Financial Inclusion and Human Development in Sub-Saharan Africa

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Abstract: *Over the past one decade, Sub-Saharan African countries have recorded substantial growth in their GDP to the extent that six of the ten fastest growing economies in the world are in Sub-Saharan Africa based on 2017 World Bank report. However, this seems to have benefited only the rich in this region because the gains from the GDP growth has failed to trickle down to the poor as revealed by the low human development index in the region over the years. Financial inclusion has the potential to make economic growth inclusive. Therefore, this study examined the relationship between financial inclusion and human development in sub-Saharan Africa (SSA). The study covers 41 countries in sub-Saharan Africa, using panel data spanning from 2004 to 2016. Annual data on all the variables were sourced from World Bank, World Development Indicators and United Nations Development program database.*

The model specification for the study expressed Human Development Index as a function of financial inclusion indices using panel System Generalized Method of Moment (system GMM) and the panel fixed effects models in analyzing the data for the study.

The results from the analysis showed that with the exception of real interest rate (a controlled variable in all the models for the study) which has negative signs, all financial inclusion variables have positive and significant effect on Human Development Index in SSA. However, the results from the analysis of data for the different blocs within the SSA varied to various extents from the one obtained for the SSA as a whole both in signs and significance.

Finally, the study concluded that financial inclusion promotes economic development by enhancing Human Development Index in Sub-Saharan Africa. Hence, policies that will lead to higher level of financial inclusion should be vigorously pursued by the countries in SSA.

Key words: financial inclusion, human development economic development

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I.   Introduction

Before 1970s, development economics was associated with growth in per capita GDP. At this period, GDP growth was almost seen as an end in itself rather than a means to an end because it was believed that the gains from the growth in GDP per capita would automatically "trickle down" to the poor in the form of employment and income opportunities (Morawetz, 1977). Based on this perception, the United Nations set a target of 5% annual growth rate in GDP for the developing countries for the decade of 1960s (Morawetz,1977), and to achieve the targeted growth rate, economists in the less developed countries suggested rapid industrialization and urbanization. By adopting this strategy of rapid industrialization, the developing countries' GDP per capita grew at an average of 3.4 per cent per annum during 1950-75. This was higher than the growth rate recorded even by the developed countries before 1950 (Morawetz, 1977).

However, the validity of the above position became a matter of contention when it became obvious that the robust growth recorded during the said era by most countries did not make any meaningful impact on poverty, unemployment and inequality (Seer, 1967) . According to Seers (1967), the questions to ask about the development of a country are: What has been happening to poverty? What has been happening to unemployment? What has been happening to inequalities? If all three of these macroeconomic indicators have declined from high levels, then this period represents a period of development for the country in question.

However if all of these have been on the rise, then it will be inappropriate to call this development even if GDP per capita doubles.

In the past one decade, sub – Saharan Africa has recorded sustained economic growth with six countries in the region being among the ten fastest growing economies of the world as at 2017. These countries with their respective GDP growth rates include Ghana (8.3%), Ethiopia (8.2 %), Cote D'Ivoire (7.2%), Djibouti (7%), Senegal (6.9%) and Tanzania (6.89) (World Bank, 2017). Even though, the region has recorded great achievement in the area of GDP growth rate, it does not seem to have translated to meaningful economic development as being manifested in high poverty rate, high inequality rate, and high unemployment rate. Hence, there is a consensus that for economic growth to have its desired impact on these economic problems, it should be human-centered.

Based on a report of United Nations Development Programme (2017), the sub – Saharan Africa has the lowest Human Development Index across the world. For instance, while the high income OECD countries recorded Human development Index of 0.887 (considered as very high), Europe and Central Asia 0.756, Latin America and the Caribbean 0.751, East Asia and the Pacific 0.720 (all considered high human development), Arab states and South Asia recorded 0.687 and 0.631 (considered medium human development) respectively, Sub-Saharan Africa recorded only 0.52 (classified as low). Human Development Index is a component measure of health outcome, educational attainment and income per capita which are all important indices of economic development.

