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Testing efficiency of Sudan's Islamic banks for funding Socio-Economics Development using world rankings indices

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Abstract
Islamic banks(IBs) are based on Sharia principles, which call for attention to human development. Islamic modes of finance (Murabaha, Musharaka, ...*etc.*) enables IBs to achieve socio-economic development through financing real projects compared to the conventional ones based on interest lending. The study aims to measure the efficiency of Sudan's IBs in financing socio-economic development using world rankings indices(WRsIs). The methodology took banking finance as an independent variable while socio-economic development was the dependent variable. Socio-development was measured by WRsIs including human development, press freedom, political rights, civil liberties, and prosperity. Economic development was measured by GDP growth and GDP per capita. Data covering (2011-2021) was collected from the Central Bank of Sudan (CBOS) and World Economic databases. The ordinary least squares method was used to estimate the nexus between variables. The results concluded that except for political rights, the rapid growth of banking finance (11% in 2011 to 43% in 2021) does not significantly positively influence socio-economic development. Because more50% of finance was provided through Murabaha (high return and low risk) but it doesn't stimulate economic development. The study recommends the CBOS revise policies and practical frameworks of IBs to enhance social dimensions as well as WRsIs.

Keywords: *Islamic Banks; Socio-Economics Development; World Rankings Indices*.

A. Introduction

The theoretical foundations and empirical literature on the nexus between banking system development and economic growth have been discussed in early. The connection between the development of the banking industry and economic development has attracted the interest of economists and policymakers, especially after the development of the endogeneity theories. The growth of the banking system can be defined by its ability to provide relevant finance to economic sectors. A vital banking financing helps economic sectors create services and products that satisfy and meet the expansions of demands for goods and services in the economy.

At present, banking finance is an important item bringing about economic growth, whereas the causal influence between banking finance and growth is still debated in the literature. Some economists declare that the development of the banking sector is the main core of economic growth, but others shed light on the demand-leading hypothesis as a basis of banking development. The economist Schumpeter (1911) maintained that the financial institutions through the intermediary processes help collect savings, mobilize funds, and facilitate transactions that are necessary for economic development. Empirical research conducted by Goldsmith (I969) and McKinnon(I973) illustrates the close links between the progress of the banking system and the economic development of countries.

The Islamic banking system is a part of the Islamic economic system that can only be understood in its context and not in the prevailing contexts of the capitalist economic system, socialist economic system, mixed economic system, or any other context. Islamic finance is completely based on Islamic ideology. This ideology is laden with the value of social justice. Social justice is the foundation stone of Islamic economics. Moreover, Islamic economics itself is an integral part of the Quran (the book of the greater creator Allah) and Sunnah (the sayings and actions of the Prophet Muhammad, may God bless him and grant him peace). Islam has come to organize the various aspects of social and economic life for all members of the Muslim society. The clarity and balance are the most notable characteristics of the Islamic economic system which differs from all of the other economic systems because of plenty of conventional banks with interest.

In conventional banking, interest/usury (riba) plays a major mechanism in orienting the surplus of funds to the deficit spending units (household, government, production firms, and foreign investors) while riba is forbidden in Islamic economics. (Mustafa, 2019) highlighted that, the prohibition of riba in Islam raises the question of how financial intermediation will take place in Islamic banks? Islam has stimulated greater reliance on equity and profit-loss sharing by stressing one following Islamic modes of finance; Mudarabah (passive partnership), Musharakah (active partnership), and shares of joint-stock companies (a mix of both the Mudarabah and Musharakah modes), Murabahah (cost plus service charge), Ijarah (leasing), Ijarah wa iqtina (hire-purchase), Salam (forward delivery contract), Istisna (contractual production), and Qard ALhassana (zero-interest loan).

Islamic banks(IBs) are based upon Islamic jurisprudence known as "fiqh al-mu'amalat" which calls for applying social equity in all banking activities. The principles of Sharia are centered on concern for morality and community development in the first place and stress the transparency of contractual obligations. IBs provide funds to approved products with avoids riba, gharar (uncertainty), maisir (gambling), and non-halal (prohibited) activities (Mustafa, 2021a). Therefore, IBs have a greater ability than conventional banks to bring about socio-economic development because they are focused on financing actual projects and assets which add real value to the economy.

