Dynamic Relationship Between Financial Sector Development and Inclusive Growth in Sub-Sahara African Countries

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Abstract

This study examines the direction of causality between financial sector development and inclusive growth using panel data of 32 countries in sub-Saharan Africa (SSA) between 2000 and 2019. Findings from Dumitrescu - Hurlin panel causality test revealed that the panel of SSA's countries and two other sub-regions (West and South African sub-regions) indicate unidirectional causality while the other two (East and Central African) show evidence of no causality. Likewise, this study observes some variations at the country-specific level where 24 out of the 32 countries selected displayed evidence of no causality, and 8 countries demonstrated evidence of unidirectional causality. Thus, the study concludes that both inclusive growth and financial sector development are too weak to cause each other in most SSA's countries since bi-directional causality is nonexistent and recommends that policymakers in respective SSA sub-regions and countries should implement massive inclusive growth strategies and promotes relevant financial innovations, reforms, and efficiency in financial inclusion across the region.

Keywords: Inclusive growth; Financial sector; D-H panel Causality test; SSA's sub-Regions and Countries.

JEL Classification Codes: O10; O40; O47; O49; O55; O57

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1.0 Introduction

The financial sector in any economy remains crucial as it affects the business environment, investment plans, economic prospects as well as other social dimensions in the economy. The financial sector remains the only sector in which funds are mobilized from the surplus side to the deficit side of the economy to promote greater economic efficiency. Activities in the financial sector also have unswerving effects on private wealth, the behavior of businesses and customers, and the cyclical performance of the economy as a whole (World Bank, 2014; IMF, 2016; Adusei 2017; Khan, Ahmed & Bibi, 2019). Also, the degree to which the financial sector is developed and managed in any economy determines its role and impact on economic activities. Likewise, underdevelopment in the financial sector could lead to financial crises, fiscal and monetary policies costs, and economic downturn. This is because it has been established that; financial sector development promotes economic activities which are in line with the "supply–leading hypothesis" (Habibullah & Eng, 2006; Odhiambo, 2010; Uddin, Shahbaz, Arouuri & Teulon, 2015; Beck & Maimbo, 2014; Durusu-Ciftci, Ispir & Yetkiner, 2017 and Best, Francis & Robinson, 2017 just to mention a few) and based on the "demand-following hypothesis" which states that it is economic growth that drives financial sector development as supported by Agbetsiafa (2003); Waqabaca (2004); Ang & McKibbin (2007) & Odhiambo (2010) among others.

Consequently, the development of this sector has been identified as one of the significant tools in promoting economic growth and poverty reduction. This is because a well-developed financial sector is a key influence in producing broad-based economic growth, and the ailing performing financial sector has been identified as one of the reasons that many developing countries in the world remain desperately poor (World Bank, 2014; IMF, 2016). However, Financial sector development in most of SSA's countries has advanced in the last decade, especially in the region's middle-income countries but compared to other regions, the financial market in SSA still lags (World Bank, 2012; IMF, 2016). Though the 'structure and development of the financial sector in some SSAs countries are developed and rated among the top 20 in the world with outstanding banking regulations, others are dominated by banks amid underdeveloped financial sectors (African Economic Outlook, 2015; Shahbaz, Tiwari & Nasir, 2015; IMF, 2016; UNCTAD, 2018; Aluko & Ajayi, 2018; Olaniyi & Oladeji, 2020; Olayiwola, Okunade & Fatai, 2021).

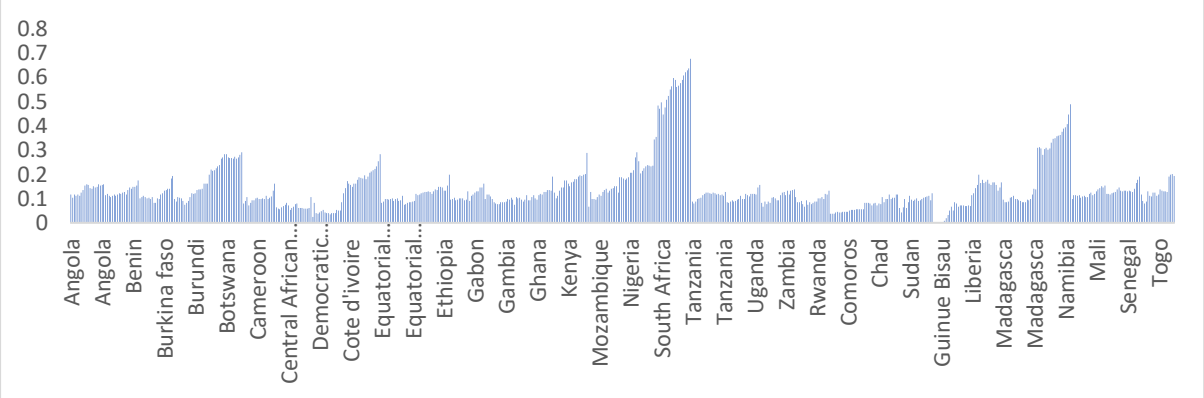

Figure 1: Financial sector development index in selected SSA countries
Source: Data from International Financial Statistics, IFS.

Over the years, many developing countries especially in sub-Saharan Africa (SSA) sub-regions focused only on accelerating the economic growth (increase in GDP) until there was a paradigm shift from just economic growth to a more sustainable and broad-based economic

growth. Even though, inclusive growth can be defined as an "evolutional dimension of growth", it is a broad-based and high level of economic advancement which allows the poor and every stratum of the economy to benefit and participate in the economic growth process. Inclusive growth is inductive and based on long term perspective of absolute poverty reduction, and this concept can be accomplished by expanding the regional scope of economic growth, access to resources, and increasing equity in the opportunities for the next generation (World Bank, 2009; Filho, 2010; Elena & Susana, 2010; OECD, 2014; Vellala, Madala & Chhattopadhyay, 2014; Clarke, Xu, & Fou, 2017).