Economists have attributed the slow pace of economic development in developing countries to lack of financial inclusion (Devarajan & Fengler, 2013, Sarma, 2008, Demerguc-Kunt & Levine, 2009, King & Levine, 1993, World Bank, 2011). Financial inclusion connotes a situation in which there is ease of access to as well as usage of formal financial systems by the people of an economy. It is a process in which no one in an economy has difficulty in opening a bank account, have access to credits and can make a consistent, easy and convenient use of financial system products and services (PCC Financial Inclusion Strategy, 2009). On the other hand, financial exclusion is when those services are not available or too costly. Again, according to the Centre for Financial Inclusion, (2010), financial inclusion is described as 'a state in which all who can use them (i.e. formal financial services) have access to a full suite of quality financial services, provided at affordable prices, in a convenient manner, and with dignity to the clients. It is a state where financial services are delivered by a range of providers, most of them in the private sector, and reach every one who can use them, including the poor, disable, rural and other excluded populations'. In that light, financial exclusion is the inability of individuals, households or groups to access particularly the formal financial products and services.

Financial inclusion has been widely recognized as highly essential in achieving poverty reduction, inclusive economic growth through participation (i.e employment creation) as well as improving human development. In fact, the World Bank has identified financial inclusion as an enabler of seven out of the seventeen sustainable development goals (World Bank, 2015). Some of these goals include: Goal one (Low poverty rate), goal two (Low hunger rate), goal three (Good health and well-being), goal four (Quality education), goal five (Gender equality), goal seven (Decent work and economic growth) and goal twelve (Reduced inequality), (World Bank, 2015).

In spite of the opportunities inherent in financial inclusion for poverty reduction, bridging inequality gaps, increasing GDP per capita, reducing unemployment, etc, access to financial services is still low in many part of the globe. A recent report on Financial Inclusion by the World Bank (2015) showed that about two billion working age adults (more than half of the world's total adult population) do not have an account at a formal financial institution. However, the situation appears more serious in   sub – Saharan Africa. For instance, in high income OECD economies, account ownership, a major index of financial inclusion is almost universal at 94% as at 2014, it was 51.4% in both Latin America and Caribbean and Central Asia, 46.4% in South Asia and only 34.2% in sub – Saharan African, with only the Middle East coming behind sub – Saharan African with 14.2% (World Bank, 2015). Sub – Saharan Africa also lags behind on some other indices of financial inclusion. For instance, available statistics from Financial Access Survey, (2017), shows that the number of automated teller machines (ATM) is fewer than 6 ATMs per 100,000 adults on the average with the exception of South Africa, which has 60 ATMs per 100,000 adults. Also, talking about the number of commercial bank branches, the statistics has it that on average, there are less than five commercial bank branches per 100,000 adults within the region. The burning question to ask now remains: What are the implications of these poor financial inclusion statistics on the economic development of the SSA?

It will not be a mere coincidence that the sub – Saharan African region whose majority of its citizens are financially excluded is also the region with the lowest level of human development as revealed by the human development index report across the globe. Indeed, it appears that it is the problem of low level of financial inclusion that manifests in poor performance on major economic development indicator such as Human Development Index within the sub-region. This is the problem this study aims to solve.

II. Literature Review

Conducting a full-scale review of previous empirical studies on the relationship between financial inclusion and human development is not intended in this section but to selectively undertake the review of some selected empirics considered central to this strand of literature.