Sudan is one of the pioneer Islamic and Arab countries in the field of Islamic finance as it has worked partially on the application of Islamic banking since the beginning of 1983. The period (1984−1989) witnessed flexibility in the application of the Islamic system. Banks were allowed to work either with modes of Islamic finance or lend money and provide credit facilities based on the interest rate. In 1990, the Central Bank of Sudan (CBOS) as the high official Islamic monetary authority announced that with the deepening Islamization of the banking system that interest rates become forbidden in all banking and financial transactions.

The provision of Islamic finance in Sudan has grown rapidly during the period 2011 to 2021. It increased from 11% in 2011 to 43% in 2021. But Sudan's economy continues to achieve slow growth in socio-economic development. Where Gross domestic product (GDP) and GDP per capita reached a negative growth of -1.4% and -18.7%, respectively, by 2021. Most literature, research, and previous studies were focused on analyzing the role of IBs in enhancing economic growth while the present study invented a new methodology for measuring the efficiency of IBs in financing socio-economic development. It is based on estimating the relationship between the growth of banking finance and its influence on world rankings indices (WRsIs) of Sudan.

B. Literature Review

Over the past decades, the theory of banking finance contributed significantly to understanding what exactly banks do for an economy as a whole. Theoretical research on the interrelationship between finance, growth, and development is only matched by the difference in economic ideas about the overall findings made by economists. Some of them have discussed that a developed financial system is a crucial condition for development (Gerschenkron, 1962) and that over the long sweep of history, the contribution of banking finance to economic growth has been "significant" (Stiglitz, 2010), "fundamental" (Schumpeter, 1912), or even "too obvious for a serious discussion" (Miller, 1998). Furthermore, Other economists such as (Robinson, 1952; Lucas, 1988) have demanded that the importance of banks as financial institutions in economic development is strictly overstated in academic research discussion. Zingales (2015) argued that without proper procedures, banking finance can grow disproportionately resulting in nothing, and even an influential force for planting the seeds of future banking disasters (Schularick and Taylor, 2012; Mian and Su., 2014), with negative implications for long-run growth and economic and social welfare.

The positive effect of banking finance on economic growth has established significant empirical research throughout the 1990s and beyond, starting with the contribution by Robert and Levine (1993). The studies displayed also that countries with more developed banking systems and liquid capital markets have experienced the most rapid growth (Demirgiiu-Kunt and Levine, 1996). Campbell (2020), showed that Solow's neoclassical growth model explains economic growth by capital accumulation and population growth. It concluded that economic growth is linked to an increase in GDP per capita or an increase in the real GDP.

Saleem (2007) highlighted the importance of new measurements of socio-economic development developed by the United Nations Organization in 1990. These measures are called World Rankings Indices including the human development index (HDI). It measures a country's average achievements in three basic dimensions of human development: life expectancy, educational attainment, and adjusted real income ($PPP per person). The optimum score of HDI is preferred to be >0.5 and Max=1 for the most developed countries, Press Freedom Index (PFI). The lowest value of PFI is the perfect score, Political Rights Index (PORI). The recommended score of PORI is preferred to be <40 therefore minimum scores are best, and Civil Liberties Index (CLI). The highest score of CLI is preferred to be <60 consequently minimum scores are preferred, and Prosperity Index (PI). The highest degree PI is the best score.

The linkage between the efficiency of banks and economic growth and economic development is routinely cited in published scores of papers across the world. But the ways in which these financial institutions affect socio-economic development are still researchable. Empirical research is far from definite answers to the question: Does banking finance cause rapid economic growth, and if it does, how?" (Levine, 2005). Through mining in empirical research, it is found that there is a variation in their methodologies, hypotheses, results, and conclusions.

Onour and Abdalla (2011) used a non-parametric approach to measuring the efficiency of IBs in Sudan (2007-2008). The study concluded that ownership is not a constriction of scale efficiency but a bank's size is a significant factor for scale efficiency in IBs.

