (1999) is implemented to test the null hypothesis of no threshold effect ($H_0: \beta_1 = \beta_2$) against the alternative of a threshold effect ($H_1: \beta_1 \neq \beta_2$). The F-statistic, which has a non-standard distribution, is constructed as $\frac{S_0 - S_1(\gamma)}{\hat{\sigma}^2}$, where S_0 is the residual sum of squares of the linear model (a no threshold case). A bootstrap procedure is implemented in order to obtain a first order asymptotic distribution in which the valid *p*-values are constructed. If the null hypothesis is rejected, then deploying a threshold analysis is validated.

To estimate linear Equations 20 and 21, the instrumental variables two-step generalized method of moments (IV-GMM) technique and threshold regressions are deployed. Both techniques serve as robustness checks for one another. Specifically, in the event that domestic credit is endogenous, the IV-GMM technique is used to correct that anomaly in addition to autocorrelation and heteroscedasticity in the data (Andrews, 1991; Gallant, 1987; Newey & West, 1994). The syntax uniquely deploys the in-built *ivregress* routine in Stata and performs several variants of the

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single-equation linear regression models, including the generalized method of moments (GMM), which implements the two-step feasible GMM estimation to ensure that our results are devoid of endogeneity, heteroscedasticity and autocorrelation. Notably, *ivreg2* generates results using robust heteroscedastic-consistent (HC), autocorrelation-consistent (AC), and heteroscedastic and autocorrelation-consistent (HAC) cluster-robust variance estimates (Baum, Schaffer, & Stillman, 2007; Breusch & Pagan, 1979).

4. ANALYSIS AND DISCUSSIONS

4.1. Summary Statistics and Correlation Analysis

Table 2 shows the statistics of the variables, which reveal that for Nigeria, the average Gini index, domestic credit and interest rate spread are 0.57, 14.90 and 6.06, respectively. Also, the data indicate that deviations from their values are 0.04, 6.07 and 2.86, respectively. The highest Gini index of 0.60 was recorded in 1992 and the lowest of 0.49 was recorded in 2015. Similarly, for South Africa, the average Gini index, domestic credit and interest rate spread are 0.67, 60.22 and 4.06, respectively. Likewise, deviations from their mean values are 0.05, 9.86 and 1.09, respectively. The highest Gini index of 0.85 was recorded in 2010 and the lowest of 0.57 was recorded in 1997.

Furthermore, for both countries, the normality of the data distribution is verified using standard deviation. The data shows that both the Gini index and interest spread are normally distributed because they have a spread that falls within 0 to 3 standard deviations on each side of the mean, while domestic credit is positively skewed. The average Gini index shows that income inequality is quite high in both countries. Similarly, the positive average spread rate indicates a wide disparity between the lending and deposit rates. Likewise, the pairwise correlation matrix shows that for both countries, the interest spread exhibits a statistically significant negative association with the Gini index, while a positive and statistically significant association exists between domestic credit and the Gini index in South Africa. The matrix also indicates that there is no multicollinearity problem, which may bias the estimates.

4.2. Unit Root Test Results

To avoid estimating spurious regressions, all the variables are tested for the presence of a unit root using the augmented Dickey–Fuller (ADF) and Phillips–Perron tests. The results, which are shown in Table 3, indicate that for Nigeria only interest rate spread is level-stationary and for South Africa both Gini index and interest rate spread are level stationary. Having confirmed that all the variables are stationary at level and first difference and none is stationary at second difference, we proceed to the econometric estimations.

4.3. Comparative Results

Table 4 details the results for the linear (columns 1, 2, 7 and 8) and non-linear threshold models (columns 3–6, and 9–12) with interpretations limited to the variables of interest – Gini index (*GINI*), domestic credit (*DCB*), and interest rate spread (*SPR*). Starting with the IV-GMM results, the coefficient of *DCB* is positive and statistically significant at the 10% level for Nigeria (column 1) and at the 1% level for South Africa (column 7). On average, *ceteris paribus*, it implies that a percentage increase in *DCB* exacerbates inequality by 0.027% in Nigeria and by 0.223% in South Africa. This outcome shows that inequality gap is wider in South Africa relative to Nigeria and further supports the inequality-widening hypothesis that finance aggravates inequality in both countries (Ang, 2010). *SPR* shows asymmetric behavior as it significantly widens (reduces) inequality in Nigeria (South Africa) by 0.002 (-0.0163) percentage points, on average, *ceteris paribus*. The aggravating effect of interest rate also aligns with related studies (Adeleye et al., 2022; Berisha, Meszaros, & Olson, 2018; Maraşlı, 2016).

