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## **FINANCIAL MARKET AND HUMAN DEVELOPMENT NEXUS IN SUB-SAHARAN AFRICA COUNTRIES: A DYNAMIC PANEL DATA ESTIMATION**

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### **ABSTRACT**

*The study examines the nexus between financial market development and human development in Sub-Saharan Africa countries from year 2000 to 2019. Particularly, the study investigates the three dimensions of financial market development in term of access, depth and efficiency with human development index. To achieve this objective, the study employed the GMM dynamic panel framework based on Arellano and Bond's (1991) first difference approach. While lagged levels of the dependent variables for different periods are used as the instruments to control the endogeneity bias associated with dynamic panel specifications, the model adequacy is determined using the J-statistic (Sargan's test) and the Arellano-Bond first and second order serial correlation tests. The result shows that financial markets development indices are positive and highly significant on human development within the SSA region. The study therefore, recommend that Sub-Saharan African countries focus on developing and implementing policies and program that will critically improve financial markets access, depth and efficiency if they must achieve higher human development, a prerequisite for economic development, particularly in SSA countries.*

**Keywords:** *Financial market development, human development, dynamic Panel GMM*

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### **Introduction**

The existence of financial market in a country or society is a clear manifestation that such institution offers valuable and indispensable services for the growth and development of any economy. Financial market could be seen as a forum

where lenders and borrowers meet to efficiently allocate funds. In theory the excess funds of the lenders could be used more efficiently if it was placed in the hand of the borrower and the lender then expects to receive a higher return on the investment than if the money were placed in the bank account or other form of storage. Economists support the idea that a developed, well-functioning and efficient financial system, which includes capital and money markets can adequately mobilize savings and allocate resources by choosing safe and profitable investment projects and avoids inequality, facilitates the exchange of goods and services, impacts on poverty, helps to diversify risks and subsequently enhance economic growth and development. The impact of financial markets have on economic growth has been studied and found to be significant (Levine, 1991; Levine and Zervos, 1998). However, the aim of this paper is to examine the relationship between financial market development and human development with empirical methods building on the inherent role that financial markets play in human development. Human development is increasingly seen as the ultimate goal of development rather than economic growth. Nevertheless, the connection between economic growth and human development remain critical because economic growth will increase opportunity for people and seems to be the primary contribution to continuous progress in human development. The level of education, to live a good and long fulfilling life are also aspects which take great part in the issue of human development. Moreover, developments in human development are not only a key developmental goal, but human development itself has made a significant contribution to economic growth over time (Tekin, 2020). The concept of human development index is to create an alternative people-based view when discussing human development rather than making assumption that economic growth will single-handedly lead to improvement in the day-to-day life of citizens. The index is used by the United Nations to measure progress as an alternative to simply consider economic growth. In the case of human development economic growth is a part of it but with the difference of economic growth not being the ultimate goal rather with it being a tool to achieve human development, a means to an end (Haq, 1990). Therefore, it is important explore the connections between financial markets development and human development

Together with Porter (1998), the World Development Report (1999-2000) highlights that the principal goal of development policy is the creation of growth

in the life for all persons. Hence, sustainable development according to the report has many objectives; besides increasing economic growth, meeting basic needs, and improving the standard of living of citizens. It also involves improving people's health and educational opportunities, giving everyone the opportunity to partake in public life, ensuring clean environment, encouraging intergenerational equality, etc (World Commission, 1999-2000). To measure human development is not as clear as economic growth. Typically, economic growth is measured as of gross domestic product (GDP) per capita but to measure human development an index was created called the human development index (HDI) and which take three factors into account: life expectancy (health), knowledge (education) and standard of living (GDP)(Stanton, 2007).