To start with, in no particular order, Osaka, Ihejirika & Chinweze (2018), investigated the relationship between financial deepening and human capital development in Nigeria between 1981-2015, using Johansen Co-integration and causality. It was found that there was a unidirectional causality running from financial deepening to human capital development. On the basis of this finding, they concluded that the existing financial deepening policies should be sustained in order to improve education and health care delivery in the country. In similar vein, Maku & Ajike (2015) examined the impact of capital and financial flows on human welfare in sub-Saharan Africa, using panel fixed effect estimator. They found that capital and financial flows increase Human Development Index and life expectancy, mean year of schooling, access to water, and access to sanitation and access to health services significantly, while it also reduces infant mortality significantly. In another study, in Cameroon, Yah and Simo-Kengne (2018) investigated the roles of financial sector reforms on human development in Cameroon between 1973 to 2013. Using auto regressive distributed lag co-integration and causality techniques, they found that financial liberalization promotes financial development which enhances human development in the long run in Cameroon. Also, Yao (2018) investigated the impact of banking development on human development of West African Economic and Monetary Union (WAEMU) member countries between 1990 and 2014 using panel data analysis. He found that banking development has positive relationship with human development. They also found that credit to the private sector has positive and significant impact on human development, though the impact remains small.

In India, a study by Gupta, Chotia & Rao (2014), titled "financial inclusion and human development: a state-wise analysis from India, found that the index of financial inclusion and Human Development Index are positively correlated with each other. Using a multi-dimensional approach, he recommended that the promotion of financial inclusion should be a policy priority in India to achieve the central goals of inclusive growth, human and economic development. In a study on another set of Asia countries, Rashmi (2012), examined the relationship between financial inclusion and human capital in 21 developing countries in Asia. Using ordinary least square in his analysis, he found that a significant negative relationship exists between financial development proxied by M2/GDP and pupil- teacher ratio (an index of human development) and strong positive relationship exists between physical access to and expected year of school. This finding of Rashmi (2012) is contrary to those of the trio of Gupta, Chotia & Rao (2014). In another study, the trio of Ghulam, Khalid & Tan (2014), investigated the impact of financial development on the economic development of south Asian Association for regional co-operation between 1988 and 2008. Using panel co-integration analysis, they found a positive and significant relationship among bank deposit, broad money supply and credit to the private sector and human development in SAARC.

Moreover, in Venezuela, Vera, Hernandez & Osorio (2013), investigated the link between financial development and human development in Venezuela between 1970 and 2009. Using several proxies for access to banking services, they found that a larger network of services and coverage of depositors reported improvements in Human Development Index. In like manner, Ayushi (2016), carried out a cross-country analysis on financial inclusion and human development using an index of financial inclusion developed by Sarma (2012). He found that levels of human development and financial inclusion in a country move closely with each other, even though there are a few exceptions. He equally found that the correlation co-efficient between index of financial inclusion (IFI) and Human Development Index (HDI) valves and ranks was calculated to be 0.82 and 0.85 respectively implying significant positive correlation between the two indices.

III. Theoretical Framework

The analysis of the relationship between financial inclusion and human development in this study is rested on the model formulated by Demirguc-Kunt & Levine (2009). The model articulates how credit market imperfection which brings about unequal access to financial resources can determine individual's economic opportunities thereby affecting his ability to generate income, and build his stock of human capital through education and health (human development).

The analysis is organized as follow:

Dynasty i's total income in generation t, y(i, t) is divided into income from wages and income from claims on physical capital..

$$y(i, t) = h(i, t) \, w(i, t) + a(i, t) \, r(i, t) \qquad\qquad \text{………………..1}$$

Where h(i, t) is the amount of human capital of dynasty i in generation t, w(i, t) is the wage rate per unit of human capital, which might be dynasty specific. a(i, t) is dynamic wealth in dynasty i in generation t, and r(i, t) is the return on assets, which may also vary by dynasty.

The model examined the decision by parents to invest in the human capital of their children and how this influences the persistence of relative incomes across generations.

Let h(i,t) = h[e(i,t), s(i,t)]   ……………………….2

Where e(i, t) is the dynamic endowment of ability and S(i t) is investment in human capital accumulation (schooling).

With perfect credit markets (i.e, in the absence of financial exclusion), high ability people get schooling irrespective of parental wealth. Human capital, h(i t) will be a function of ability only, e(i,, t) and the economy attains the socially efficient allocation of schooling, S(i, t). That is, an individual's economic opportunities are determined solely by her abilities, not by parental wealth if such an individual could have access to credit facilities to finance his schooling despite his poor parentage.

