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FINANCIAL DEPTH, INSTITUTIONAL QUALITY AND POVERTY NEXUS IN SUB-SAHARAN AFRICA

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Abstract

This paper examined the nexus among financial depth, institutional quality and poverty in sub-Saharan Africa. The objectives of this paper are to examine the relationship between financial depth and poverty in sub-Saharan Africa and also to investigate the interaction effect of financial depth and institutional quality on poverty in sub-Saharan Africa. A panel of 32 countries in the region for a period of 2000-2023 was used due to data availability. Stata 17 was used to estimate a two-step system GMM. In this regard, an evidence that financial depth has reduce poverty in sub-Saharan Africa was established. Also, it was found that the interaction effect of financial depth and institutional quality (control of corruption) has reduce poverty in sub-Saharan Africa. Furthermore, human capital has reduced poverty in sub-Saharan Africa over the period of study. Based on the findings, it is recommended that the monetary authorities should give more credit facilities to the private sector in order to significantly reduce poverty in sub-Saharan Africa. It is equally recommended that strong institutions, including fighting corruption should be intensified by the government in order to significantly alleviate poverty in sub-Saharan Africa. More funding should be made available by the government to the education sector in sub-Saharan Africa in order to significantly reduce poverty.

Keywords: Financial Depth, Institutional Quality, Poverty, sub-Saharan Africa, System GMM

1. Introduction

Poverty has become vicious to the entire world, sub-Saharan Africa in particular, and the fight against it has grown beyond individual country approach to a holistic one. The United Nation's Sustainable Development Goals (SDGs), made poverty eradication a topmost priority (Babafemi, 2020). Given the urgent concern on the need to tackle poverty, development economists over time have devoted their resources and consider poverty reduction one of its target

objectives. Governments, policy makers, and other stakeholders across the globe have equally devoted huge resources in combating poverty due to its ravaging effects on quality of life, health status, and productivity. Poverty eradication strategies have assumed different dimensions over time. One of the ways through which there is an ongoing debate is the finance-poverty link. According to Wang (2020), finance can affect poverty directly through the lowering of credit and transaction costs, information costs, promoting investment including human capital investment, expanding access to credit and improving microfinancing for the poor and vulnerable portion of the population. Costs induced by market imperfections will truncate economic development, decelerate improvement in standard of living and trigger poverty (Cihak, Demirguc-Kunt, Feyen & Levine, 2012). What necessitates financial development (emergence of particular types of financial contracts, markets and other financial intermediaries) is the push to help lessen such costs and market imperfections (Wang, 2020).

More so, financial depth has been classified as one of the dimensions of financial development. Studies such as Wang, 2020; Rashid & Intartaglia, 2017; Abdin, 2016; Dhrifi, 2013b and Jeanneney & Kpodar, 2011 have theoretically and empirically backed the role of finance on poverty. In recent decades, the financial sector has received a boost in sub-Saharan Africa with many countries in the region embracing financial liberalization (Fashina, 2022). The region has recorded successes in the financial sector development both in the financial institutions and markets. Financial depth has increased but still lags behind when compared to other developing countries (IMF, 2016). According to the World Bank (2020), in 2018 about 40 percent of the population in SSA still lived in extreme

poverty. Regrettably, 18 of the 20 poorest countries in the world are situated in sub-Saharan Africa (World Bank, 2020). Based on the global poverty line of $1.90 per day per person, Nwani and Osuji (2020) maintain that Sub-Saharan Africa surpassed Asia in 2019 as the region with the greatest concentration of the poor.

Furthermore, in recent times, attention of scholars and policy makers have been drifted towards explaining the role of quality institutions in an economy. It is argued in the literature that quality of institutions in any economy determines its performance. According to North (1991), institutions have been developed by humans throughout history to bring forth order and lessen uncertainty in exchange. Institutions such as constitutions, laws, norms and values are present across all sub-Sahara African countries. Studies have argued that quality institutions have significant impact on economic outcomes and poverty reduction (Singh, 2021; Akobeng 2016; Dhrifi, 2013a; Tebaldi & Mohan, 2010). Although there are studies that found improvement in fighting corruption, democratic accountability and bureaucratic quality as institutional quality indicators tend to worsen poverty (Perera & Lee, 2013).