Although, the relations between financial development and economic developments of countries have been studied in many academic terms, studies that examine the relationship between the development levels of financial markets and human development levels by taking into account the human life standards are limited. Building on the inherent role that financial markets play in human development and employing the dynamic GMM panel data estimation on data 41 out of 48 SSA countries whose data are fully available, the study seeks to investigate empirically the nexus between financial markets development and human development in Sub-Saharan African countries. The aim is to determine the relationship between financial market development indicators: (access, depth, and efficiency) and human development for Sub-Saharan African countries for year 2000 to 2019

The rest of the paper is structured into four sections. In section 2, we present the literature review on the study. Section 3 is on data issues and methodology. Section 4 and 5 contain empirical analysis and conclusion respectively.

### **Literature Review**

Many studies have been carried out to reveal the dynamic and linear relationship between financial and economic growth and development levels of countries. But the studies that examine the dimensions of countries' financial markets levels relationship with human development is limited.

The investigation of the relationship between financial development and economic growth, which is accepted as a measure of social welfare and development, goes back to Schumpeter (1911). King and Levine (1993)

examined the relationship between financial and economic development indicators between 1960-1989 and concluded that the relationship between financial development and economic growth is linear. Levine (1997), mentioned the relationship between these two variables, suggest that there is a strong relationship between the variables. Levine (1997) states that the capital accumulation and technological development of the countries are encouraged by the financial system, and this positively affects economic development Enisan and Olufisayo (2009), employed the autoregressive distributed lag (ARDL) in seven of the Sub-Saharan African countries to analyzed the long-run relationship between stock market development and economic growth. The findings reveal the stock market is beneficial and had effect on growth. Causality findings suggest unidirectional causality existed for both South Africa and Egypt and run from stock market development to economic growth. Although bidirectional causality is exhibited by Cote D'Ivoire, Kenya, Morocco and Zimbabwe, while Nigeria demonstrates poor evidence that finance caused development.

Asongu (2011) examines the determinants of human development from the financial dynamics of depth, efficiency, size, and activity on data from 38 developing countries. While the importance of financial activity, size and depth (in decreasing order) are significant for inequality-adjusted human development, financial allocation efficiency as a driver of human development Monacelli, Lovino and Pascucci (2012) present a cross-country evidence of the role of the financial system in promoting human development using data from 68 countries from 1990-2005. Various measures of financial development concerning both financial market and financial architecture were robustly associated with human development index, a composite indicator of health, education and income. The analysis also identified the main policy channels through which financial reforms enhancements affect the human development Schraqat and Giri (2014) analyzed the relationship between financial development indicators and the human development in India using annual data between 1980-2012. Long-term relationships and short-term dynamics were examined by applying the Autoregressive Distributed Lag Model (ARDL) boundary test approach. Three proxy variables were used in this study to measure the financial development: First, the ratio of private sector loans to GDP, second, the share of loans provided by the banking sector to GDP, and the rate of the broad money supply to GDP. Granger causality test and variance

decomposition techniques were also used to examine the impact of financial development indicators on human development. The results confirm a long-term relationship between the variables. Granger causality results show that one-way causality is from financial development indicators to the human development index. Variance decomposition analysis reveals that among all financial signs, broad money supply(M3) is the indicator that contributed the most to the changes in human development in India

Ngongang (2015) empirically analyzes and verifies the debate between economic and financial development relationship in 21 Sub-Saharan African (SSA) countries. The study employed the dynamic GMM panel technique. The variables include: real GDP per capita, private sector banking loans to GDP, per capita stock market capitalization relative to GDP, corruption, financial liberalization, openness rate as calculated by total exports (X) and imports (M) to GDP, inflation rate, and political instability. The finding that the credit level coefficient (CBBSP) distributed to the private sector was significantly negative. This could be explicitly related to the public sector credit allocation. Consequently, Sub-Saharan Africa (SSA) countries need to encourage the privatization of national banks or enhance credit control and promote banking sector competition to boost credit allocation. Also, result indicates negligible effect of capitalization of the stock market on the GDP per head growth rate. This has been clarified by the degree of financial repression and weak stock market, together with slow and unbalanced growth in SSA countries. Likewise, SSA countries' trade openness is favorable and negligible. This demonstrates that improved savings mobilization and distribution of economic capital allow production possibilities and more productive techniques that strengthen specialization, technical innovation and economic development. In the background of SSA countries has negative and negligible impact on rate of real GDP per capita. Finally, economic growth indicates negative effect on both corruption and inflation. This encourages SSA countries to explore, in their participation, a climate characterized by political and economic stability.