However, imperfect credit markets increase the persistence of cross– dynasty differences in human capital, with corresponding implications for the persistence of cross –dynastic differences in income, wealth and the distribution of income.

If access to schooling is constrained by parental wealth so that S(i, t) is a function of a(i, t-1) , we can substitute a(i,t-1) for S(i,t). And holding ability endowment constant, human capital will be a function of parental wealth* as follow:

h(i, t) = h[a(i t-1)]   ………………………………..3

The implication of this is that children from rich parents (i.e, parents who have access to credits and other financial services) with comparatively low abilities receive more schooling and are able to build their stock of human capital than comparatively high – ability children from poor families. Hence, human development is posited as a function of financial inclusion

3.1   Estimation Techniques

In accounting for the dynamics of the financial inclusion- human development relationship within the sub-Saharan region, this study estimates a system GMM model and panel data fixed effect model.

The adoption of system GMM in the analysis of data for the whole sample for sub-Saharan is premised on the short time series dimension of our sample as compared to the cross-sectional dimension. For instance, while T(number of years) = 13, N (number of countries) = 41. However, the analysis of sub-samples based on the data from the various economic blocs within the region only made use of panel fixed effect.

The dynamic panel regression model to capture the relationship between financial inclusion and human development pattern based on system GMM model is specified as follows:

$$HDI_{it} = \rho + \theta HDI_{it-1} + \Psi FINCLU_{it} + \sum_{j}^{k} \delta j X jit + uit \qquad \text{……………}.4$$

$$j = 1 \ldots \ldots, k, i = 1 \ldots \ldots, n, t = 1 \ldots \ldots \ldots T$$

Where, HDI stands for Human Development Index, i is a proxy for Human Development Index of country i over period t, ρ gives the value of the dependent variable when explanatory variables are zero, $FINCLU_{it}$ denotes financial inclusion variables of country i over period t, X_{jit} is the other regressors included in the model as control variables for country i over period t, j is the number of included control variables, ρ, θ, Ψ, and δ are the parameter estimates measuring the impact of explanatory variables on the dependent variables.

A country specific fixed effect is assumed for the disturbance term as follows:

$$\varepsilon_{it} = e_i + \mu_{it} \qquad \text{………………………………….}5$$

Where ε_{it} represents error term. It entailse$_i$, which represents country-specific fixed effects that are time invariant, meanwhile, μ_{it} is assumed to be independent and normally distributed with zero (0) mean and constant variance σ_{μ}^2 both over time and across countries, that is, $u_{it} \approx n(0, \sigma_{\mu}^2)$.

To adjust for the violation of the orthogonality assumption in the dynamic model in (4), we differenced the equation as:

$$\Delta EHDI_{it} = \rho + \theta \Delta HDI_{it-1} + \Psi \Delta FINCLU_{it} + \sum_{j}^{k} \delta j \Delta X jit + uit \qquad \text{…..……… …} 6$$

Empirical model

HDI = f (financial inclusion, control)

The model is explicitly specified thus:

lnHDI = $\alpha_0 + \alpha_1$lnHDI-1i,t +$\alpha_1$lnATMi,t + $\alpha_2$lnBbranchi,t + $\alpha_3$lnBorrowersi,t + $\alpha_4$lnDepositorsi,t
+ α_5Rinteresti,t + α_6GCF$_{i,t}$ + u$_{i,t}$ …………………7

ATM = Number of ATMs per 100,000 adults

Bbranch = Commercial bank branches per 100,000 adults

Borrowers = Borrowers from commercial banks per 1,000 adults

Depositors = Depositors with the commercial banks per 1,000 adult

 GCF = Gross Capital Formation

Rinterest = Real interest Rate

Ut   = Error term

3.2   Variables description and sources

The data for this study was sourced mainly from the World Bank, World Development Indicators and United Nations Development Programme (UNDP) data base. In selecting the explanatory variables for the model, the two major dimensions of financial inclusion (i.e. access and usage of financial services) were considered in the study. Access dimension was measured by number of ATMs per 100,000 adults and number of commercial bank branches per 100,000 adults, while the usage dimension was measured by borrowers from commercial banks per 1,000 adults and depositors with commercial banks per 1,000 adults (as in Financial Access Survey, 2017) . In addition, real interest rate and gross capital formation were also included as control variables.