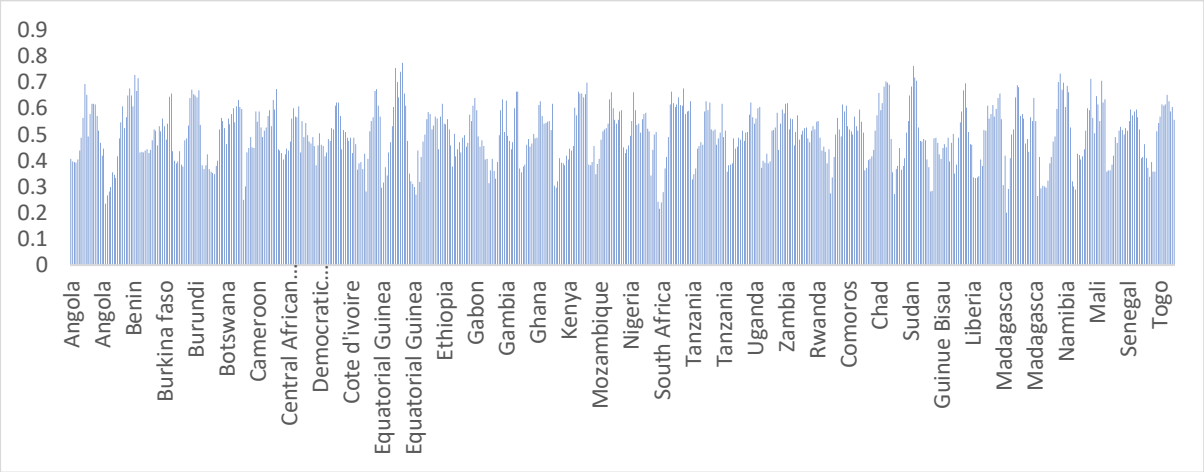

Figure 2: Inclusive Growth in selected SSA Countries.
Source: Author's Construct based on data from World Development Indicator, WDI using Z-score.

The idea of inclusive growth is all about improving the general level of investment, productive economic opportunities, and ensuring that these opportunities are available to all citizens, especially, the poor in SSA sub-regional countries (Rahul, Mishra & Shanaka, 2013; Munir & Ullah, 2018). Therefore, this concept becomes crucial in this study as inclusive growth provides more information than ordinary growth, given the fact that the nexus between 'financial sector development and inclusive growth has not been explored too well in the literature especially when it comes to the developing region of sub-Sahara Africa (Munir & Ullah, 2018; Asian Development Bank (ADB) Strategy, 2020; Europe 2020 Strategy). From the foregoing, it can be inferred that 'economic growth' remains essential to any economy (Joseph *et al*., 2019; Olayiwola and Joseph, 2020; Wandeda *et al*., 2021; Olayiwola *et al*., 2021 and Dramane, 2022). However, it may not be adequate in terms of its impacts on the citizens except the benefits of this 'growth' are distributed adequately amongst people and social groups. Thus, the need for inclusive growth serves as both an outcome and a process. A process because all and sundry can partake in the growth process and an outcome because every person shares fairly the benefits of the growth (Gable, 2012; Rahul, Mishra & Shanaka, 2013; Vellala, Madala & Chhattopadhyay, 2014; Munir & Ullah, 2018).

Following the Organisation for Economic Co-operation and Development (OECD)'s definition and recommendation, the assessment of welfare considerations of the high poverty level and lack of inclusive opportunities in most developing countries remains relevant to understanding whether financial sector development affects poverty level through inclusive growth or they both influence poverty level in the same direction or not. But there seems to be a paucity of studies in this direction in the literature because empirical investigations in this regard are relatively uncommon, especially in the areas of causal effects relationship (Birdsall 2010; Berg

& Ostry, 2011; Ianchovichina & Gable, 2012; OECD, 2015; OECD, 2018; Asian Development Bank (ADB) Strategy, 2020; Europe 2020 Strategy).

Moreover, despite well-established empirical connections between financial sector development and economic growth (which remain a subset of inclusive growth) with several studies supporting the positive relationship between them (starting with the pioneering work of Schumpeter, 1911; Goldsmith, 1969; McKinnon, 1973; Levine, 1997; Khan & Senhadji, 2000; Christopoulos & Tsionas, 2004; Jedidia, Boujelbène & Helali, 2014; Fidrmuc & Ghosh, 2014; Beck & Maimbo 2013; Durusu-Ciftci, Ispir & Yetkiner, 2017; Bist, 2018 & Wu *et al*., 2020), still there is no consensus on how financial sector development affects growth and this remains unfinished business in the literature. For instance, some authors believe that the "general effect" of financial sector development on growth depends highly on some set of indicators and concluded that financial sector development influences growth negatively in the economy while some were of the idea that the nexus between financial sector development and economic growth is non-linear. Thus, they concluded that the connection between them is somehow "complex" and ought to be handled with extreme caution (Singh, 1997; Andersen & Tarp, 2003; Ayadi, Arbak, Naceur, & De Groen, 2015; Ibrahim, 2017; Nyasha & Odhiambo, 2018).

Besides, none of the recent studies in the developing countries of Africa (either country-specific or cross-section) considers "financial sector development- inclusive growth nexus" in the area of 'feedback effect' (see Adeniyi, 2015; Waiyaki, 2016; Olusola & Yinusa, 2016; Ibrahim, 2017; Adediran *et al*., 2017; Keho, 2017; Kheir, 2018; Aluko & Ibrahim, 2020; Yinusa, Aworinde & Odusany, 2020). Thus, this study deviates from extant studies on finance-growth nexus by using financial sector development index to capture the gaps in financial service and inclusive growth which provides more information about an economy than ordinary growth (GDP); and at the same time provides comparative analyses at SSA sub-regional communities.

The rest of the paper is structured as follows. Section 2 centers on the methodology/model specification while Section 3 provides information on the measurement of variable and sources of data. Section 4 presents the main empirical results while section 5 concludes the study.

2.0 Model Specification

Following supply-leading hypothesis with the arguments that development in "financial sector" is vital and fundamental to the growth of any economy and demand-following hypothesis" which hypothesizes that it is economic growth that drives financial sector development, the direction of causality concerning financial development and inclusive growth in SSAs nations in this study is captured with the "panel causality test" introduced by Dumitrescu & Hurlin in 2012 (D-H dynamic panel causality model).