Overall, the financial sector in sub-Saharan Africa has undergone serious rejuvenation with most countries in the region putting deliberate efforts towards major reforms such as financial liberalisation, banking recapitalisation, mergers and acquisition, e-banking, cashless policies, financing small and medium scale businesses, market liberalization, and so on. There are laws, constitutions, norms, and a host of others that guide the conduct of citizens in SSA. Financial depth in SSA has received a boost in recent times, even though low compare to their counterparts in other developing countries (Bello & Oladunjoye, 2013).

Consequently, despite all of these advancements in the financial sector and the institutional setup in sub-Saharan Africa, poverty has remained a major challenge. The objectives of this paper are to examine the relationship between financial depth and poverty in sub-Saharan Africa and also, investigate the interaction effect of financial depth and institutional quality on poverty in sub-Saharan Africa. The remaining parts of this paper is organised as follows: section two is the literature review (concepts, review empirical studies and the theoretical framework); section three is the methodology employed; section four is the results and discussion; while section five is the conclusion and recommendations.

2. Literature Review

2.1 Conceptual Literature

2.1.1 Financial Development/Depth

Financial development occurs when financial instruments, markets, and intermediaries lessen the consequences of imperfect information, restricted enforcement, and transaction costs, even though these effects might not be completely and fundamentally removed (Wang, 2020). Financial development is the expansion of the scope, effectiveness, and stability of financial markets as well as increasing access to them, all of which can be beneficial to the economy in a number of ways (Guru & Yadav, 2019). In a broader sense, Levine (2004) defines financial development as enhancements in the caliber of the following crucial financial functions: Offering capital allocation based on these evaluations and producing and processing ex-ante information regarding creditable investments; after allocating capital and providing financing, those people or companies are being watched, and corporate governance is being exercised; facilitating the exchange of products, services, and financial instruments, as well as the trading, diversification, and risk management of financial instruments; and

mobilizing and pooling funds. The World Bank (2020) has classified financial development into depth, access, efficiency and stability. The focus of this paper is the financial depth dimension. Wang (2020) defined financial depth as liquidity and size of the financial sector (institution or market). This paper see financial depth as the size of the banks and other financial institutions.

2.1.2 Poverty

Poverty is a multidimensional concept that is difficult to define. What is tagged poverty in one country or region might be different in another country or region. In other words, given some peculiarities among countries or region, poverty can be defined to suit them. Poverty in the context of this paper can be defined as the proportion of the population living below the poverty line, say $1.90/day Purchasing Power Parity (PPP) line or threshold. This is in line with the study of (Wang, 2020)

2.1.3 Institutions/Institutional Quality

Institutions can be defined as integrated systems of rules that structure social interactions. These rules include norms of behaviour and social conventions, as well as legal rules (Hodgson, 2015). According to North (1990), institutions are a society's set of ground rules or, to put it more properly, they are the limitations that humans have created to influence how people interact. On the other side, the presence of effective institutions can be referred to as institutional quality.

2.2 Empirical Review

Wang (2020) used a sample of developing and emerging nations to examine the role that financial development plays in reducing poverty. According to system Generalized Method of Moment (system-GMM) findings, financial development directly and favorably contribute to the decline in poverty. Tsaurai (2020) used Fixed-effects and Fully Modified Ordinary Least Squares (FMOLS) to analyze

how financial development in BRICS affected poverty. The findings indicate that there are conflicting effects of regional financial development on poverty. Similarly, in a sample of 73 nations, Sugiyanto and Yolanda (2020) looked at how financial deepening affected economic growth, inequality, and poverty. The fixed effect estimator's findings show that while financial development has a positive effect on economic growth, it has a negative effect on income inequality and poverty. Even though the fixed effects model does not control for endogeneity. Also, the effect of financial development and institutional quality on poverty in sub-Saharan Africa was studied by Fashina (2022). The study spans the years 2000 through 2019. The headcount ratio was used as a proxy for poverty, aggregate or composite index of financial development by the IMF and aggregate or composite index of institutional quality based on (political risk) were used. Equally, control variables such as income per capita, consumer price index growth and trade openness were included. The results of the Fixed-effect estimator reveal that while institutional quality has a positive but statistically negligible impact on poverty, financial development has a positive and statistically significant impact on poverty in the region. The fixed and random effect models used do not control for possible endogeneity and variables omission. Also, the composite financial development indicator used gave a broad understanding of the concept without making reference to its specifics.