AL-Tamimi (2013) examined the role of IBs in enhancing Jordanian economic development. The study concluded that the contribution of IBs to economic development in Jordan is still minimal compared to the contribution of the Jordanian banking system.

Based on hypothesis states that Muslim prevalence in a population is the most significant determinant of the spreading of IBs. Johnson (2013) analyzed the economic growth determinative power of Islamic banks. The results show that IBs are not significantly correlated with economic growth. Followed by Abdul (2015) examined the role of IBs on economic growth in Kenya (2008-2014). The results proved that the total savings had a positive influence on economic growth while total advances have a negative relationship with economic growth. Moreover, the study recommends that IBs would develop effective policies on deposit mobilization leading to more funds oriented to economic sectors.

Saida and Frikha (2016) compared IBs and conventional in their ability to contribute to economic growth by studying a sample of 120 banks from 2005 to 2012. The results reveal that IBs have a significant contribution to the GDP of developing countries.

Mhadhbi, Terzi, and Bouchrika (2017) re-examined the granger causality testing approach for the development of the banking sector and economic growth for selected developing countries (1970-2012). The results show that the causal relationship between banking sector development and economic growth exists in twenty-five countries.

Boukhatem and Moussa (2018) evaluated the impact of Islamic finance on the economic growth of 13 countries in the Middle East and North Africa region (2000-2014). The study found strong evidence that Islamic finance stimulated economic growth in the selected countries.

Ishak, Bengkalis, and Syariah (2019) investigated the role of Islamic finance in economic development in Malaysia (1994-2007). The results show that the financing of IBs plays a significant role in the Malaysian monetary transmission process and links to the real GDP.

Mustafa (2020a) answered the question of does economic growth in Sudan responds to changes in implemented financing policies of CBOS? The results reveal that economic growth has a low response to changes in financing policies. Because the imbalance of economic growth is directly related to the imbalance of providing of finance to economic sectors.

Mustafa (2020b) clarified the role of banking finance in developing Sudan's housing sector from 2011-to2018. The study concluded a weak contribution (4%- to14% of gross banking finance-oriented to developing the housing sector) of IBs in the developing housing sector due to the CBOS implemented financing policy leading to restrictions on granting finance to real estate.

Mustafa (2021b) used the monetization deepening indicators to measure the efficiency of the monetary policy in Sudan from 2000-to2018. The study used the monetization indicators as a function of; GDP per capita, return on investment deposits, banking awareness, and inflation rate. The results show that the monetary policy was ineffective because of inflation rise, a decline in the rate of return on investment deposits, a reduction in banking awareness, and a fall in GDP per capita.

Almahadin et al (2021) used the autoregressive distributed lag and the causality analysis to examine whether economic growth is elevated by banking industry development in Jordan from 1980-to 2018. The observed results show that Jordanian economic growth has a strong significant response to changes in the provision of banking finance.

(Mustafa, 2020c) illustrated that the Ordinary Least Squares (OLS) is a statistical technique that is capable of determining the line of best fit of a model and seeks to find the minimum sum of the squares of residuals. This method is extensively used in the estimation of a simple regression model.

Rushchyshyn et al (2021) investigated the effect of banking sector development on the socio-economic development of Ukraine and compare it to some European Union Countries

(2009-2019). The study reveals that the size development of the banks has a low impact on Ukraine's economy.

Review of previous empirical studies denoting that they tried to clarify the role of IBs and conventional in economic growth by taking bank finance as an independent variable and economic growth measured by the GDP growth rate as a dependent variable. Furthermore, it is noted that they neglect the social dimension of Islamic finance. This study highlights the adoption of a new methodology to measure the efficiency of Sudan's IBs in financing socio-economic development using WRsIs. Economics development is measured by the GDP growth rate and GDP per capita growth rate while social development is measured by WRsIs. Thus the following hypothesis is the core scope of the study:

H1: High level of the banking finance growth rate has a significant impact on the socio-economic development of the country.