Kaya (2017) tried to determine the impact of developments in the financial markets on human development. In the study, the author measured the level of development of financial market with the Borsa Istanbul 1000 Index(BIST) growth rate. It used the UN's Human Development Index to represent the level of human development. In the study, Johansen-Juselius Cointegration test was used to determine the existence of long-term relationship between the variables.

Granger causality test was used to determine causality. As a result of this analysis, it was determined that the variables acted together in the long-term and the HDI index is a granger cause for the BIST index

Satrovic (2017) studied the relationship between long-term and short-term financial and human capital development in Turkey from 1986-2015 using the ARDL approach. Financial development was measured using two proxy variables: broad money (% of GDP) and liquid debts (% of GDP). The results show a significant positive impact of human capital on broad money and liquid debt in both short and long-terms. Pesaran, Shin and Smith's ARDL boundary test confirmed the existence of a long-term relationship

Cheshti (2017) examined the relationship between the two and the ways of making it complimentary by analysing the various indices of human development (as developed by the UNDP) and various indices of the financial development in terms of access, depth, efficiency and stability. It was observed from the study that the financial development is essential and has got a good prospect for ensuring human development

In a paper released by the IMF (2019), they test 3 explanatory variables against the 3 indicators of HDI-GNI, life expectancy at birth and years of schooling. The paper both tests granger causality tests and a regression analysis with plenty of control variables. They find that public educational spending display a small positive effect on GNI in the short run and larger effect in the long run. They also find that it has a positive effect on years of schooling, although not directly but more so in the long run. Lastly, they also conclude that public health spending and life expectancy has a significant relationship. These variables could possibly be used as control variables, depending on the availability of data