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Table 2. Comparative summary statistics and pairwise correlation analysis.

Variable	Nigeria					South Africa				
	GINI	**DCB**	**SPR**	**PC**	**PRY**	**GINI**	**DCB**	**SPR**	**PC**	**PRY**
Observations	144	144	144	144	112	144	144	144	144	112
Mean	0.566	14.901	6.059	874.872	94.35	0.668	60.219	4.06	4175.609	99.436
Std. Dev.	0.04	6.008	2.827	898.26	9.152	0.054	9.754	1.075	1647.138	11
Minimum	0.488	8.693	0.317	153.647	78.457	0.572	41.503	1.708	2098.306	78.091
Maximum	0.601	38.349	11.064	3221.678	112.81	0.852	78.294	6.333	8049.954	117.34
Pairwise Correlations										
Variable	[1]	[2]	[3]	[4]	[5]	[1]	[2]	[3]	[4]	[5]
GINI	1.000					1.000				
DCB	0.007	1.000				0.442***	1.000			
SPR	-0.228***	-0.305***	1.000			-0.251***	0.006	1.000		
PC	-0.841***	0.28***	0.281***	1.000		0.516***	0.692***	-0.313***	1.000	
PRY	-0.219**	0.134	-0.31***	0.068	1.000	-0.058	0.407***	0.057	0.082	1.000

Note: *** and ** represent statistical significance at the 1% and 5% levels, respectively. GINI = Gini index; DCB = domestic credit provided by banks; SPR = interest rate spread; PC = GDP per capita; PRY = primary school enrolment. With the exception of SPR, a correlation analysis was performed using the logarithmic transformation of the variables.

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Table 3. Comparative unit root tests.

Variable	Nigeria				South Africa			
	ADF		PP		ADF		PP	
	Level	First Diff.	Level	First Diff.	Level	First Diff.	Level	First Diff.
lnGINI	-1.095	-8.309***	-1.096	-11.835***	-2.945**	N/A	-2.939**	N/A
lnDCB	-2.577	-8.308***	-2.582	-11.833***	-2.122	-8.443***	-2.082	-11.959***
SPR	-2.031*	N/A	-2.033*	N/A	-2.620*	N/A	-2.625*	N/A
lnPC	0.015	-8.357***	0.008	-11.830***	-0.942	-8.328***	-0.944	-11.903***
lnPRY	-0.784	-7.194***	-0.802	-10.312***	-2.061	-7.005***	-1.992	-10.137***

Note: ***, ** and * represent statistical significance at the 1%, 5%, and 10% levels, respectively. ADF = augmented Dickey–Fuller; PP = Phillips–Perron; GINI = Gini index; DCB = domestic credit provided by banks; SPR = interest rate spread; PC = GDP per capita; PRY = primary school enrolment.

The equalizing impact of interest rate supports the findings of Sugözü, Erdoğan, & Ulaşan (2017) in relation to Turkey. In addressing the first objective, we conclude that while domestic credit aggravates inequality in both countries, the impact of interest rate spread is significantly asymmetric (Adeleye, Nathaniel, Ogunrinola, & Ikuemonisan, 2021). On the moderating impact of interest rate spread, the coefficient of *SPR* (columns 2 and 8) is negative and statistically significant at the 5% and 1% levels, respectively. This shows that the interaction between *SPR* and *DCB* attenuates the worsening impact of DCB on income inequality. To this end, the net impact of *DCB* on inequality for Nigeria can be evaluated at different values (mean, minimum or maximum) of interest rate spread, that is, 0.198+[-0.0310**SPR*]. Analogous for South Africa is 2.343+[-0.466**SPR*]. Given these outcomes, it was concluded that *SPR* slows the negative effect of *DCB* on inequality, which is a novel contribution to the literature and addresses the second objective of the study.The results[2] regarding the non-linear threshold models revealed mixed inferences. To align with the non-linear finance inequality theory of Greenwood & Jovanovic (1990), we state that if the signs of the coefficients are the same in both the lower and upper regions, then a monotonic (increasing or decreasing) relationship occurs. If the lower region shows a negative sign and the upper region has positive sign, then it is indicative of a U-shaped relationship, but if the lower region has a positive sign and the upper region has a negative sign, then an inverted U-shaped relationship occurs. The interest spread thresholds for Nigeria and South Africa are 3.20% and 3.35%, respectively, and both values lie below their respective mean values in the data.