C. Research Methodology

The study's main objective is to evaluate the efficiency of Sudan's IBs in funding socio-economic development using WRsIs. This objective can be identified in the following formula:

$$\text{Socio-Economics Development} = f(\text{Banking Finance Provided to Economic Sectors}) \quad (1)$$

"Equation (1)." implies that socio-economic development (the dependent variables) is a function of gross banking finance provided to various economic sectors (the independent variable). Economics development is measured by the GDP Growth Rate(GDPGR) and GDP Per Capita Growth Rate(GDPPCGR) while social development is measured by WRsIs. Banking finance provided to economic sectors as the independent variable is measured by Banking Finance Growth Rate (BFGR). "eq(1)." in symbols as shown below:

$$\text{GDPGR, GDPPCGR, HDI, PFI, PORI, CLI, and PI} = f(\text{BFGR}) \quad (2)$$

According to Bandlamudi and Taidala (2017), "eq(2)." implies that banks act as a link between all economic sectors by acceptable deposits and provide these sectors with needed funds. The sign of the relationship between economic-social development and banking finance is predicted to be positive. Because financing provided to economic sectors will affect positively the GDP as well as the economic growth will lead to pushing the country's world rankings toward better. It's very difficult to estimate "eq(2)." econometrically because it includes seven dependent variables and only one explanatory variable which is called Multivariate Regression Model. Therefore, to avoid the problems associated with Multivariate Regression Model, the study going to divide "eq(2)." into seven sub-seven simple regression models and put them in an econometric format as follows:

$$\text{GDPGR} = \alpha_0 + \alpha_1 \ \text{BFGR} + \mu \qquad (2-1)$$

"equation (2-1)." measures the potential influence of banking finance on GDP growth.

$$\text{GDPPCGR} = \beta_0 + \beta_1 \ \text{BFGR} + \sigma \qquad (2-2)$$

"equation (2-2)." measures the potential influence of banking finance on GDP per capita.

$$\text{HDI} = \gamma_0 + \gamma_1 \ \text{BFGR} + \varphi \qquad (2-3)$$

"equation (2-3)." measures the potential influence of banking finance on HDI.

$$PFI = \delta_0 + \delta_1 \text{ BFGR} + \omega \qquad (2-4)$$

"equation (2-4)." measures the potential influence of banking finance on PFI.

$$PORI = \varepsilon_0 + \varepsilon_1 \text{ BFGR} + \tau \qquad (2-5)$$

"equation (2-5)." measures the potential influence of banking finance on PORI.

$$CLI = \epsilon_0 + \epsilon_1 \text{ BFGR} + \rho \qquad (2-6)$$

"equation (2-6)." measures the potential influence of banking finance on CLI.

$$PI = \vartheta_0 + \vartheta_1 \text{ BFGR} + \emptyset \qquad (2-7)$$

"equation (2-7)." measures the potential influence of banking finance on the PI.
Where:
BFGR: Banking-finance growth rate.
GDPGR: GDP growth rate.
GDPPCGR: GDP per capita growth rate.
HDI, PFI, PORI, CLI, and PI have been defined in the literature.

$\alpha_0, \beta_0, \gamma_0, \delta_0, \varepsilon_0, \epsilon_0, and\ \vartheta_0$ are the intercepts.
$\alpha_1, \beta_1, \gamma_1, \delta_{01}, \varepsilon_1, \epsilon_1, and\ \vartheta_1$ are the coefficients of the independent variable BFGR.
$\mu, \sigma, \varphi, \omega, \tau, \rho, and\ \emptyset$ are the error terms.

There are many types of methods are used in scientific research to estimate a set of "eq(2-1)." to "eq(2-7).". The study used the method of OLS for estimating "eq(2-1)." to "eq(2-7).

To judge the quality of the regressions outputs of "eq(2-1 to 2-7).", the following statistics will be calculated; The Durbin Watson(DW) is used to ensure that the regression does not suffer from autocorrelation. The standardized value of DW is approximately 2.0 means that the sample is free of autocorrelation), Standard Error (S.E) is used to ensure that the regression model is on average using the data of the response variable or that the observations are closer to the fitted line. The standardized value S.E of 1.09: falls within plus/minus 2, Comparison between Akaike information criterion, R2 or Adjusted R- Squared and Schwarz Criterion helps to judge the optimal model is selected and helps select the least complex probability model among multiple options.