To account for individual differences (heterogeneity) cross-sections (countries) and resolve the challenge of "cross-sectional dependence" in cross–country panel models, the D-H "dynamic panel causality test" is not conditioned on the presence of cointegration. It puts the heterogeneity of contributory nexus in addition to the heterogeneity of the model used into consideration and this is performed within a panel Vector Autoregressive (VAR) modeling framework as follows:

$$FSD_{i.t} = \alpha_{1i} + \sum_{j=1}^{k} \theta_{1i}^{j} FSDI_{i,t-j} + \sum_{j=1}^{k} \beta_{1i}^{j} IGI_{i,t-j} + \sum_{j=1}^{k} \gamma_{1i}^{j} X_{i,t-j} + \varepsilon_{1i,t} \quad 1$$

$$IGI_{i,t} = \alpha_{2i} + \sum_{j=1}^{k} \theta_{2i}^{j} IGI_{i,t-j} + \sum_{j=1}^{k} \beta_{2i}^{j} FSDI_{i,t-j} + \sum_{j=1}^{k} \gamma_{1i}^{j} X_{i,t-j} + \varepsilon_{2i,t} \quad 2$$

With i =1..., N and t=1..., T

Where $FSDI_{it}$ is the level of financial sector development indicator of country i at time t; IGI_{it} remains the vector of inclusive growth indicators of country i at time t; X_{it} denotes a set of other independent variables. α_{1i} and α_{2i} are fixed (individual-specific) outcomes. The "lag order K" is expected to be alike for all cross-sections. The autoregressive parameters ($\theta_{1i}^{j}, \theta_{2i}^{j}$) and regression coefficients ($\beta_{1i}^{j}, \beta_{2i}^{j}$) can differ across countries.

The model above remains founded on a Wald statistic which tests the "homogeneous non–causality (HNC)" hypothesis of absence of causation for all cross-sections ($H_0: \beta_i = 0,\ i\ ranges\ from\ 1\ to\ N$) against the other hypothesis–"heterogeneous non–causality (HENC)" hypothesis of the presence of causation for at least one cross-section ($H_0: \beta_i = 0,\ i\ ranges\ from\ 1\ to\ N_1;\ \beta_i \neq 0,\ i\ ranges\ from\ N_1 + 1,\ N_1 + 2,\ N_1 + 3,\ to\ N$). The test statistic converges sequentially to a standard normal distribution with k degrees of freedom under the null hypothesis of HNC and it is computed by averaging specific Wald statistics of Granger non–causality tests. This individual Wald statistics (say $W_{N,T}^{HNC}$) can be obtained by.

$$W_{N,T}^{HNC} = \frac{1}{N} \sum_{i=1}^{N} W_{i,T} \quad 3$$

Where $W_{i,T}$ denotes individual Wald statistic for the ith cross-section which is presumed to be identically and independently distributed.

3.0 Measurement of Variable and Sources of Data

The study uses annual data over the study period of 2000 to 2019 (20 years). The descriptions, measurements of variables and the sources of data are presented below.

Table 1 Description and Measurement of Variables

VARIABLES	DESCRIPTION	MEASUREMENTS	SOURCE
IGI	This is an evolutional dimension and broad-based high level of economic growth which allows the poor to benefit and participate in the economic growth process. Inclusive growth provides more information about the growth of an economy than ordinary GDP.	Inclusive Growth Index is generated in this study via key indicators and pillars of inclusive economic growth such as Education expenditure (%GDP), Mortality rate under-5, primary school enrolment, Health expenditure (%GDP), GDP per capita, investment, total reserve, and Employment to population ratio, 15+, total (%). using the Z-sum score technique which is the standardized score (Kothari, 1978; Kiani and Ullah, 2015; Khan, Khan, Safdar, Munir, and Andleeb,2016).	WDI (2021).
FSDI	Financial sector development index	FSD index is a composite measure of financial sector development that contains nine indicators that summarize how the developed financial sector is; using financial institutions and financial markets in terms of their depth, access, and efficiency. These indicators are aggregated into an overall index of financial sector development. FSDI index is a more "comprehensive measure" of financial sector development worldwide than every other indicator (such as private credit to GDP ratio, the ratio of broad money to income, monetary aggregates such as M2 or M3 to income, the ratio of banking deposit liabilities to income, domestic credit to private sectors to GDP and ratio of domestic credit to income, private credit to income and the ratio of domestic credit to income) of financial sector development that explains just a facet of financial development. (IMF, 2015; Sahay, 2015; Svirydzenka, 2016; OECD, 2015 & 2018).	International Financial Statistics, IFS (2020).
GDP per capita	Indicator of inclusive economic growth	GDP at purchaser's prices. It is calculated without making deductions for depreciation of fabricated assets or depletion and degradation of natural resources. Data are in constant 2017 international dollars.	WDI (2021).

Education expenditure	Education expenditure (%GDP): Indicator of inclusive economic growth	This includes current, capital, and transfers which are measured as a percentage of GDP. It incorporates expenditure funded by transfers from international sources to the government.	WDI (2021).
School enrollment	School enrollment, primary (% gross) level in "public and private schools". Indicator of inclusive economic growth	This is measured as the "ratio of total enrollment", irrespective of age to the population.	WDI, (2021)
Health expenditure	Health expenditure (%GDP): Indicator of inclusive economic growth	Measured as health expenditure as a percentage of GDP	WDI (2021).
Total reserves	Total reserves	Comprised of holdings of monetary gold, special drawing rights, and holdings of foreign exchange under the control of monetary authorities.	WDI (2021).
INV (Investment)	Gross Capital Formation measures the level of domestic investment in the economy. Indicator of inclusive growth	Articulated as a "percentage of GDP".	WDI (2021).
Mortality Rate	Mortality rate, under-5 (per 1,000 live births): Indicator of inclusive growth	Expressed as "probability per 1,000" that a newborn baby will die before "reaching age five".	WDI (2021).
Employment	Employment to population ratio. Indicator of inclusive economic growth	Employment to population ratio, 15+, total (%) (modeled ILO estimate)	WDI (2020).