For Nigeria (columns 3 and 5), when the spread is below the threshold of 3.2%, the equalizing impact of *DCB* and *SPR* on inequality is statistically not significant. However, significant but asymmetric effects are found at the upper regimes of interest spread. While *DCB* worsens inequality by 0.023%, *SPR* reduces inequality by -0.0143 percentage points, on average, *ceteris paribus*. The plausible interpretation of this outcome is that at a lower threshold of interest spread, the willingness of financial intermediaries to issue out loans and advances is curtailed, but the situation is reversed at higher thresholds when the interest margin is wide enough to spur the incentive to create more loans. More loans are then made available at higher cost only for those able to meet the ancillary charges (which excludes the poor) thus widening the inequality gap further. Contrary to Adams & Klobodu (2019) and Hassan & Meyer (2020), *DCB* only significantly aggravates inequality for South Africa (columns 9 and 11) when spread is below its threshold of 3.35%; while *SPR* exerts a statistically significant reducing monotonic relationship. For both countries, no evidence was found of the GJ inverted U-shaped hypothesis.

[2] To understand the interpretation of the lower and upper thresholds, these columns are read together: 3&5; 4&6; 9&11; 10&12.

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Table 4. Comparative regression IV-GMM and threshold results for Nigeria and South Africa.

Variable	Nigeria						South Africa					
	Linear Model		Threshold Model				Linear Model		Threshold Model			
	(IV-GMM without threshold)		Region1 ≤ 3.20%		Region2 > 3.20%		(IV-GMM without threshold)		Region1 ≤ 3.35%		Region2 > 3.35%	
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]
lnDCB	0.0271*	0.198**	-0.00173	-0.108**	0.0230***	0.0945***	0.223***	2.343***	1.285***	-1.508	0.0836	0.782***
	(1.805)	(2.468)	(-0.0589)	(-2.259)	(3.412)	(4.187)	(4.172)	(3.296)	(5.966)	(-0.415)	(1.309)	(3.320)
SPR	0.00201**	0.0860**	-0.00436	-0.194***	-0.0143***	0.0232**	-0.0163***	1.825***	-0.0606*	-3.714	-0.0177**	0.603***
	(2.262)	(2.245)	(-0.995)	(-2.762)	(-11.09)	(2.033)	(-4.498)	(3.080)	(-1.835)	(-0.782)	(-2.063)	(2.981)
lnDCB*SPR		-0.0310**		0.0703***		-0.0138***		-0.466***		0.927		-0.157***
		(-2.210)		(2.705)		(-3.298)		(-3.101)		(0.770)		(-3.071)
lnPC	-0.0313***	-0.0391***	-0.101***	-0.0973***	-0.0437***	-0.0428***	0.0322	-0.157**	-0.337***	-0.433***	0.133***	0.0803**
	(-3.831)	(-4.970)	(-9.076)	(-9.332)	(-12.19)	(-12.82)	(1.459)	(-2.126)	(-4.501)	(-3.006)	(4.708)	(2.505)
PRY	-0.00176***	-0.00131***	0.0911**	0.00516	0.194***	0.206***	-0.00171***	0.000515	0.0583	0.0521	-0.142**	-0.0484
	(-10.50)	(-5.570)	(2.096)	(0.100)	(6.565)	(7.449)	(-2.990)	(0.635)	(0.397)	(0.367)	(-2.131)	(-0.683)
Constant	-0.271***	-0.737***	-0.374**	0.290	-1.106***	-1.364***	-1.355***	-8.413***	-2.884***	8.919	-1.113***	-3.880***
	(-9.426)	(-3.564)	(-2.326)	(1.008)	(-8.486)	(-9.467)	(-8.981)	(-3.622)	(-2.792)	(0.580)	(-3.957)	(-4.124)
Observations	107	107	111	111	111	111	112	112	112	112	112	112
Threshold Effects (*p*-value)				0.0301		0.0023				0.2081		0.3637
R-squared	0.359	0.359					0.349	0.259				
Wald Statistic	136.89***	79.43***					48.88***	63.22***				
GMM C p-value	0.6133	0.2598					0.1324	0.4688				
Sum Squared Resid.			0.0321		0.0272				0.3408		0.3098	