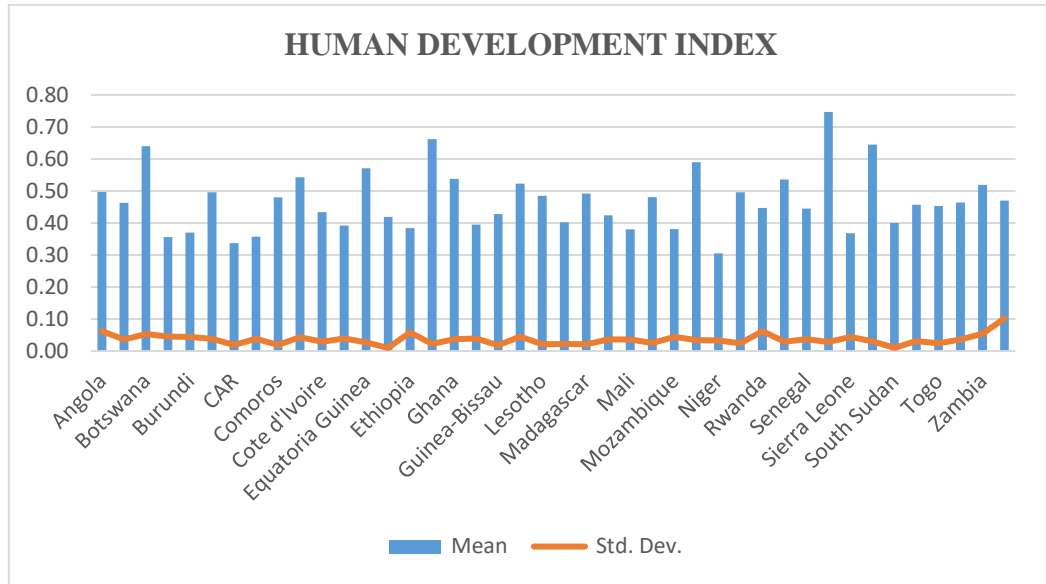
## **Research Methodology**

### **Data Description**

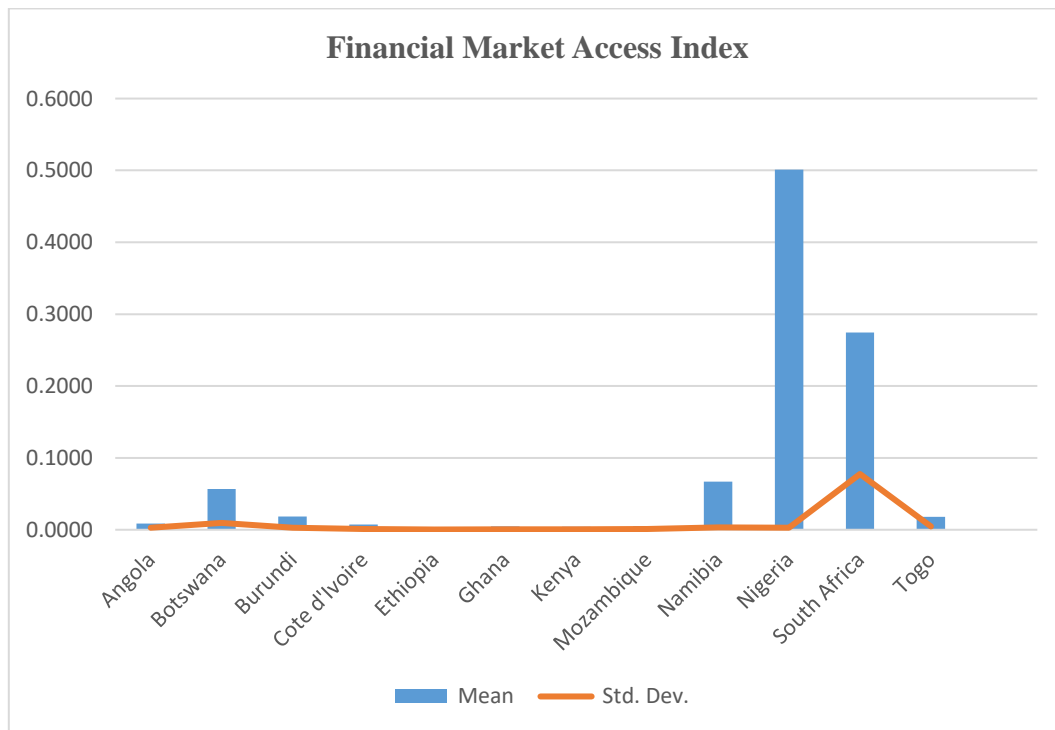
In this study, we use panel data consisting of 41 countries in Sub Saharan Africa countries for 20 years from 2000 to 2019. The variables are Human Development Index (HDI) and three dimensions of financial markets development: Financial Markets Access Index (FMAI), Financial Market Depth Index (FMDI), and Financial Market Efficiency Index (FMEI). While human development index data were obtained from the world development indicators database, all financial markets development data were sourced from the IMF

database. Our analysis is done in both EXCEL (descriptive) and EView (empirical).