Similarly, Kaidi, Mensi, and Amor (2018) examined the impact of financial development, institutional quality and poverty reduction using a worldwide sample and 3-stage least squares was used for estimation. They used poverty headcount ratio and poverty gap as a proxy for poverty, M3/GDP, Credit/GDP, market capitalization

and stock market turnover to capture financial development; economic freedom and polity2 to capture institutions and income per capita, consumer price index growth and trade openness to capture the control variables. The result shows that financial development does not reduce poverty. More so, the impact of institutional quality on poverty depends on the choice of indicator. Furthermore, Cepparulo, Cuestas and Intartaglia (2016) explored the impact of financial development, institutional quality on poverty using a sample of developing countries. Poverty headcount was used to proxy poverty, private credit, M3/GDP and bank assets to proxy financial development, government corruption and rule of law to proxy institutions, while GDP, school enrolment, inflation, government expenditure and trade openness were used as control variables. Results from the Generalized Method of Moments (GMM) show that financial development has a positive and statistically significant impact on poverty alleviation. More so, quality institutions have positive and statistically significant impact on poverty reduction.

From the literature reviewed, only one study Fashina (2022) has done the interaction of financial development and institutional quality on poverty using the aggregate proxy of financial development. This study has added to the extant literature in the following ways by disaggregating financial development into its different dimensions (depth, access and efficiency), and after which the interaction of financial depth with institutional quality on poverty was tested. Additionally, the fixed effects estimator used by Fashina (2022) is weak in addressing the problems of endogeneity, variables omission and heteroscedasticity in panel. Thus, a more robust estimator (System-GMM) was used in order to ensure robust findings.

2.3 Theoretical Framework

McKinnon (1973) conduit theory consider an economy where sources of external financing are difficult and individual/firms resort to self-financing. Since individuals/firms lack money to invest, they save until they have enough to invest in physical capital. This suggests that actual returns on investments increase, encouraging the poor to hold money and resulting in a sizeable fraction of investments that are self-financing. This result illustrates how money is thought of as a "capital conduit" (Boukhatem, 2015). In McKinnon's words, real interests on deposits may serve as a "conduit" for capital formation, making deposits and capital complementary assets. The availability of deposits with positive real rates of return may thus encourage both saving and capital accumulation. In summary, according to McKinnon (1973), liberalisation is related with higher real interest rates and has the potential to promote increased saving. As such, the key premise of this theory is that savings is attentive to real interest rates. As a result, greater savings rates would fund more investment, resulting in stronger economic growth. As a result, reforming a repressed financial sector by eliminating interest rate ceilings and other types of regulation encourages higher real interest rates on deposits. This broadens the scope of financial intermediation and leads to financial development by enticing savers.

Nevertheless, Schiller (1972) theory of limited opportunities state that poverty is as a result of lack access to economic opportunities. These include access to high-quality education, effective and efficient health care programs, safe communities, finance and other relevant public services. It is argued in the literature that financial development has direct effect on poverty (Wang, 2020; Rashid & Intartaglia, 2017; Abdin, 2016; Dhrifi, 2013a; Jeanneney & Kpodar, 2011). According to the McKinnon-Shaw theories (1973), a developed financial

system is characterised with free flow of information, removal of interest rate ceiling (high interest on deposit to entice depositors), as well as a system that is free from financial repression, to the benefit of all economic agents. This in effect will increase the poor's access to credit as well as their ability to save and invest. Financial development might be attained when quality institutions are in place, as a result of a sound legal system that upholds private property rights (La Porta, Lopez-de-Silances, Shleifer & Vishny, 1997). Given this background, this study is anchored on the aforementioned theories due to their potency in explaining the nexus between financial depth, institutional quality and poverty.

3. Methodology

This study was conducted using a sample 32 sub-Saharan African countries from the year 2000 to 2023. The choice of this region is premised on the fact that it has been ranked as the poorest in the world. The number of countries and time period is based on data availability on most of the variables of interest.

3.1 Model Specification and Description of Variables

$$Pov_{i,t} = \alpha Pov_{i,t-1} + \beta_1 DF_{i,t-1} + X_{i,t}\,\delta + \lambda_t + \eta_i + \varepsilon_{i,t} \quad (1)$$

Equation 1 is the baseline model. It captures the effect of financial depth on poverty. Where, Pov represents poverty head count, DF represents Financial Depth (financial development proxy). X is a vector of explanatory variables and other controls including, inflation rate, trade openness, GDP per capita, population, financial instability and human capital; δ represents the vector of unknown parameters; λ represents time specific-effects; η are unobserved country-specific effects, ε is the observation-specific error, where $\boldsymbol{i}$ is the individual dimension of the panel (country) and $\boldsymbol{t}$ is the time dimension. To account for the dynamic process, the response variable is

lagged as '$Pov_{i,t-1}$' and included as an independent variable in the model.