Note: ***, ** and * represent statistical significance at the 1%, 5%, and 10% levels, respectively. Robust *z*-statistics are in parentheses. DCB = domestic credit provided by banks; SPR = interest rate spread; PC = GDP per capita; PRY = primary school enrolment.

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On investigating if the moderating impact of spread on domestic credit causes a reduction in inequality, the coefficients of the interaction term indicate an inverted U-shaped relation for Nigeria (columns 4 and 6), but that of South Africa (columns 10 and 12) is inconclusive due to the statistically insignificant coefficient of 0.927. Deductively, the interaction of interest spread and domestic credit causes inequality to deteriorate when spread is below its threshold, but inequality is reduced at the upper regimes of interest spread. For South Africa, the interaction shrinks the inequality gap at the upper regimes of interest rate spread. These findings are a significant contribution to the literature on finance inequality.

5. CONCLUSION

This study undertakes an empirical and comparative examination on the nexus of financial friction, credit growth and income inequality in Nigeria and South Africa. Using quarterly time series data spanning from 1980 to 2015, the study employs linear and non-linear methods to evaluate the impact of financial friction and domestic credit on income inequality. Findings from the bootstrapped IV-GMM and threshold techniques reveal that domestic credit aggravates inequality in both countries, while the impact of interest rate spread is asymmetric. Also, the interaction of interest rate spread and domestic credit attenuates inequality in both countries. Regarding non-linearity, the outcome was inconclusive for the Greenwood-Jovanovich hypothesis in relation to domestic credit for both countries; however, interest spread reveals a decreasing monotonic relationship for South Africa. Overall, the non-linear analysis brought out the intrinsic relationships among the three variables.

The results from this study may have some policy implications. A financial approach can be deployed to correct or reduce inequality in both countries. That is, if credit constraints are removed in addition to increasing the incentives to borrow (reduced lending rate), there is the likelihood that the inequality gap in the country will reduce as the larger populace gain more economic opportunities due to access to credit. Similarly, financial intermediaries must engage in a trade-off between financial efficiency (profit-making) and inclusive growth (inequality reduction). By reducing the interest spread, more people will have access to credit. To engender a more significant impact of credit and financial friction on inequality, government and policymakers may consider other factors triggering inequality in these countries and make concerted efforts to address them. Future studies could calculate the net impact of credit amidst different values of interest rate spread.

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REFERENCES

Adams, S., & Klobodu, E. K. M. (2019). Financial development and income inequality in South Africa. In E. F. Wamboye & P. J. Nyaronga (Eds.), The Service Sector and Economic Development in Africa (pp. 48-64). New York: Routledge.

Adeleye, B. N. (2020). Unbundling interest rate and bank credit nexus on income inequality: Structural break analysis from Nigeria. *Journal of Financial Regulation and Compliance*, *29*(1), 63-78. Available at: https://doi.org/10.1108/jfrc-04-2020-0035.

Adeleye, B. N., Gershon, O., Ogundipe, A., Owolabi, O., Ogunrinola, I., & Adediran, O. (2020). Comparative investigation of the growth-poverty-inequality trilemma in Sub-Saharan Africa and Latin American and Caribbean Countries. *Heliyon*, *6*(12), e05631. Available at: https://doi.org/10.1016/j.heliyon.2020.e05631.

Adeleye, B. N., Ogundipe, A. A., Ogundipe, O., Ogunrinola, I. I., & Adediran, O. (2019). Internal and external drivers of inflation in Nigeria. *Banks and Bank Systems*, *14*(4), 207-219. Available at: https://doi.org/10.21511/bbs.14(4).2019.19.