Figures 1 to 4 show a graphical description of the data



**Figure 1: Mean and Standard Deviation for Human Development Index**



**Figure 2: Mean and Standard Deviation for FMAI**

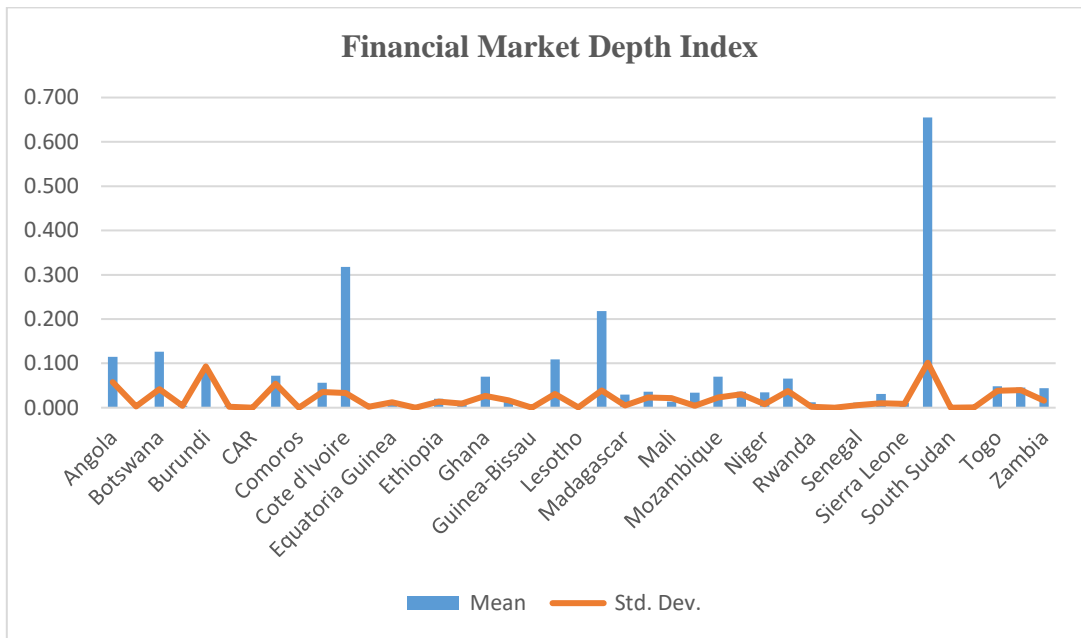


Figure 3: Mean and Standard Deviation for FMDI

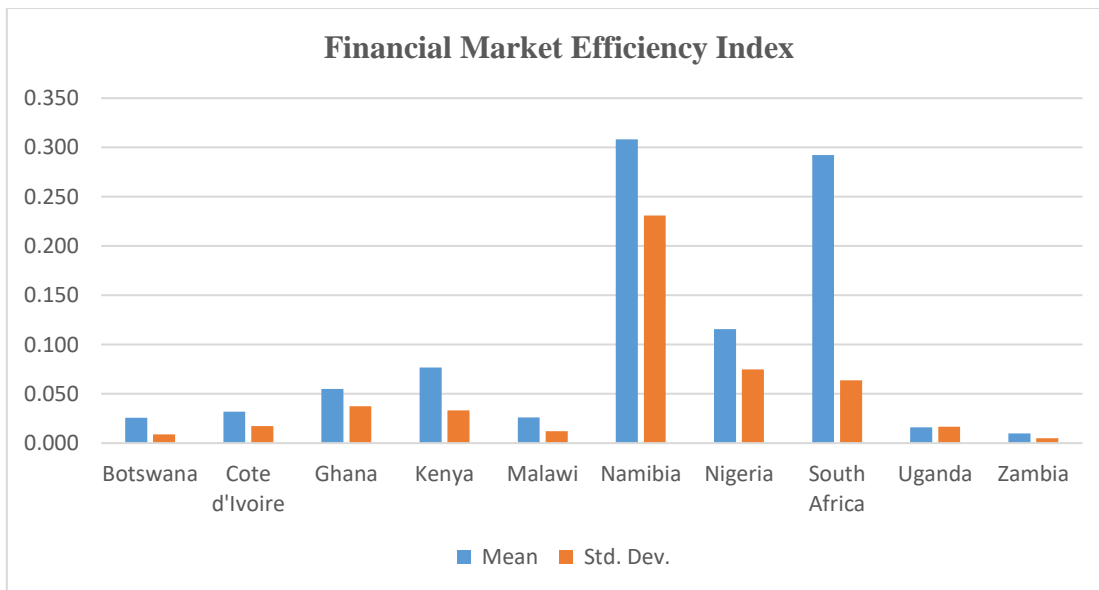


Figure 4: Mean and Standard Deviation for FMEI

### Model Specifications

To examine the effect of the financial markets development on human development, we employed the dynamic panel GMM based on the first difference Arellano and Bond (1991) approach. This framework, which is based on instrumental variables, is particularly used because of the large body of



evidence suggesting that it is suitable for controlling the possible endogeneity bias arising from the possibility that the causal link from financial market development and human development.

Consistent with the study objective, we specify the Arellano and Bond's (1991) first difference dynamic panel GMM model linking human development to the three financial market proxies; FMAI, FMDI, and FMEI as follows:

The econometric representation for the relationship between dimensions of financial market development and human development is given as follows:

$$\Delta HDI_{it} = \beta_0 + \beta_1 \Delta HDI_{it-1} + \beta_2 \Delta FMAI_{it} + \beta_3 \Delta FMDI_{it} + \beta_4 \Delta FMEI_{it} + u_{it} \quad (1)$$

Where:

*HDI* = Human Development Index

*FMAI* = Financial Market Access Index

*FMDI* = Financial Market Depth Index

*FMEI* = Financial Market Efficiency Index

Where:

$\Delta$  is the first difference operator,  $\beta_0$  is the regression intercepts, and  $u_{it}$  is the error terms. Also  $\beta_1$  captures the effect of past innovation in human capital development. The slope parameters,  $\beta_2$ ,  $\beta_3$ , and  $\beta_4$  capture the effect on human development index on financial market access index, financial market depth, and financial market efficiency index respectively. The subscript  $i$  represents the cross-sectional dimension of the panel data while the subscript  $t$  represents the time index.