To examine if the effect of financial depth on poverty changes, institutional quality indicators are included and specified in equation (2).

$$Pov_{i,t} = \alpha Pov_{i,t-1} + \beta_1 DF_{i,t-1} + \beta_2 CoR_{i,t-1} + \beta_3 RL_{i,t-1} + X_{i,t} + \lambda_t + \eta_i + \varepsilon_{i,t} \quad (2)$$

From equation 2, the proxies of quality institutions represented as 'CoR' (control of corruption) and 'RL' (Rule of law).

Finally, to account for the interaction effects of institutional quality and financial depth (DF) on poverty, is specified in equation 3 as follows:

$$Pov_{i,t} = \alpha Pov_{i,t-1} + \beta_1 DF_{i,t-1} + \beta_2 CoR_{i,t-1} + \beta_3 RL_{i,t-1} + \beta_4 DF_{i,t-1} * \beta_2 CoR_{i,t-1} + \beta_4 DF_{i,t-1} * \beta_3 RL_{i,t-1} + X_{i,t} + \lambda_t + \eta_i + \varepsilon_{i,t} \quad (3)$$

On a priori grounds, it is expected that expect $\alpha > 0$; β_1-$\beta_3 < 0$; the interaction terms to be < 0. This will imply that financial development and quality institutions are pro-poor and complements. Conversely, if the interaction terms are > 0, it will imply that financial development and quality institutions are substitutes. These specifications are in line with empirical trend on the moderating role of a variable in the relationship between two variables.

The models as specified in equations 1, 2 and 3 respectively defined poverty as a function of financial development, institutional quality, interaction of financial development and institutional quality and other control variables.

Poverty head count was used to represent poverty. The other explanatory/control variables that were used are GDP per capita, inflation, instability (bank z-score), trade openness, population and human capital. Data on these variables were sourced from the World Bank Development Indicators, (World Bank, 2023). Furthermore, financial depth index is the financial development indicator used. Data on the variable was

sourced from the International Monetary Fund (IMF) database, 2023. Finally, the institutional quality proxies that were used in this study are as follows: Rule of law and Control of Corruption. Data on these variables were sourced from the World Governance Indicators (WGI, 2023).

The data used is a micro panel because of the short time 'T' (23) over large number 'N' of individuals (32). The system Generalized Method of Moments (System-GMM) developed by Arellano and Bover (1995) and Blundell and Bond (1998) was used to estimate the nexus of financial depth, institutional quality and poverty in sub-Saharan Africa. The use of system-GMM is underscored for its strength to address the problem of weak instruments, which is typically brought on by system regressors in the case of differenced GMM. It takes into account country-specific effects and control for endogeneity (through the inclusion of the lagged dependent variables), measurement errors and missing or omitted variables. The system GMM estimator, which has significantly asymptotic efficiency gains, includes the GMM estimator based on non-linear moment conditions found in the model of dynamic error components. The system GMM estimator considerably increase precision and decrease the biases associated with finite samples (Blundell, Bond & Windmeijer, 2001).

4. Results and Discussion

The mean, standard deviations and correlation matrix were estimated in order to describe the data. The two-step system GMM was estimated, and in order to control for potential endogeneity in the model, appropriate lags of the endogenous variables were used rather than external instruments. Summary of the results are presented in tables 1, 2 and 3, respectively.

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Table 1: Summary Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Povhc.	736	39.24218	21.06327	.2	86.2
DF	736	.1234511	.1665547	.01	.86
CoR	736	-.1581656	2.015426	-1.597468	13
RL	736	31.2921	19.11563	.9478673	84.61539
Infl.	736	7.642968	15.36026	-9.616154	324.9969
GDP	736	1948.87	2215.695	110.4609	11643.46
Inst	736	14.74045	6.705673	.9517466	43.48232
Open	736	67.86863	28.52574	23.98087	173.798
HC	736	68.32237	19.43321	16.56425	112.522
Pop.	736	2.13e+07	3.35e+07	458251	2.19e+08

Source: Author's computations (2024)