Adeleye, B. N., Osabuohien, E., & Bowale, E. I. (2017). The role of institutions in the finance-inequality nexus in Sub-Saharan Africa. *Journal of Contextual Economics*, *137*(1-2), 173-192. Available at: https://doi.org/10.3790/schm.137.1-2.173.

© 2022 AESS Publications. All Rights Reserved.

Adeleye, N., Nathaniel, S., Ogunrinola, I., & Ikuemonisan, E. (2021). Financial deepening and income inequality in Nigeria: Evidence from Zivot-Andrews and Gregory-Hansen structural break analyses. *Applied Economics Studies*, *39*(8), 1-17. Available at: https://doi.org/10.25115/eea.v39i8.4348.

Adeleye, B. N., Adusei, M., Olohunlana, O., Akinyemi-Babajide, O., Sankaran, A., & Jamal, A. (2022). Real deposit rate and credit supply nexus in ECOWAS. *SN Business & Economics*, *2*(2), 1-24. Available at: https://doi.org/10.1007/s43546-021-00194-y.

Adeleye, N., Osabuohien, E., Bowale, E., Matthew, O., & Oduntan, E. (2018). Financial reforms and credit growth in Nigeria: Empirical insights from ARDL and ECM techniques. *International Review of Applied Economics*, *32*(6), 807-820. Available at: https://doi.org/10.1080/02692171.2017.1375466.

Adusei, M., & Adeleye, N. (2020). Credit information sharing and non-performing loans: The moderating role of creditor rights protection. *International Journal of Finance & Economics*, 1-14. Available at: https://doi.org/10.1002/ijfe.2398.

Adusei, M., Adeleye, N., & Okafor, A. (2021). Drivers of credit union penetration: An international analysis. *Managerial and Decision Economics*, *42*(3), 710-723. Available at: https://doi.org/10.1002/mde.3267.

Adusei, M., Adeleye, N., & Sarpong-Danquah, B. (2022). Legal cost of contract enforcement and nonperforming loans: Is credit information sharing relevant? *Managerial and Decision Economics*, 1-14. Available at: https://doi.org/10.1002/mde.3540.

Allub, L., & Erosa, A. E. (2017). Financial frictions, occupational choice and economic inequality.

Allub, L., & Erosa, A. E. (2019). Financial frictions, occupational choice and economic inequality. *Journal of Monetary Economics*, *107*, 63-76. Available at: https://doi.org/10.1016/j.jmoneco.2018.12.003.

Andrews, D. W. (1991). Heteroskedasticity and autocorrelation consistent covariance matrix. *Econometrica*, *59*(3), 817-858. Available at: https://doi.org/10.2307/2938229.

Ang, J. B. (2010). Finance and inequality: The case of India. *Southern Economic Journal*, *76*(3), 738-761. Available at: https://doi.org/10.4284/sej.2010.76.3.738.

Baum, C. F., Schaffer, M. E., & Stillman, S. (2007). Enhanced routines for instrumental variables/generalized method of moments estimation and testing. *The Stata Journal*, *7*(4), 465-506. Available at: https://doi.org/10.1177/1536867x0800700402.

Becker, G. S., & Tomes, N. (1986). Human capital and the rise and fall of families. *Journal of Labor Economics*, *4*(3, Part 2), S1-S39. Available at: https://doi.org/10.1086/298118.

Becker, G. S., & Tomes, N. (1979). An equilibrium theory of the distribution of income and intergenerational mobility. *Journal of Political Economy*, *87*(6), 1153-1189. Available at: https://doi.org/10.1086/260831.

Becker, G. S. (1957). *The economics of discrimination* (2nd ed.). Chicago: University of Chicago Press.

Bengui, J., & Phan, T. (2015). *Inequality, financial frictions and leveraged bubbles*. Unpublished Manuscript, University of North Carolina at Chapel Hill.

Berisha, E., Gupta, R., & Meszaros, J. (2020). The impact of macroeconomic factors on income inequality: Evidence from the BRICS. *Economic Modelling*, *91*, 559-567. Available at: https://doi.org/10.1016/j.econmod.2019.12.007.