The study used annual secondary data covering the 2011-2021 period. Data on banking finance covering the period 2011-2021 were collected from the published annual reports of the CBOS while the other data were gathered from the World Economic Outlook database.

The selected period from 2011-to2021 is based on an important political event that occurred in Sudan in 2011 it is the secession of South Sudan.

The Unit Root Test and Augmented Dickey-Fuller (ADF) test were applied to ensure the stationary of the variables used in the estimation of the set of equations.

D. Results And Discussion

Table1 shows the distribution of banking finance to economic sectors in Sudan by Islamic modes of finance; Murabaha, Musharka, Mudaraba, and Salam. While table2 contains

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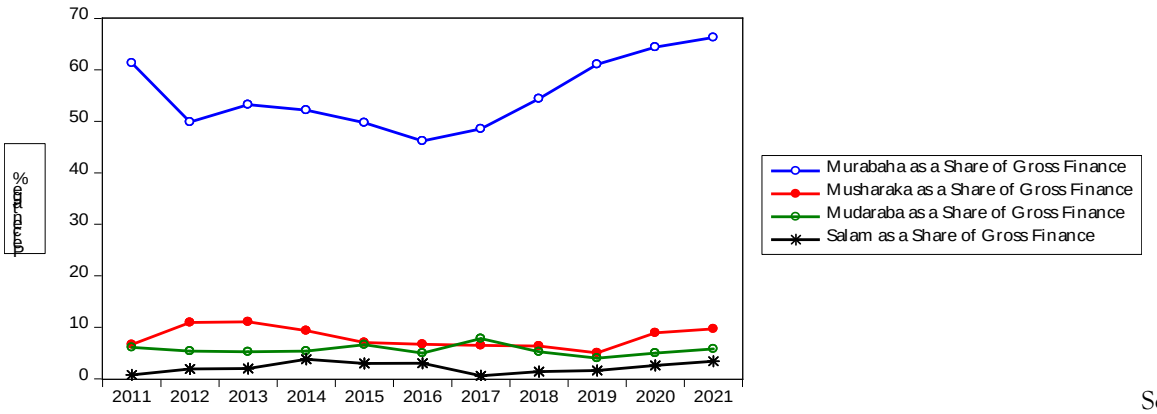
annual data that were used to estimate the set of parameters and coefficients of a system of "eq(2-1)." to "eq(2-7).".

Table. 1 The flow of Banking Finance by Islamic Modes (2011-2021)

Year	Murabaha as share % of Gross Finance	Musharaka as share % of Gross Finance	Mudaraba as share % of Gross Finance	Salam as share % of Gross Finance
2011	61.35	6.64	6.11	0.75
2012	49.88	10.94	5.38	1.91
2013	53.26	11.06	5.24	1.97
2014	52.17	9.37	5.39	3.79
2015	49.76	7.05	6.61	2.99
2016	46.21	6.71	5.00	3.00
2017	48.54	6.47	7.79	0.59
2018	54.40	6.36	5.23	1.40
2019	61.10	5.01	4.02	1.60
2020	64.41	8.90	5.00	2.60
2021	66.30	9.70	5.80	3.40

CBOS, (2021).

Figure 1 The Trend of the flow of Banking Finance by Islamic Modes (2011-2021)



Source : Author's production using EViews.10 based on data of table1

As seen in table1 and figure1 the provision of finance by Murabaha mode ranged between (46.21%-66.3%) which gives us clear evidence that IBs in Sudan were concentrated on Murabaha mode to finance their clients during the period 2011-2021. IBs prefer the use of Murabaha due to it having a high predetermined return, low risk, guaranteed, easy to apply, easy to explain to the clients, and pre-known profits compared to Mudaraba and Musharaka. As for Musharaka mode, it is noticed that ranged between (6.36%-11.9%). While the provision of finance by Mudaraba mode ranged between (4.02%-7.79%). Sudan is an agricultural country and its economy depends mainly on agricultural products. Salam mode is the appropriate method used in funding the agricultural sector, despite, that finance granted in this mode does not exceed 3.4% of the total banking finance. Therefore, IBs in Sudan have preferred the use of modes that generate returns over those support economic growth, such as Musharaka and Salam.