4.0 Findings and Discussion of Results

This section centers on the findings and discussion of results regarding the direction of causality between financial sector development and inclusive growth in sub-Sahara African (SSA) countries using the "panel causality test" that overcomes the challenge of cross-sectional dependence in cross–country panel models and at the same time accounts for individual differences (heterogeneity) across countries (Dumitrescu & Hurlin, 2012). Following Dumitrescu & Hurlin's (DH) panel causality test which is a Granger non–causality test procedure that is not conditioned on the presence of cointegration, the results are in Tables 1 and 2 reveal the findings of this study concerning these causal links in selected sub-Saharan African (SSA) countries and SSA sub-regions.

4.1 Financial Sector Development - Inclusive Growth Causality Nexus in SSA

Starting with the panel of selected SSA countries and other sub-regional communities, Table 1 shows there is evidence of unidirectional causality from inclusive growth (IGI) to financial sector development (FSDI) in sub-Saharan Africa (SSA) region. This implies that financial sector development in the SSA region does not cause inclusive growth. It also suggests that, as there is no causality from the financial sector to inclusive, it is only the increase in inclusive growth that causes changes in the financial sector. Thus, inclusive growth promotes further demand for financial services which in turn causes further development in the financial sector and not the other way round. Comparatively, there is substantial variation at the SSA sub-regional level. That is two out of four sub-regions examined have unidirectional causality while the other two show evidence of no causality in their regions. Table 1 reveals, like the case in the SSA panel, that there exist unidirectional causality running from inclusive growth to financial sector development in West and South African sub-regions while there is no evidence of causality in the remaining two (East and Central African) sub-regions of sub-Saharan African (SSA). This infers that all-encompassing growth matters in the SSA region and it remains an essential ingredient for development in the financial sector.

These outcomes of unidirectional causality running from inclusive growth to financial sector development stand in line with the theoretical proposition of demand-following hypothesis (also known as "growth – led finance hypothesis" by Robinson, 1952; Patrick, 1966) developed on the impression that growing economic activities via inclusive growth influence financial systems and as such financial sector development is seen as a product of a growth that is inclusive in nature; as supported by the findings of Agbetsiafa (2003); Waqabaca (2004); Trew (2006); Ang and McKibbin (2007); Odhiambo (2010) and Nwakobi, Oleka and Ananwude (2019) that financial development does not cause changes in growth but it remained influenced by economic growth. On the contrary, the results contradict the outcome of causality and that of bi-directional nexus (feedback hypothesis) as revealed by the works of Kar and Pentecost (2000), Calderon and Liu (2003), Chuah and Thai (2004), Antonios (2014), Agbélénko and Kibet (2015), Yılmaz and Demirhan (2021). Similarly, it contests against the "supply-leading hypothesis" which asserts that development in the financial sector is vital and fundamental to the growth of the economy as maintained by Odedokun (1996), Levine and Zervos (1998), Rajan and Zingale (1998), Habibullah and Eng (2006), Odhiambo (2010), Uddin, Shahbaz, Arouuri and Teulon (2015), Beck and Maimbo (2014); Durusu-Ciftci, Ispir and Yetkiner (2017), Bist (2018) among others.

Having discussed the outcomes of the causal relationship between financial sector development and inclusive growth in sub-Saharan African (SSA) and other SSA sub-regional communities, unlike extant cross-sectional studies in finance-growth nexus, the focus of this study is shifted

to the causal analysis of each of the selected sub-Saharan African (SSA) countries. Table 2, Figures 1 and 2 provide detailed information on the analysis of the causal relationship between financial sector development and inclusive growth in the selected countries. Therefore, when each of the selected countries is considered separately, the research outcome reveals some level of variations at individual country-specific levels (see Table 2).

Relatively, this result shows that Twenty- Four (24) out of the Thirty-Two (32) selected countries do not have evidence of causality (no causality) while the remaining eight (8) countries show unidirectional causality. Four (Burkina Faso, Botswana, Mozambique, and Togo) out of these Eight countries indicate unidirectional causality running from inclusive growth (IGI) to financial sector development (FSDI) while the remaining four countries (Cameroon, Chad, Liberia, and Uganda) show unidirectional causality from financial sector development (FSDI) to inclusive growth (IGI). Whereas, the evidence of bi-directional causality is non-existence (see Figures 3 and 4).

By implication, only 25 percent (one-quarter) of the selected countries have evidence of unidirectional causality and no evidence of feedback outcome or reverse causality (bi-directional causality) in any of the selected countries and this supports the works of Kar and Pentecost (2000), Calderon and Liu (2003), Chuah and Thai (2004) which emphasized evidence of no feedback or reverse causality between finance and growth nexus. It also implies that 12.5 percent supports growth-led finance/ demand following hypothesis where inclusive growth causes changes in the development of the financial sector as established by the studies of Agbetsiafa (2003), Waqabaca (2004), Ang and McKibbin (2007), Odhiambo (2009), and, Gautam (2014). The other 12.5 percent indicate supply- leading hypothesis in which the development in the "financial sector" remains vital and fundamentally causes growth that is inclusive in nature as supported by the works of Levine and Zervos (1998), Rajan and Zingale (1998), Odhiambo (2002), Habibullah and Eng, (2006), Odhiambo (2009; Uddin, Shahbaz, Arouuri and Teulon (2013), Beck and Maimbo (2014); Durusu-Ciftci, Ispir and Yetkiner (2017), and Bist (2018).

Moreover, this research outcome reveals categorically that 75 percent (three–quarter) of the selected countries demonstrate no evidence of causality whatsoever over the study period. This indicates that neither inclusive growth (IGI) nor financial sector development causes each other in most sub-Saharan African (SSA) countries.