Berisha, E., Meszaros, J., & Olson, E. (2018). Income inequality, equities, household debt, and interest rates: Evidence from a century of data. *Journal of International Money and Finance*, *80*, 1-14. Available at: https://doi.org/10.1016/j.jimonfin.2017.09.012.

Bozik, M. S. (2019). Real interest rate and its effect on income inequality. *Journal of Economic Policy Researches*, *6*(2), 107-120.

Breusch, T. S., & Pagan, A. R. (1979). A simple test for heteroskedasticity and random coefficient variation. *Econometrica*, *47*(5), 1287-1294. Available at: https://doi.org/10.2307/1911963.

Cepni, O., Gupta, R., & Lv, Z. (2020). Threshold effects of inequality on economic growth in the US states: The role of human capital to physical capital ratio. *Applied Economics Letters*, *27*(19), 1546-1551. Available at: https://doi.org/10.1080/13504851.2019.1696449.

Delis, M. D., Hasan, I., & Kazakis, P. (2014). Bank regulations and income inequality: Empirical evidence. *Review of Finance*, *18*(5), 1811-1846. Available at: https://doi.org/10.1093/rof/rft039.

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Demir, A., Pesqué-Cela, V., & Murinde, V. (2020). Threshold effects of financial inclusion on income inequality (pp. 1-11). Centre for Global Finance Working Paper Series, No. 2/2020.

Demirguc-Kunt, A., & Levine, R. (2008). Finance and economic opportunity. Policy Research Working Paper, No. 4468. Washington, D.C.: World Bank.

Demirgüç-Kunt, A., & Levine, R. (2009). Finance and inequality: Theory and evidence. National Bureau of Economic Research, Working Paper No.15275.

Ehrlich, M. V., & Seidel, T. (2016). Financial development and inequality in the global economy. CESifo Working Papers, WP No. 5776(1-34).

Fern´andez-Villaverd, J. U., Hurtado, S., & Nu˜no, G. (2019). Financial frictions and the wealth distribution (No. w26302). National Bureau of Economic Research.

Gallant, A. R. (1987). *Nonlinear statistical models*. New York: Wiley.

Galor, O., & Moav, O. (2004). From physical to human capital accumulation: Inequality and the process of development. *The Review of Economic Studies*, *71*(4), 1001-1026.

Galor, O., & Moav, O. (2006). Das human-kapital: A theory of the demise of the class structure. *The Review of Economic Studies*, *73*(1), 85-117. Available at: https://doi.org/10.1111/j.1467-937x.2006.00370.x.

Galor, O., & Zeira, J. (1993). Income distribution and macroeconomics. *The Review of Economic Studies*, *60*(1), 35-52.

Godechot, O. (2020). *Financialization and the Increase in Inequality. In D. M. Philip Mader, Natascha van der Zwan (Ed.), The Routledge International Handbook of Financialization*. London: Routledge.

Greenwood, J., & Jovanovic, B. (1990). Financial development, growth, and the distribution of income. *Journal of Political Economy*, *98*(5, Part 1), 1076-1107.

Gupta, S., Davoodi, H., & Alonso-Terme, R. (2002). Does corruption affect income inequality and poverty? *Economics of Governance*, *3*(1), 23-45.

Hansen, B. E. (1999). Threshold effects in non-dynamic panels: Estimation, testing, and inference. *Journal of Econometrics*, *93*(2), 345-368. Available at: https://doi.org/10.1016/s0304-4076(99)00025-1.

Hassan, A., & Meyer, D. (2020). Financial development–income inequality nexus in South Africa: A nonlinear analysis. *International Journal of Economics and Finance Studies*, *12*(2), 335-351.

Karpowicz, I. (2014). Financial inclusion, growth and inequality: A model application to Colombia (pp. 1-31). IMF Woking Paper, No. WP/14/166.

Kavya, T., & Shijin, S. (2020). Economic development, financial development, and income inequality nexus. *Borsa Istanbul Review*, *20*(1), 80-93. Available at: https://doi.org/10.1016/j.bir.2019.12.002.