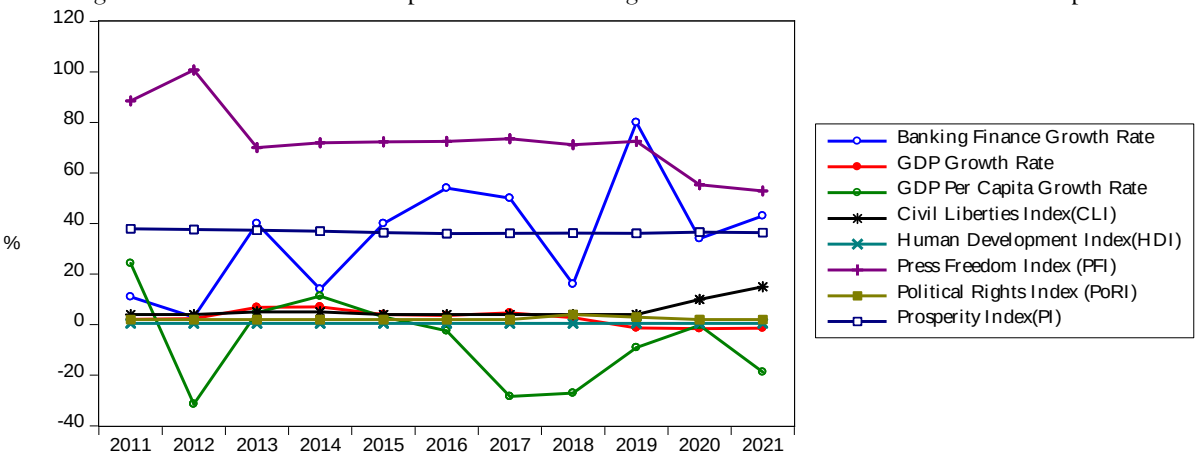
Table 2 Data Matrix

Year	BFGR	GDPGR	GDP PCGR	HDI	PFI	PoRI	CLI	PI
2011	11	2.1	24.3	0.47	88.5	2	4	37.89

2012	3	2.4	-31.4	0.47	100.75	2	4	37.61
2013	40	6.8	4.8	0.49	70.06	2	5	37.34
2014	14	7	11.3	0.49	71.88	2	5	37.00
2015	40	4	3.1	0.50	72.34	2	4	36.37
2016	54	3.6	-2.4	0.50	72.53	2	4	36.06
2017	50	4.7	-28.4	0.51	73.56	2	4	36.16
2018	16	2.8	-27.1	0.51	71.13	4	4	36.18
2019	80	-1.3	-9.1	0.51	72.45	3	4	36.16
2020	34	-1.6	-0.26	0.50	55.33	2	10	36.57
2021	43	-1.4	-18.7	0.47	52.93	2	15	36.42

Source: World Economic Outlook, (2022) and CBOS, (2021).

Figure 2 The Interrelationships between Banking Finance and Socio-Economic Development



Source: Author's production using E.Views.10 based on data of table1

Table2 and figure2 have displayed the primary picture of the nexus between the growth of banking finance and the general trend of socio-economic development indices. It is noted that there are clear observations between the variation in growth of banking finance and fluctuations in GDP growth, GDP per capita, and press freedom. While other indices have no clear response to changes in banking finance levels. The econometric analysis will judge the power and direction of the relation between the variables.