Table 1. Results of FSDI-Inclusive growth (IGI) Causality Nexus in SSA and sub-regions

Panels of SSA & SSA sub-regions	**H_0: it does not Granger-cause fsdi**			**H_0: fsdi does not Granger-cause igi**			**Causality Inference**
	Wald Statistic	**P-value**	**Decision**	**Wald Statistic**	**P-value**	**Decision**	
SSA panel	1.5840	0.020**	Reject	1.2997	0.231	Do not reject	Unidirectional (IGI → FSDI)
SSA sub-Regional Communities							
West African Region	1.7704	0.071***	Reject	1.1371	0.748	Do not reject	Unidirectional (IGI → FSDI)
South African Region	2.4680	0.002*	Reject	0.5847	0.378	Do not reject	Unidirectional (IGI → FSDI)
East African Region	0.7755	0.675	Do not reject	1.6886	0.198	Do not reject	No causality
Central African Region	0.5438	0.393	Do not reject	1.8110	0.129	Do not reject	No causality

Notes: * and ** denote rejection of null hypothesis (H_0) at 1% and 5% level of significance respectively. Also, the computation of *p*-values is based on 1000 bootstrap replications.

Source: Author's compilation using Stata -16

This suggests that there exists an independent causal relationship between inclusive growth and financial development in most of these selected countries. That is financial sector development and inclusive growth do not initiate and support each other to achieve any macroeconomic objective in these countries (Shan & Morris, 2002; Nyasha & Odhiambo, 2018). This situation could be caused by quite a lot of factors. Firstly, as established through the trend analysis and earlier findings from previous objectives (one and two) of this study, it might be that the level of development in the financial sector is too weak in most SSA countries to support inclusive growth activities. Secondly, it could be that the level of corruption and political instability is too high in most SSA countries that strategies and policies to promote inclusive growth could not cause satisfactory changes in demands for financial services that can induce development in the financial sector. Thirdly, it may be because most activities of the financial sector to sufficiently intermediate by mobilizing financial resources to promote inclusive growth are not producing impactful results in most of the selected countries in SSA because of large off-balance sheet activities of the banking sector and other political interferences in the sector (Olayiwola & Akinbobola, 2021). Lastly, it could be that the state of financial sector development in most SSA sub-region is below the required minimum level needed before the sector can effectively cause changes in inclusive growth or be stimulated by inclusive growth at the same time.

Table 2: Financial Sector Development and Inclusive Growth Causality in SSA

The panel of SSA & Selected countries in SSA	**H_0: igi does not Granger-cause fsdi**			**H_0: fsdi does not Granger-cause igi**			**Causality Inference**
	Wald Statistic	**P-value**	**Decision**	**Wald Statistic**	**P-value**	**Decision**	
SSA panel	1.5840	0.020**	Reject	1.2997	0.231	Do not reject	Unidirectional (IGI → FSDI)
Selected SSA Countries							
Angola	2.9050	0.178	Do not reject	0.4216	0.683	Do not reject	No causality
Benin	1.8040	0.570	Do not reject	0.0119	0.4847	Do not reject	No causality
Botswana	12.3924	0.000*	Reject	1.3063	0.8285	Do not reject	Unidirectional (IGI → FSDI)
Burkina Faso	10.1826	0.000*	Reject	0.1512	0.5484	Do not reject	Unidirectional (IGI → FSDI)
Burundi	0.9401	0.966	Do not reject	2.1682	0.409	Do not reject	No causality
Cameroon	1.8990	0.525	Do not reject	4.4587	0.015*	Reject	Unidirectional (FSDI → IGI)
The Central African Republic	0.0532	0.503	Do not reject	0.0735	0.512	Do not reject	No causality
Chad	0.0006	0.480	Do not reject	4.0156	0.033**	Reject	Unidirectional (FSDI → IGI)
Comoros	0.0259	0.4910	Do not reject	0.0421	0.498	Do not reject	No causality
Congo DR	0.4000	0.671	Do not reject	0.2739	0.608	Do not reject	No causality
Cote d'Ivoire	0.014	0.486	Do not reject	0.7195	0.843	Do not reject	No causality
Equatorial Guinea	0.3350	0.638	Do not reject	1.1877	0.894	Do not reject	No causality
Ethiopia	0.1874	0.566	Do not reject	2.1630	0.411	Do not reject	No causality
Gabon	0.3911	0.667	Do not reject	0.1431	0.545	Do not reject	No causality
The Gambia	1.4649	0.7424	Do not reject	2.4807	0.2951	Do not reject	No causality
Ghana	0.0037	0.481	Do not reject	0.0700	0.511	Do not reject	No causality
Guinea-Bissau	0.0887	0.519	Do not reject	2.8358	0.194	Do not reject	No causality
Kenya	1.3078	0.828	Do not reject	0.3696	0.656	Do not reject	No causality
Liberia	0.7881	0.881	Do not reject	3.8829	0.042**	Reject	Unidirectional (FSDI → IGI)
Madagascar	0.3891	0.666	Do not reject	1.2373	0.867	Do not reject	No causality
Mali	0.0519	0.503	Do not reject	0.5843	0.769	Do not reject	No causality
Mozambique	4.2457	0.022**	Reject	0.4368	0.691	Do not reject	Unidirectional (IGI → FSDI)
Namibia	0.0549	0.5039	Do not reject	0.1783	0.561	Do not reject	No causality
Nigeria	0.0037	0.481	Do not reject	0.1340	0.540	Do not reject	No causality
Rwanda	1.7517	0.5950	Do not reject	2.2312	0.384	Do not reject	No causality
Senegal	0.3802	0.661	Do not reject	1.6329	0.655	Do not reject	No causality
South Africa	1.9204	0.515	Do not reject	0.5930	0.774	Do not reject	No causality
Sudan	0.1789	0.562	Do not reject	0.4996	0.724	Do not reject	No causality
Tanzania	0.0305	0.493	Do not reject	2.7265	0.222	Do not reject	No causality
Togo	4.6926	0.009*	Reject	0.0046	0.482	Do not reject	Unidirectional (IGI → FSDI)
Uganda	1.5810	0.681	Do not reject	3.6871	0.057**	Reject	Unidirectional (FSDI → IGI)

Zambia	0.2236	0.583	Do not reject	0.8683	0.926	Do not reject	No causality

Notes: * and ** denote rejection of null hypothesis (H_0) at 1% and 5% level of significance respectively. Also, the computation of *p*-values is based on 1000 bootstrap replications.