## Empirical Analysis and Discussion of findings

### Model estimation and Results

For our empirical model, log of human development index is specified to depend on the three dimensions of financial market development; namely, financial market access, financial market depth and financial market efficiency. Tables 1 and 2 show the estimation results for the dynamic panel GMM methods. Whereas Table 1 shows the model parameter estimates, Table 2 shows the model fit statistics and diagnostic tests. To control for endogeneity problem associated with dynamic panel GMM estimation, lags of the dependent variable (HDI) from 2 to 5 are used as instruments for each period.

**Table 1: Panel GMM Results**

Variable	Coefficient	p-value
HDI(-1)( $\beta_1$ )	0.9719	0.0000
FMAI ( $\beta_2$ )	0.0350	0.0051
FMDI( $\beta_3$ )	0.0209	0.0000
FMEI ( $\beta_4$ )	0.0335	0.0000
<b>Wald (<math>\beta_2 = \beta_3 = \beta_4 = 0</math>)</b>	170.14	0.0000

Source: EViews output

**Table 2: Model Diagnostic Tests**

Statistic	Value
<b>Instrument rank</b>	41
<b>J-statistic</b>	37.451
<b>Prob(J-statistic)</b>	0.4483
<b>AR(1)</b>	-3.6049 (0.0003)
<b>AR(2)</b>	0.5327 (0.5942)

Source: EViews output

From Table 1, we can see that  $\beta_1$ , which is the autoregressive coefficient in the HDI model, is estimated at 0.9719 with a p-value of 0.0000, indicating that lagged human development index has a positive and highly significant effect on current human development index. This shows that, *ceteris paribus*, an increase in the current period human development index would lead to an increase in the next period human development index in sub-Saharan Africa. Further, all the estimated financial market variables; FMAI ( $\beta_2 = 0.0350$ ), FMDI ( $\beta_3 = 0.0209$ ) and FMEI ( $\beta_4 = 0.0335$ ), are associated with positive coefficients, indicating that human development index moves in similar direction with financial market development in sub-Saharan Africa. Also, FMAI (p-value = 0.0000), FMDI (p-value = 0.0000) and FMEI (p-value = 0.0000) all are associated with a zero probability, indicating that their individual effects on HDI are highly statistically significant. The Wald statistic (p-value = 0.0000) is also associated with a zero probability, indicating that the combined effect of FMAI, FMDI and FMEI on HDI is highly statistically significant.