From table 1, it is observed that there is wide degree of variation of some variables across the sub-Saharan African countries. Poverty head count vary with a maximum of 86.2 and a minimum of 0.2 which is considerably high across the countries. Population has the widest variation with a maximum of 2.19 and a minimum of 458,251, followed by GDP per capita with a maximum of 11,643.46 and a minimum of 110.46. This is not surprising because population and economic growth across the countries in sub-Saharan Africa vary considerably. The degree of openness vary with a maximum 173.8 minimum of 23.98, while human capital (primary school completion rate) vary with a maximum of 112.5 and a minimum of 16.6. This is probably due to different levels of international transactions and education policies across the countries. Inflation also varies with a maximum of 324.1 and a minimum of -9.6 across the countries. The deviation of other variables (control of corruption, rule of law and instability) from their individual means has a minimum and maximum values of 13 to -1.6, 84.6 to 0.95 and 43.5 to 0.95, respectively. Financial depth has the lowest variation from its mean with a maximum of 0.86 and a minimum of 0.01.

Table 2: Correlation Matrix

Variable	Povhc	DF	CoR	GE	Infl	GDP	Inst	Open	HC	Pop
Povhc	1.00									
DF	-0.38	1.00								
CoR	-0.01	0.23	1.00							
RL	-0.39	0.46	0.27	1.00						
Infl	0.05	-0.06	-0.01	-0.09	1.00					
GDP	-0.65	0.32	0.05	0.52	-0.01	1.00				
Inst	-0.09	0.29	0.03	0.34	-0.00	0.24	1.00			
Open	-0.30	0.19	-0.01	0.23	0.08	0.39	0.41	1.00		
HC	-0.45	0.24	0.11	0.44	-0.11	0.49	0.22	0.35	1.00	
Pop	0.15	0.05	-0.13	-0.11	0.11	-0.09	0.33	-0.05	0.00	1.00

Source: Author's computations (2024)

From table 2, it is observed that most of the variables are negatively correlated with poverty headcount. This is in line with our expectations. Financial depth (DF) shows a negative correlation with poverty. This is expected and has confirm the theoretical provisions that financial development reduce poverty. GDP per capita is negatively correlated with poverty headcount. This is not a surprise, probably because economic growth in sub-Saharan African countries does not translate to reduction in poverty. Population (Pop) equally shows a positive correlation with poverty. This is also expected probably because the large chunk of population in sub-Saharan African countries are dependent and unproductive. We do not expect human capital (HC) to have negative correlation with poverty. This sign could be true, probably due to low government commitments toward education in sub-Saharan Africa. Instability (Inst) proxied as bank z-score has a negative correlation but not expected because it negates the theory which states that financial development could result to financial instability which in turn increase poverty. Inflation (Infl) shows a positive correlation with poverty. This implies that inflation in sub-Saharan African countries could result to increase in poverty.

Control of corruption (CoR) and rule of law (RL) show negative correlation with poverty. This is expected because an intensive fight against corruption and real practice of the rule of law could alleviate poverty in sub-Saharan African countries. The degree of openness (Open) shows a negative correlation with poverty. This is probably because there is an improvement in balance of payments across sub-Saharan African countries. Overall, there is low and average correlation between the dependent variable and other variables in the model. This is evident from the correlation matrix which indicates 0.52 as the highest value among the regressors, thus, there is no problem of multicollinearity in the model given a threshold of 0.8 or 80% beyond which multicollinearity becomes a serious concern (Gujarati, 2004).

According to Bond (2001), three models such as pooled OLS, fixed effects and difference GMM must be estimated to decide between difference and system GMM. If the coefficient of the lagged dependent variable of the difference GMM is closer or lower than the coefficient lagged dependent variable of the fixed effect model, then the best model is the system GMM. We estimated three models base on the scenarios mentioned above, the coefficient of the lagged dependent variable of the difference GMM is found to be lower than the coefficient of the lagged dependent variable of the fixed effects model. This implies that the difference GMM is downward biased due to weak instrumentation. This informed our decision to use the system GMM as presented in table 3.