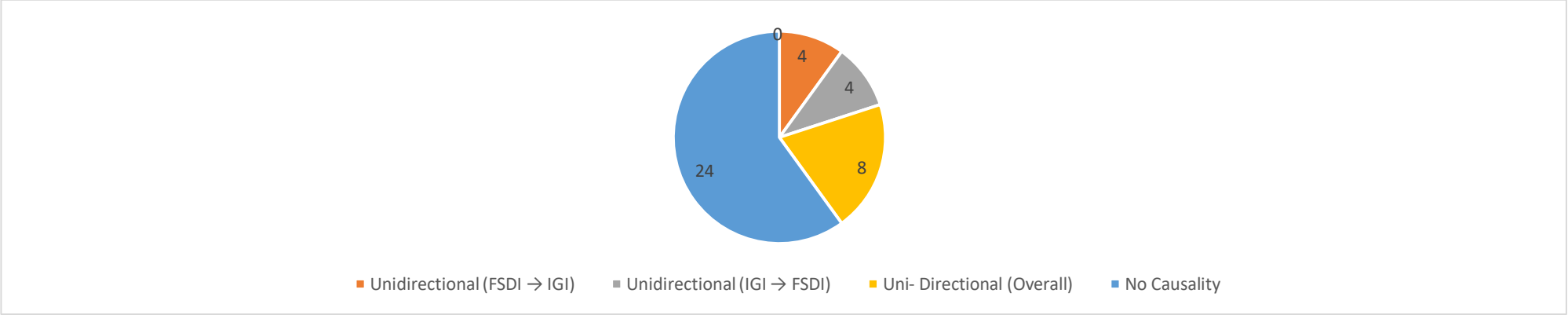

Figure 3. Financial Sector Development -Inclusive Growth Causality Nexus in SSA Countries

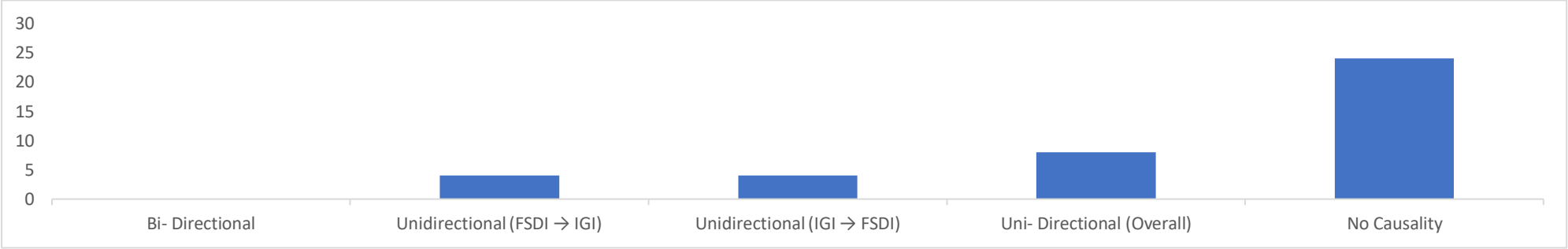

Figure 4. Financial Sector Development -Inclusive Growth Causality Nexus in SSA Countries
Source: Author's construct based on D-H causality results

5.0 Conclusion and Policy Recommendation

This study analyzed the direction of causality between financial sector development and inclusive growth in sub-Sahara African (SSA) countries. This was with the view to ascertain the nature of the relationship between financial sector development and inclusive growth in SSA countries. Annual secondary data from 2000 to 2019 on the financial sector development index and inclusive growth index. The findings from causal links between financial sector development and inclusive growth in sub-Saharan African (SSA) countries and two out of four SSA sub-regions indicated evidence of no causality from the financial development sector to inclusive. Since it is only the changes in inclusive growth that causes changes in the financial sector, this study concludes that inclusive growth matters in the SSA region and it remains an essential ingredient for development in the financial sector. Also, both inclusive growth and financial sector development are too weak to cause each other in almost 75 percent of the selected countries with evidence of no causality while bi-directional causality is nonexistent. Thus, it is recommended that policymakers in respective SSA countries should implement massive inclusive growth strategies (that are not used for only political gains) such as; human capital development, social capital development, gender development, and social protection services in form of unconditional cash-transfer, youth empowerment, school feeding programs that are all-encompassing in nature, etc. in addition to special monetary regulatory policies like liberalization, deregulation, and risk-mitigating policies that promote the development of the financial sector in the region above the minimum threshold level.

References

Adediran, O. S., Oduntan, E. & Matthew, O. (2013). Financial development and inclusive growth in Nigeria: A Multivariate Approach. *Journal of Internet Banking and Commerce*,5(4), 56 – 64.

ADB (2020). Fighting poverty in Asia and the Pacific: The poverty reduction strategy. Manila: Asian Development Bank

Adediran, O., Oduntan, E. & Oluwatoyi, M. (2017). Financial development and inclusive growth in Nigeria: A multivariate approach, *Journal of Internet Banking and Commerce*

Adediran, I. A., Yinusa D. O. & Xuan V. (2020). Twin innovation and entrepreneurship in advanced and emerging economies. https://www.researchgate.net/publication/343748373

Adusei, M. (2018). The finance–growth nexus: does risk premium matter? *International Journal of Finance*. https ://doi.org/10.1002/ijfe.1681

African Economic Outlook (2013). Structural transformation and natural resources. African Development Bank, Abidjan

Agbélénko, A. & Kibet, T. (2015). Financial development and economic growth in West African economic and monetary union (WAEMU). *African Journal of Business Management*. http://www.academicjournals.org/AJBM

Aluko O A., Ibrahim, M., & Atagbuzia, M., O. (2020): On the causal nexus between FDI and globalization: Evidence from Africa, *The Journal of International Trade & Economic Development*, DOI: 10.1080/09638199.2020.1823460

Aluko O. A., & Ibrahim, M. (2020a). Institutions and the financial development–economic growth nexus in sub-Saharan Africa. Econ Notes. https ://doi.org/10.1111/ecno.12163

Aluko, O. A., & Ajayi, M. A. (2018). Determinants of banking sector development: evidence from sub-Saharan African countries. *Borsa Istanbul Rev*iew, 18(2),122–139

Akinlo A. E., & Egbetunde, T. (2010). Financial development and economic growth: The experience of 10 sub-Saharan African countries revisited. *Review of Finance Bank*, 2(1),17–28

Agbetsiafa D.(2003). The finance growth nexus: Evidence from sub-saharan Africa. *International Advances in Economic Research*, Springer; International Atlantic Economic Society, 9(2), 172-172

Ang, J. B., & McKibbin, W. J. (2008). Financial liberalization, financial sector development, and growth: Evidence from Malaysia. CAMA Working Paper No. 2005−05. Centre for Applied Macroeconomic Analysis, Australian National University, Canberra.