The list of the countries on which relevant data were collected and which were selected based on the economic blocs to which they belong within the SSA are as follow: From the Economic Community of West African States (ECOWAS) bloc, we have Benin, Burkina Faso, Cape Verde, Cote D'Ivore, Gambia, Ghana, Guinea, Guine Bissau, Liberia, Mali, Niger, Nigeria, Sierra Leone, Senegal, and Togo. From the Central Africa Economic and Monetary Community (CEMAC) bloc, we have Gabon, Cameroon, Central Africa Republic, Chad, The Republic of Congo and Equitoria Guine. From the Southern Africa Development Council SADC, we have Angola, Botswana, Congo DR, Lesotho, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, Tanzania, Zambia and Zimbabwe. Finally, from EAC, we have Burundi, Kenya, Rwanda, South Sudan, Tanzania and Uganda.

IV.   Results and Discussions

4.1   Result of Panel Unit Root Tests

Table 4.1   Result of Panel Unit Root Test

	IPS unit root test		ADF-Fisher Chi-square unit root test		Levin-Lin-chu unit root test	
Variables	**t* Statistics**	**Order of Integration**	**t* Statistics**	**Order of Integration**	**t* Statistics**	**Order of Integration**
lnHDI	-4.5548**	I(1)	108.66**	I(1)	-12.2087**	I(1)
lnBorrowers	-1.3523**	I(1)	53.5097***	I(1)	-2.68057**	I(1)
lnDepositors	-2.1083**	I(1)	66.9642**	I(1)	-3.01472**	I(1)
lnBbranches	-3.0639**	I(1)	85.9310***	I(1)	-4.78849**	I(1)
lnATM	-4.1070**	I(1)	104.896**	I(1)	-5.65218**	I(1)
lnGCF	-5.3612**	I(1)	71.62**	I(1)	-4.36142**	I(1)
Rinterest	-2.4420***	I(1)	58.5069**	I(1)	-4.59987**	I(1)

Statistical significance at 1% (***), 5 %(**)
Source: Author's Computation, 2019

In table 4.1, the results of panel unit root tests were presented. The result as shown in the table indicates that all series are non-stationary at their levels but are made stationary at their first difference. This means that all the variables are I(1) series. The economic implication of stationary variable implies that any disturbance or shock to it will not be sustained for a long period of time, that is, a shock to the variable will die out over time.

Table 4.2 System GMM Result

Variable	Coef.	Std. err.	P-value
Lagln HDI	0.925738	0.002616	0.0104
lnATM	0.063826	0.002584	0.0013
lnBBRANCH	0.0354472	0.002132	0.0023
lnBORROWERS	0.034721	0.002579	0.0042
lnDEPOSITORS	0.037153	0.004273	0.0072
lnGCF	0.031522	0.005314	0.0047
RINTEREST	-0.063422	0.000231	0.0036

CONS	0.728144	0.004712	0.0025
Observation	533		
Group	41		
Arellano-Bond test for AR(1) in first differences:	z = -3.64 (0.813)		
Arellano-Bond test for AR(2) in first differences	z = -6.03(0.731)		
Sargan test of overid. restrictions:	$\chi2$ (1) =0.46 (0.25)		
Hansen test of overid. restrictions	$\chi2$ (1) = 0.35(0.635)		