Table 3: Estimated Results

Variable	(1) Baseline	(2) With IQ	(3) With Interaction	(4) Baseline	(5) With IQ	(6) With Interaction
Povhc	0.9087***	0.9045***	0.9061***	0.9101***	0.9249***	0.9781***
	(0.0766)	(0.0077)	(0.0077)	(0.04723)	(0.0342)	(0.0353)
DF	1.9997	1.8128	1.4076	-2.8017**	-1.4461	-1.2115
	(2.0039)	(1.9905)	(1.9917)	(1.3406)	(1.0033)	(4.2120)
Infl	-0.1043*	-0.0099*	-0.0095*	-0.0022	-0.0067	0.0044
	(0.0058)	(0.0057)	(0.0057)	(0.0076)	(0.00577)	(0.09132)
logGDP	-0.6146***	-0.6266***	-0.5861***	-0.8343	-0.5734	-0.0050
	(0.1655)	(0.1658)	(0.1662)	(0.5778)	(0.4465)	(0.5172)
HC	-0.0009	-0.0000	-0.0005	-0.0289**	-0.0307**	-0.0149
	(0.0049)	(0.0050)	(0.0041)	(0.0132)	(0.0154)	(0.0176)
LogPop	0.3237	0.2356	0.2301	0.6384**	0.4406*	-0.0050
	(0.2875)	(0.2866)	(0.2866)	(0.3225)	(0.2346)	(0.5172)
Inst	-0.0026	-0.0040	-0.0038	-0.0008	0.0017	0.0031
	(0.0048)	(0.0048)	(0.0048)	(0.0091)	(0.0105)	(0.0124)
CoR	-	-0.0082	0.2107*	-	0.1052	0.7351**
		(0.0686)	(0.1134)		(0.0671)	(0.3457)
RL	-	0.0937	-0.0059	-	-0.8611	-1.1827
		(0.2344)	(0.2801)		(0.5985)	(0.9454)
Open	-	-	-0.0099***	-	-	-0.0005
			(0.0021)			(0.0054)
DF*CoR	-	-	-3.5715**	-	-	-14.5035*
			(1.4711)			(7.5074)
DF*RL	-	-	1.7741	-	-	6.0667
			(2.0035)			(7.7842)
Constant	2.2002	2.3367	4.4023	-2.9054	-2.8611	0.0463
	(4.3234)	(4.3590)	(4.3698)	(3.7603)	(3.5245)	(3.9351)
R^2	0.97	0.97	0.97	-	-	-
F-stat.	0.000	0.000	0.000	-	-	-
Hansen P.val	-	-	-	0.47	0.68	0.45
AR(1) P.val	-	-	-	0.00	0.00	0.00
AR(2) P.val	-	-	-	0.84	0.33	0.65
Observations	704	704	704	704	704	704
Group	32	32	32	32	32	32
Instruments	-	-	-	20	22	28

Figures in parenthesis are the standard errors. * ** *** denotes significance at 10%, 5% and 1% respectively.
Source: Author's computations (2024)

Table 3 represent the estimated results. Columns 1, 2 and 3 contain the fixed effect results, while columns 4, 5 and 6 are the two-step system GMM result. Results of the baseline model in column 4 show that financial depth (DF) has a negative

relationship with poverty and statistically significant at 5%. This shows that a 1% rise in financial depth, will result to 2.8% decrease in poverty in sub-Saharan Africa. This implies that financial depth is essential for poverty reduction. This has confirmed the McKinnon (1973) conduit theory and it is in tandem with the findings of Aleemi and Azam (2015), Abdin (2016), Rewilak (2017) and Wang (2020). Likewise, human capital (HC) proxied as primary school completion rate has a negative relationship with poverty and statistically significant at 5%. This finding could be true because of poor commitments to education by governments across sub-Saharan African countries. This is in line with the findings of (Wang, 2020).

More so, population has a positive and statistically significant relationship with poverty at the 5% level. It means that a unit increase in population, result to a 0.6% increase in poverty in sub-Saharan Africa. This implies that a large, dependent and unproductive population will remain poor despite financial development. Inflation (Infl) has a negative relationship with poverty but statistically insignificant. Likewise, instability (Inst) proxied as bank z-score has a negative relationship with poverty but not statistically significant. Furthermore, in column 5, with the introduction of institutional quality variables in the model, financial depth maintained a negative relationship with poverty but statistically insignificant. The two institutional quality proxies (Control of corruption and the rule of law) have a positive and negative relationships with poverty respectively, but statistically insignificant. Inflation still maintained a negative relationship with poverty but statistically insignificant. Although, GDP per capita shows a negative relationship with poverty but not statistically significant. It signifies a poverty reduction effect. Human capital (primary school

completion rate) has a negative and statistically significant relationship with poverty at 5% level as expected. The implication of this finding is that quality education is needed in order to reduce poverty, with proper planning and sufficient budgetary allocation. This is in line with the findings of (Wang, 2020). Population has a positive and statistically significant relationship with poverty at 10% level. It shows that a unit increase in population result to a 0.6% increase in poverty. This implies that only productive population can lead to poverty reduction. This negates the findings of (Kaidi, Mensi & Amor, 2018). Instability has a positive relationship with poverty but not statistically significant. This shows that financial instability increase poverty in SSA.