Aluko, O. A. (2020). The foreign aid–foreign direct investment relationship in Africa: the mediating role of institutional quality and financial development. *Economic A*frica,40(1),77–84

Anand, R., Mishra, S. & Peiris, J S. (2013). Inclusive growth – measurement and determinants. IMF Working Paper 13/135.

Antonios, A. (2014). Financial development and economic growth: A revised empirical study for Ireland. *European Research. Studies*, 16(2),25-33.

Asian Development Bank Strategy (2020). Long-term strategic framework: Lessons from implementation, Manila.

Asian Development Bank (2013). A framework of inclusive growth: Key indicators for Asia and the Pacific.

Aye, G. C. (2013). Causality between financial depending, economic growth, and poverty in Nigeria. *The Business and Management Review*, 3(3), 1-12

Beck, T. & Maimbo, S. M. (2013). Financial sector development in Africa: Opportunities and Challenges. World Bank, Washington

Best, A., Francis, B. M, & Robinson, C. J. (2017). Financial deepening and economic growth in Jamaica. *Glob Bus Rev*, 18(1),1–18.

Bist, J. P. (2018). Financial development and economic growth: evidence from a panel of 16 African and non-African low-income countries. *Cogent Journal of Economic and Finance*, 6(1),1449780

Clarke, G., Xu, L. & Fou, H. F. (2017). Financial and income inequality: Test of alternatives theories. *World Bank Policy Research Paper*, WPS 2984. The World Bank, Washington, DC.

Dhrifi, A. (2018). Financial development and the growth-inequality triangle: A comparative study between developed and developing countries. 12(4), 472-401.

Dramane, A. (2022). The Nexus between Military Spending, Tax Revenues and Economic Growth in the G5 Sahel countries. *African Journal of Economic Review, 10(2), 56-72.*

Dumitrescu, E. I. & Hurlin, C. (2012). Testing for Granger non–causality in heterogeneous panels. *Economic Modelling* 29 (4),1450–1460.

Durusu-Ciftci, D., Ispir, M. S. & Yetkiner, H. (2017). Financial development and economic growth: some theory and more evidence. *J Policy Model*, 39(2), 290–306.

Elena, I. & Sushana, L. (2010). Inclusive growth analytics: Framework policy research working paper, World Bank, Economic Policy and Debt Department, Economic Policy Division, WP:No.4851

Fosu, A. K. (2018). The recent growth resurgence in Africa and poverty reduction: the context and evidence. *Journal of African. Economics*., (27) 1, 92–107.

Habibullah, M & Eng, Y. (2006). Does financial development cause economic growth? A panel data dynamic analysis for the Asian developing countries. *Journal of the Asia Pacific Economy*, Taylor & Francis. 11(4), 377-393.

Ianchovichina, E. & Gable, S. L. (2012). What is inclusive growth in commodity prices and inclusive growth in low-income countries, ed. by Rabah Arezki, Catherine Pattillo, Marc Quintyn, and Min Zhu? International Monetary Fund.

Ibrahim, M. & Alagidede, P. (2017a). Financial sector development, economic volatility, and shocks in sub-Saharan Africa. Phys A 484:66–81

Ibrahim. M. & Alagidede, P. (2017b). Financial development, growth volatility and information asymmetry in sub-Saharan Africa: does law matter? *South African Journal of Economics*, 85(4),570–588

Iheanacho, E. (2016). The impact of financial development on economic growth in Nigeria: An ARDL analysis. *Economies*, 4(4), 26 – 35.

International Monetary Fund, (2016). Financial development in sub-Saharan Africa – Promoting inclusive and sustainable growth.

IMF (2014). West African Economic and Monetary Union (WAEMU): Common policies of member countries Staff Report." IMF Country Report 13/92, International Monetary Fund, Washington, April.2013. "Inclusive Growth: Measurement and Determinants" IMF Working Paper No. 135, Washington, DC.

IMF (2016). Time for a Policy Reset." In Regional Economic Outlook: Sub-Saharan Africa, Chapter 1. Washington, April.

International Monetary Fund, (2007). Namibia: Financial system stability assessment, including the report on the observance of standards and codes on Banking Supervision." IMF Country Report 07/83, Washington, February.

International Monetary Fund, (2012). Globalization and inequality. World Economic Outlook, Chapter 4. Washington, DC.

IMF (2016). Sub-Saharan Africa is time for a policy reset. regional economic outlook. Sub-Saharan Africa. International Monetary Fund, Washington. World economic and financial surveys

Joseph, K. E., Olayiwola, A. S., & Yinusa, D. O. (2019). Capital inflows, manufacturing exports and economic growth in Nigeria: A threshold regression analysis. *Journal of Economics and International Finance, 11(5): 52-59.* doi: 10.5897/jeif2019.0982

Kargbo, A & Adamu, T. (2016). Financial development and economic growth in Sierra Leone. *Journal of Monetary Economics and Economic Integration*, (9)2

Khan A, Ahmed M, Bibi S (2019). Financial development and economic growth nexus for Pakistan: a revisit using maximum entropy bootstrap approach. *Empirical Economic Review,* 57(4),1157–1169. https ://doi.org/10.1007/s0018 1-018-1501-0

Khan, H., Khan, A., Ahmad, A. & Siraj, A. (2015). Financial Sector Development and Poverty Reduction. *Global Journal of Management and Business Research*, (11)5, 59-63.

Khan, A., Khan, G., Safdar, S., Munir, S. & Andleeb, Z. (2016). Measurement and Determinants of Inclusive Growth: A Case Study of Pakistan (1990-2012). *The Pakistan Development Review, (*55)4, 455– 466.

Kiani, A.K & Sana Ullah, S. (2015). The inclusive growth index: A new measurement of Pakistan's development. HEC 3rd International Social Science Conference Proceedings, pp. 163 – 169.