Lahoti, R., Jayadev, A., & Reddy, S. (2016). The global consumption and income project (GCIP): An overview. *Journal of Globalization and Development*, *7*(1), 61-108. Available at: https://doi.org/10.1515/jgd-2016-0025.

Law, S. H., Tan, H. B., & Azman-Saini, W. (2014). Financial development and income inequality at different levels of institutional quality. *Emerging Markets Finance and Trade*, *50*(sup1), 21-33. Available at: https://doi.org/10.2753/ree1540-496x5001s102.

Lee, C.-S., Nielsen, F., & Alderson, A. S. (2007). Income inequality, global economy and the state. *Social Forces*, *86*(1), 77-111. Available at: https://doi.org/10.1353/sof.2007.0102.

Levine, R. (2004). Finance and growth: Theory and evidence. National Bureau of Economic Research, Working Paper No. 10766

Levine, R. (2008). Finance and the poor. *The Manchester School, Supplement 2008*(1463-6786), 1-13.

Li, J., & Yu, H. (2014). Income inequality and financial reform in Asia: The role of human capital. *Applied Economics*, *46*(24), 2920-2935. Available at: https://doi.org/10.1080/00036846.2014.916390.

Loury, G. C. (1981). Intergenerational transfers and the distribution of earnings. *Econometrica*, *49*(4), 843-867. Available at: https://doi.org/10.2307/1912506.

Maraşlı, O. (2016). Interest and social justice: The impact of real interest rate on income inequality. *Journal of Islamic Economics and Finance*, *1*, 77-188.

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Merlin, G., & Teles, V. K. (2014). Financial frictions, informality and income inequality (pp. 1-33). Sao Paulo School of Economics Working Paper, WP No. 34.

Milanovic, B. (2014). Description of all the ginis dataset. World Bank, Research Department. Retrieved from www.worldbank.org/en/research/brief/all-the-ginis.

Newey, W. K., & West, K. D. (1994). Automatic lag selection in covariance matrix estimation. *The Review of Economic Studies*, *61*(4), 631-653. Available at: https://doi.org/10.2307/2297912.

Piketty, T. (2014). Capital in the twenty-first century: A multidimensional approach to the history of capital and social classes. *The British Journal of Sociology*, *65*(4), 736-747. Available at: https://doi.org/10.1111/1468-4446.12115.

Seo, M. H., & Shin, Y. (2016). Dynamic panels with threshold effect and endogeneity. *Journal of Econometrics*, *195*(2), 169-186. Available at: https://doi.org/10.1016/j.jeconom.2016.03.005.

Solt, F. (2014). The standardized world income inequality database. Working Paper(SWIID Version 5.0, October 2014).

Stiglitz, J. (1969). Distribution of income and wealth among individuals. *Econometrica*, *37*(3), 382-397. Available at: https://doi.org/10.2307/1912788.

Sugözü, İ. H., Erdoğan, S., & Ulaşan, E. (2017). The impacts of interest expenditure on income distribution and an application on the factors distorting income distribution: An empirical analyses for Turkey. *Turkish Studies*, *12*(12), 231-250.

Sun, P., Sen, S., & Jin, S. (2013). Equity market liberalization, credit constraints and income inequality. *Economics: The Open-Access, Open-Assessment E-Journal*, *7*(2013-12), 1. Available at: https://doi.org/10.5018/economics-ejournal.ja.2013-12.

Swamy, V., & Dharani, M. (2021). Thresholds in finance–growth nexus: Evidence from G-7 economies. *Australian Economic Papers*, *60*(1), 1-40. Available at: https://doi.org/10.1111/1467-8454.12192.

UNU-WIDER. (2021). World income inequality database (WIID).

Were, M., & Wambua, J. (2014). What factors drive interest rate spread of commercial banks? Empirical evidence from Kenya. *Review of Development Finance*, *4*(2), 73-82. Available at: https://doi.org/10.1016/j.rdf.2014.05.005.

Weychert, E. (2020). Financial development and income inequality. *Central European Economic Journal*, *7*(54), 84-100. Available at: https://doi.org/10.2478/ceej-2020-0006.

World Bank. (2017). World development indicators. Retrieved from: World Bank http://data.worldbank.org. [Accessed March 2017].

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