Nevertheless, in column 6, institutional quality (control of corruption) has a positive and statistically significant relationship with poverty at 5% level. This result though not expected, is probably because the fight against corruption in the region is not yielding the desired results. This has confirm the findings of (Fashina, 2022). The interaction between financial depth and institutional quality (control of corruption) has a negative and statistically significant relationship with poverty at 10% level. It means that a 1% increase in financial depth and institutional quality, will result to 14.5% reduction in poverty. In other words, financial depth and quality institutions (control of corruption) are complementary in poverty reduction. This has confirmed the findings of (Fashina, 2022). On the contrary, the interaction between financial depth and the rule of law has a positive but statistically insignificant relationship with poverty. Trade openness has a negative relationship with poverty but statistically insignificant. Similar results hold in columns 1, 2 and 3 for the fixed effect estimator.

To test for the validity of the instruments in GMM model, the Hansen J-test for over identifying restrictions (OIR) was conducted under the null hypothesis that the instruments are not correlated with the residual. Maintaining the null hypothesis means that the instruments satisfy the orthogonality requirement for instrument validity and are not correlated with the residual. Using the Hansen p-values, it signify that we do not reject the null hypothesis that the instruments are not correlated with the residuals. It shows that the instruments used are valid and have satisfied the orthogonality requirements. Equally, to test for heteroscedasticity and serial correlation, Arellano and Bond autocorrelation test to detect second-order serial correlation AR(2) in the idiosyncratic disturbance term inside the GMM framework was used. The AR(2) p-values show that all the models used do not exhibit serial correlation.

5. Conclusion and Recommendations

This paper examined the nexus among financial depth, institutional quality and poverty in sub-Saharan Africa. A sample of 32 countries in the region was used for the period 2000-2022. The major findings of this paper are: Financial depth has a direct reduction effect on poverty in sub-Saharan Africa. The interaction of financial depth with institutional quality (control of corruption) are complementary in poverty reduction in sub-Saharan Africa. In other words, financial depth in the presence of quality institutions aid poverty reduction in sub-Saharan Africa. Education has reduce poverty in sub-Saharan Africa. Increase in population has increase poverty in sub-Saharan Africa. The major contribution of this paper to knowledge is the use of disaggregated data of financial development and its interaction effect on poverty. To the best of our knowledge, none of the studies has done the same. Thus, it is recommended that the monetary authorities should give

more credit facilities to the private sector in order to significantly reduce poverty in sub-Saharan Africa. It is equally recommended that strong institutions, including fighting corruption should be intensified by the government in order to significantly alleviate poverty in sub-Saharan Africa. More funding should be made available by the government to the education sector in sub-Saharan Africa in order to significantly reduce poverty.

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APPENDIX: Variable Description/Measurement

Variable	Description/Measurement	Source
Poverty Headcount (Povhc)	Percentage of the population living on less than $1.90 per day.	World Development indicators (WDI), 2023
Financial Depth (DF) index	Combines data on bank credit to private sector (% of GDP), pension funds' assets to GDP, mutual fund assets to GDP, and (insurance premium life and non-life to GDP).	IMF, 2023
Control of Corruption (CoR)	It is a composite indicator, which measures corruption on a scale of -2.5 to +2.5 with higher scores indicating less corruption.	World Governance Indicators (WGI), 2023
Real GDP per capita	This is GDP at constant prices or GDP in volume based on 2015 PPP.	WDI 2023

Inflation (Infl)	It is measured as the consumer price index (2015) PPP.	WDI, 2023
Human Capital (HC)	Percentage of the gross primary school completion rate.	WDI, 2023
Openness (Open)	Sum of exports and Imports (%GDP)	WDI, 2023
Population (pop)	Aggregate number of people.	WDI, 2023
Rule of Law (RL)	It is a composite indicator that measures rule of law on a scale of -2.5 to +2.5 with higher scores indicating high rule of law.	WGI, 2023
Instability (Inst)	Standard Deviation of Real GDP.	WDI, 2023

Source: Author's Extraction