From table 4.2, the values of sargan and Hansen statistics show that the model correctly specified in terms of endogeneity and instrument validity. The Arrellao-Bond test values also show that the model does not suffer from serial correlation. The panel system GMM result indicates that the lag value of Human Development Index (0.874173) did not only conform to a priori expectation but also statistically significant. It shows that the previous value of this variable has a significant impact on the present values of the variable. On the relationship between ATM usage and Human Development Index, the result shows a positive and statistically significant relationship. The co-efficient is 0.037455. It shows that a one percent increase in number of ATMs per 100,000 adults will bring about a 0.37% increase in Human Development Index for the SSA. Access to digital financial services, apart from enhancing income generation, also enhances diaspora remittances which help people to boost their levels of educational attainments and also attend to their health needs. All these work together in improving the human development potentials of a people. This finding is in conformity with the findings of Francis & Nirosha (2016), who discovered a positive significant trend of digital and mobile money usage with GDP in Ghana. A study by CGAP (2017), shows that access to digital financial services has increased daily per capita consumption levels of households, lifting them out of extreme poverty. Mobile money services have changed lives – for example, helping women to move from subsistence farming to business occupations and sustainable livelihoods.

Also, commercial bank branches per 100,000 adults were found to have a positive and significant relationship with Human Development Index. It shows that bringing the bank branches closer to the people and most especially the financially excluded in the rural areas will likely enhance their access to financial services and therefore helping them in developing their stock of human capital. Also, borrowing from commercial banks and depositors with commercial banks per 1000 adults both has the expected signs with Human Development Index and are statistically significant. Access to credits gives financial access to the poor to take care of the health and educational needs of their children. This helps in improving the Human Development Index at the aggregate level. Again, when people have access to borrowing, they become empowered to set up small businesses for the purpose of self-employment. This aligns with the position of Ismet (2013), who maintains that bank loans and increase in credits have reducing effects on unemployment rate, in Europe. Also, according to Akhmat & Tan (2014), bank deposit has positive and significant relationship with human development in South Asian Association for regional co-operation (SAARC) between 1988 and 2008. By opening a deposit account, a customer begins a contractual relationship with a financial institution which can enable him to benefit from other financial services and hence enhancing his human development potential.
However, interest rate has a negative and significant relationship with Human Development Index, showing that a higher interest rate will reduce the potential of people to increase their stock of human capital in SSA.

4.2 Robustness Check on System GMM Result
This section examines the robustness and sign of the results with the use of some new but related variables instead of the initial ones. In this study, two different indicators of financial inclusion – Number of ATMs per 1,000 km[2,], and Number of loan accounts per 1,000 km^2 – rather than Number of ATMs per 100,000 adults and Borrowers from commercial banks per 1,000 adults respectively were used for the test of robustness. All robustness check specifications use the same dynamic panel system GMM techniques.

Table 4.3 System GMM Robustness Result

Variable	Coef.	Std. err.	P-value
Lag lnHDI	0.951825	0.000316	0.0016
lnATMper km2	0.425821	0.007518	0.0052
lnBBRANCH	0.287114	0.016883	0.0225
LnLOANperkm2	0.014617	0.003271	0.0021
lnDEPOSITORS	0.462114	0.003065	0.0284
lnGCF	0.182143	0.102906	0.0163

RINTEREST	-0.044163	0.006942	0.0381
CONS	0.425821	0.007518	0.0052
Observation	533		
Group	41		
Arellano-Bond test for AR(1) in first differences:	z = -4.42 (0.645)		
Arellano-Bond test for AR(2) in first differences	z = -8.13(0.187)		
Sargan test of overid. restrictions:	2 (1) = 0.74 (0.542)		
Hansen test of overid. Restrictions	$\chi 2$ (1) = 0.32(0.86)		

The results of the robustness test in table 4.3 are not different from those obtained in table 4.2 both in terms of signs and level of significance. This shows that our result in table 4.2 is robust.