Levine R., Loayza, N. & Beck T. (2000). Financial intermediation and growth: Causality and Causes. *Journal Monetary Economics*, (46),31-77.

Levine, R. (2005). Finance and growth. In Handbook of Economic Growth, edited by P. Aghion and S. Durlauf. Amsterdam: Elsevier.

Munir, H. & Ullah, A. (2018). Inclusive growth in Pakistan: Measurement and determinants. *Pakistan Journal of Social Issues*, Special Issue (June 2018)

Nyasha, S. & Odhiambo, N. M. (2018). Financial development and economic growth nexus: A revisionist approach. *Economic Notes Review of Banking, Finance and Monetary Economics*, (47)1,223–229.

OECD (2014). Framework for Inclusive Growth: Meeting of The OECD Council at Ministerial Level, Paris.

OECD (2013). OECD Workshop on Inclusive Growth Government. OECD publishing

Odhiambo, N. (2010). Finance-investment-growth nexus in South Africa: an ARDL-bounds testing procedure. *Economic Change and Restructuring* (43),205-219, DOI 10.1007/s10644-010-9085-5.

Odhiambo, N. M. (2010). Is financial development a spur to poverty reduction? Kenya's experience, *Journal of Economic Studies*, 37(3),343 – 353

Olaniyi, C. O. & Oladeji, S. I. (2020). Moderating the effect of institutional quality on the finance–growth nexus: insights from West African countries. *Economic Change and Restructuring*. https ://doi.org/10.1007/s10644-020-09275 -8

Olayiwola A.S & Akinbobola T O. (2021**).** Financial Intermediation, Regulation and Macroeconomic Performance in Nigeria: Direction of Causality. *Hallmark University Journal of Management and Social Sciences (HUJMSS)* 3(1)

Olayiwola, A.S., Okunade, S.O & Fatai, M.O (2021). Savings-growth nexus revisited: An empirical analysis from Nigeria. *African Journal of Economic Review, 9(4), 223-237.*

Olayiwola, A.S & Joseph, K. E (2020). Impact of capital inflows on manufacturing exports and economic growth: An empirical Evidence from Nigeria. *Research in Applied Economics,12 (1), 1-11*. http://rae.macrothink.org

Olufemi A., Ibrahim, M. & Atagbuzia, M. (2020). On the causal nexus between FDI and globalization: Evidence from Africa, *The Journal of International Trade & Economic Development*, DOI: 10.1080/09638199.2020.1823460

Pagano, M. (1993). Financial markets and growth: an overview. *Eur Econ Rev*, 37(2–3):613–622

Pradhan, R. P. (2010). The nexus between finance, growth, and poverty in India: the cointegration and causality approach. *Asian Social Science*, 6(9), 114-122. https://doi.org/10.5539/ass.v6n9p114

Rahul, A., Mishra, S. & Shanaka, J. P. (2013). Inclusive growth revisited: Measurement and determinants. poverty Reduction and Economic Management (Prem) Network. The World Bank Economic Premise, Number 122. www.worldbank.org/economicpremise

Sahay, R., Cihak, M., N'Diaye, P. & A. Barajas. (2015a). "Financial Inclusion: Can It Meet Multiple Macroeconomic Goals?" IMF Staff Discussion Note 15/17, International Monetary Fund, Washington.

Schumpeter, J. A. (1911). The Theory of economic development. Harvard University Press, Cambridge, MA

Shahbaza, M., Tiwari, A. K. & Nasir, M. (2013). The effects of financial development, economic growth, coal consumption, and trade openness on CO2 emissions in South Africa. *Energy Policy*, (61), 1452–1459.

Svirydzenka, K. (2016). Introducing a new broad-based indicator of financial development. IMF Working Paper 16/05, International Monetary Fund, Washington

Uddin, G. S., Shahbaz, M., Arouri, M. & Teulon, F. (2015). Financial development and poverty reduction nexus: a cointegration and causality analysis in Bangladesh. *Economic Modelling*, (36), 405-412. https://doi.org/10.1016/j.econmod.2013.09.049

United Nation Conference on Trade and Development (UNCTAD) Trade and Annual Reports 2018

Vellala, G. Madala, A & Chhattopadhyay, K. (2014). A Theoretical Model for Inclusive Economic Growth in Indian Context. *International Journal of Humanities and Social Science*, (4)13.

Wandeda, D. O, Masai, W & Nyandemo, S. M. (2021). Institutional quality and economic growth: evidence from Sub-Saharan Africa countries. *African Journal of Economic Review, 9(4), 106-125*

Waqabaca, C. (2004). Financial development and economic growth in Fiji. Working paper Reserve Bank of Fiji. Economics Dept. 2004/03.

World Bank, (2012a). An update to the World Bank's estimates of consumption poverty in the developing world. The World Bank, Washington, D.C., February.

World Bank, (2012b). World Development Indicators. The World Bank, Washington, D.C.

World Bank (2015). World Development Report: Equity and Development. World Bank website.

World Bank (2018). World Development Indicators; Poverty and Inequality. World Bank, Washington

Wu, C.F., Huang, S.C., Chang, T., Chiou, C. C. & Hsueh, H. P. (2020). The nexus of financial development and economic growth across major Asian economies: Evidence from bootstrap ARDL testing and machine learning approach. *Journal of Computer and Applied Mathematics*. https ://doi.org/10.1016/j.cam.2019.11266 0

Yaya, K. (2017). Financial development and poverty reduction: Evidence from selected African countries. *International Journal of Financial Research*, (8)4, 90-98.

Yılmaz, C and Demirhan, B. (2021). The direction of causality between financial development and economic growth in Turkey. *Journal of Economics Management and Trade, (27)9,22-37.*

Yinusa, O. G., Aworinde, O. B. & Odusanya, I. A. (2020). Institutional quality, financial development, and inclusive growth: Asymmetric cointegration approach, *International Journal of Management, Economics and Social Sciences (IJMESS)*, ISSN 2304-1366, IJMESS International Publishers, Jersey City, (9)3,182-205, http://dx.doi.org/10.32327/IJMESS/9.3.2020.10