From Table 2, the instrument rank is 41, which is greater than the number of the model coefficients, suggesting that our GMM model is overidentified. However, the J-statistic, which tests the validity of the included instruments, has a p-value of 0.4483, indicating that the Sargan validity test is statistically insignificant. Thus, at all usual significant levels, there is no evidence to reject the null hypothesis of valid overidentifying restrictions, implying that our fitted GMM model for human development is well specified. Further, the first order Arellano-Bond statistic ( $AR(-1) = -3.6049$ , p-value = 0.0003) has the expected negative sign and is highly statistically significant, whereas the second order statistic ( $AR(-2) = 0.5327$ , p-value = 0.5942) is statistically insignificant. Therefore, we conclude that the model error terms have no serial correlation in levels, which further validates our GMM results.

## **Discussion of Findings**

### **Financial markets access and human development index**

The findings revealed that financial market access is positive and highly significant relationship with human development. The positive coefficient of 0.0350 on FMAI ( $\beta_2$ ) indicates that human development index moves in similar direction with financial market access in the study SSA countries. The positive and highly significant sign may not be unconnected with the recent past increased in financial market reform, increase in percentage of stock market capitalization and total number of debt security issuers, increase in number of deposit money bank branches, increased in number of ATMs and POS within the region. This will in doubt increase competitive, reduce income inequality, guarantees financial stability and wealth generation with overall long-term income (education, health, etc.) enhancing effect on the level of human development. Absence of such services disenfranchised large people and putting them into the cycle of poverty.

### **Financial markets depth and human development index**

The study results indicate that financial market depth is positive and highly significant with human development. The coefficient of 0.0209 on FMDI ( $\beta_3$ ) indicates that human development index moves in similar direction with financial market depth in sub-Saharan Africa. The significantly positive nature may be attributed to the increased in variables of stock market capitalization,

stock market turnover, international government debt securities outstanding and total debt securities outstanding of private non-financial corporations.

The lack of financial depth in SSA countries is exemplified by the highly liquid, narrow banking sector, undeveloped, and illiquid stock markets. Theories hold that the more liquid money is available, the more opportunities exist for continued growth, as it increases the firms and individuals ability to access the basic services like education and health, having power to reduce poverty.

### **Financial markets efficiency and human development index**

The finding indicates that financial market efficiency is positively and highly significant with human development index. The coefficient of 0.0335 on FMEI ( $\beta_4$ ) indicates that human development index moves in similar direction with financial market efficiency in sub-Saharan Africa. This suggests that improvement in financial markets efficiency through the regulatory and credit environment are expected to make SSA human development index more efficient. This means that the increase in financial market efficiency has marginally led to improvement in human development in the study SSA countries.

### **Conclusion**

The existence of the relationship between economic growth and financial development has been frequently discussed and has been the subject of numerous studies. Although, studies investigating the relationship between financial markets development and human development studies are relatively few, the result from this empirical study shows that a developed financial market affects human development, as it will invest in education and other socio-economic factors. Thus, improving financial markets development in terms of access, depth and efficiency would lead to higher human development, a prerequisite not only a necessary for economic growth as have been emphasized in literature but also good condition for economic development particularly for sub-Saharan Africa Countries. Consistent with few studies, where is evidence that financial markets development positively and significantly affects human development, the empirical result from this study reveals that financial market development indicators have significant effect on human development.

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