4.3 Panel Cross-Sectional Dependence Test for SSA
Furthermore, because of the possibility of cross-sectional dependence among the cross-section units, we conduct a cross-sectional dependence test. The major objective here is to investigate the presence of common factor which may affect absolute generalization of our results. The results of the cross-sectional dependence test are presented in table 4.4.

Table 4.4 Cross-sectional Dependence Test Result for SSA

Test	Statistics	P-value
Pesaran CD	0.3714	0.0036

Significant at 5%
Source: Author's Computation, 2019

The result shows that, the null hypothesis of no cross-sectional dependence is rejected at 5% level and the alternative hypothesis of there is cross-sectional dependence is accepted. Hence we conclude that there is presence of common factor that can affect our results. The implication of this result is that there is limit to the extent to which we can generalize our results in the panel analysis for the SSA. Based on these findings and to reduce the extent of the effect of cross sectional dependence, we break the SSA into notable and important economic blocs existing within the SSA more so since the chosen countries were so selected based on their membership of the different economic groups within the region.

Table 4.4   Results Based on Economic Blocs Analysis

	Regional Blocs			
Variables	Eastern Africa	Southern Africa	Central Africa	Western Africa
ATM	0.34822** (0.00439)	0.041163** (0.002121)	0.088272 (0.461026)	0.036342** (0.005361)
BBranches	0.06187 (0.00711)	0.052853** (0.003688)	0.714094 (0.033082)	0.0798632** (0.008427)
Borrowers	0.05110** (0.00441)	0.012723** (0.003623)	0.312959** (0.008088)	0.3227525 (0.23124)
Depositors	0.03322** (0.00179)	0.032683** (0.002421)	0.069886 (0.09257)	0.025682** (0.001326)
GCF	0.04728** (0.00256)	0.046143** (0.004614)	0.047153** (0.00755)	0.035734** (0.003371)
Rinterest	-0.15147** (0.02420)	-0.804876** (0.005031)	-0.351478** (0.003285)	-0.051163** (0.004428)
Constant	0.07364** (0.00419)	0.274922** (0.004261)	0.376011** (0.02182)	0.035442** (0.003152)
Hausman	(216.147)**	(45.958) **	(79.409)**	(45.614)**
R-Squred	0.91527	0.89672	0.5667	0.61231
F-Stat.	(21506.58)**	(167.5251)**	(92.048)**	(138.217)**

Source: Authors computation

The results obtained based on the analysis of data on sub-regional basis are somewhat different from those obtained for the SSA as a whole, emphasizing the essence of cross-sectional dependence test. For instance, while all the variables conform to the theoretical expectation and are statistically significant for SADC just as it was for SSA, those obtained for the three other sub-regions exhibit some degrees of variations. In EAC, every other variables except commercial bank branches per 100,000 adults were statistically significant, while in ECOWAS, both borrowers from commercial banks and depositors with commercial banks per 1000 adults were not significant. However, of the four main variables of interest, only borrowers from commercial banks per 1000 adults were significant for the CEMAC.

According to Findex (2017), over half of adults living in the SADC region are financially included, more than 6% higher than the continent-wide average. At the country level however, 90%, 86% and 81% of adult's population in Mauritius, South Africa and Lesotho are classified as financially included.

In Lesotho, financial inclusion among the non-banked is mainly driven by funeral cover, while in Zambia, it is driven by mobile money and remittance services (CGAP, 2016). Indices of financial inclusion are generally higher in SADC countries as compared with the countries in other sub-regions of SSA . For instance ATM per 100,000 adults is highest in five Southern Africa Countries of Seychelles, South Africa, Namibia, Malawi and Botswana with 71.80, 69.29, 64.41, 44.51 and 30.94 respectively with only cape-Verde in West Africa coming fourth with 45.70, Findex (2017). Southern Africa countries of Seychelles, Mauritius, Namibia, Angola and South Africa also occupy the first, third, fourth, fifth and sixth positions on the number of commercial banks per N100,000 adults with 52.83, 20.40, 14.70, 10.29 and 10.18 respectively. These may have explained the positive and significant relationship between financial inclusion variables and Human Development Index in the sun –region.

On EAC, since the launch of MPESA in Kenya, countries in the EAC have recorded significant progress in financial inclusion particularly with the use of mobile money. In addition to Kenya, other countries such as Malawi, Tanzania, Rwanda, Uganda have attained a higher than SSA percentage average in financial inclusion. However, according to the Central Bank of Kenya (2018), innovations in financial services has led to non-bank transactions, mobile, agency banking, point of sales terminals and ATMs to account for 89% of total volume of transactions at the expense of physical bank branches. This may have accounted for the non-significant relationship between commercial bank branches per 1oo,ooo adults and HDI in the EAC.

According to FAS 2017, countries in CEMAC have the poorest financial inclusion statistics in SSA. For instance, on ATMs per 100,000 adults, the statistics range from 12.77 for Gabon, 9.15 for equatorial Guinea, 7.64 for Cameroon and as low as 1.31 and 1.18 for Congo Democratic Republic and Central Africa Republic respectively. These are all lower than the average for SSA which stood at 13.9 (FAS, 2017). Also, on commercial bank branches per 100,000 adults, with the exception of Gabon which has as much as 9.32 commercial bank branches per 100,000 adults, it is as low as 3.65 in Congo Republic, 1.03 in Democratic Republic of Congo and 1.03 in Central Africa Republic. This may have accounted for the non-significance of the variable. Again, according to Global Findex (2016), borrowing from family or friends is the most common sources of credits for CEMAC countries. For example 28% of loans are from family and friends in Gabon, 42% in Cameroon, and 20% in Central Africa Republic. In all countries but Cameroon, borrowing from an informal lender is more frequent than borrowing from a financial institution. This may have explained the non-significance of these two variables on HDI in CEMAC.

Digital financial services particularly ATM, POS and mobile money is enhancing financial inclusion in countries within the ECOWAS and most especially in Nigeria and Ghana even though a greater percentage of the digital devices are still concentrated around big cities at present. The advent of the electronic banking in Ghana is contributing to the financial inclusion for many Ghanaians, especially rural dwellers who were previously excluded. The upsurge in the use of digital banking is not limited to Ghana. For instance, card payments on Point of sale (PoS) terminals in Nigeria have also grown from a paltry 5,000 monthly volume in 2011 to 30 million in November 2018, all thanks to the success of the cashless Nigeria initiative (CGPA, 2016).

Also, according to GSMA (2016), BCEAO, the regional central bank for West African Economic and Monetary Union (WAEMU), was one of the first regulators in the world to adopt regulations expressly authorizing the issuance of electronic money by non-bank institutions through a directive adopted in July 2006. It was under this directive that mobile operators in partnership with banks were able to introduce mobile money to the WAEMU market starting from 2008 (with orange in Cote d' Ivoire). These may have accounted for the significance of most of the variables with HDI in ECOWAS.

V.   Conclusion and Recommendations

Our study investigated the relationship between financial inclusion and human development in Sub-Saharan Africa. The study confirms that financial inclusion promotes Human Development with its significant impact on Human Development Index in SSA. However, by considering the results on sub-economic bloc basis, the analysis shows that financial inclusion has most significant impact on human development of SADC with all

the selected variables conforming with the theoretical expectations and significant. On the other hand, the CEMAC sub-regional bloc recorded the poorest result on the relationship between financial inclusion variables and Human Development Index.

Since the study has established a strong link between financial inclusion and human development in the SSA, more concerted efforts should be made by the various national governments within the region towards reducing the number of financially excluded adults particularly as countries are striving towards reducing the exclusion rate to not more than 20% by 2020.

Again, in the drive towards financial inclusion, priority should be given to digital financial services such as ATM and mobile money while agent banking should also be greatly enhanced because they have the potential to bring formal financial services loser to the rural areas where most of the poor reside thereby helping them to reduce poverty, generate incomes and attend to their educational and health needs.

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