Table 3 Descriptive Statistics

Item	BFGR	GDPGR	GDPPCGR	HDI	CLI	PORI	PFI	PI
Mean	35.00	2.6454	-6.7145	0.492	5.727	2.272	72.86	36.71
Median	40.00	2.8000	-2.4000	0.500	4.000	2.000	72.34	36.42
Maximum	80.00	7.0000	24.300	0.510	15.00	4.000	100.7	37.89
Minimum	3.000	-1.6000	-31.400	0.470	4.000	2.000	52.93	36.06
Std. Dev.	22.64	3.0582	17.944	0.016	3.552	0.646	13.19	0.648
Skewness	0.355	-0.1393	0.0554	-0.461	1.961	2.077	0.557	0.722
Kurtosis	2.506	1.9046	1.9575	1.726	5.381	5.806	3.333	2.018
Jarque-B	0.343	0.5855	0.5036	1.133	9.656	11.51	0.619	1.396
Probability	0.8420	0.7462	0.7773	0.567	0.008	0.003	0.733	0.497
Sum	385.00	29.100	-73.860	5.420	63.00	25.00	801.4	403.7
Sum Sq.D	5128.0	93.527	3220.1	0.003	126.2	4.181	1739.7	4.210
Observations	11	11	11	11	11	11	11	11

Source: Author's Calculation using E.Views.10 based on data of table1

Table 3 reported a summary of the descriptive statistics of variables used in the analysis. As seen, BFGR in Sudan on average was %35exhibits a very high standard deviation of 22.26 causing variation between $(\text{Min}_{\text{BFGR}} = \%3.0;\ \text{Max}_{\text{BFGR}} = \%80 \text{ with a probability of } 0.84)$. The average rate of GDP growth (GDPGR) of %2.64 with a standard deviation of 3.1 reflects a distance between the minimum rate of %-1.6 and maximum rate of %7 with a probability of 0.74. As for the growth of GDP per capita, we noted that it exhibits a negative value for the mean of %-6.7 and %-31.4 for the minimum rate. Also, descriptive statistics show that almost no difference between the Minimum and the Maximum HDI, the Minimum and the Maximum PI, the Mean and the Median HDI, the Mean and the Median PI, the Mean and the Median PORI, and the Mean and the Median PFI as follow:

CLI have almost no difference in the following values:

$(\text{Min}_{\text{HDI}} = 0.47\ ; \text{Max}_{\text{HDI}} = 0.50)$,

$(\text{Min}_{\text{PI}} = 36.0\ ; \text{Max}_{\text{PI}} = 37.8)$,

$(\text{Mean}_{\text{HDI}} = 0.49\ ; \text{Median}_{\text{HDI}} = 0.50)$ and

$(\text{Mean}_{\text{PI}} = 36.7\ ; \text{Median}_{\text{PI}} = 36.4)$,

$(\text{Mean}_{\text{PORI}} = 2.2\ ; \text{Median}_{\text{PORI}} = 2.0)$, and

$(\text{Mean}_{\text{PFI}} = 72.8\ ; \text{Median}_{\text{PFI}} = 72.3)$.While a variation exists between

$(\text{Mean}_{\text{CLI}} = 7.5\ ; \text{Median}_{\text{CLI}} = 4.0)$

$(\text{Min}_{\text{CLI}} = 15\ ; \text{Max}_{\text{CLI}} = 4.0 \text{ with a probability of } 0.008)$. Compared Sudan's social indices to the standardized scores of World Rankings Indices exhibits

$(\text{Mean}_{\text{HDI}} = 0.49;\ \text{Standardized Score}_{\text{HDI}} > 0.5\ )$,

$(\text{Mean}_{\text{CLI}} = 5.7;\ \text{Standardized Score}_{\text{CLI}} < 60\ )$,

$(\text{Mean}_{\text{PORI}} = 2.2;\ \text{Standardized Score}_{\text{PORI}} < 40\ )$,

$(\text{Mean}_{\text{PFI}} = 5.7;\ \text{Standardized Score}_{\text{PFI}} = \text{The lowest score is preferred}\ )$, and

$(\text{Mean}_{\text{FI}} = 36.71;\ \text{Standardized Score}_{\text{PI}} = \text{The highest is the best score})$.

Table 4 Correlation Matrix

Item	BFGR	GDPGR	GDPPCGR	HDI	CLI	PORI	PFI	PI
BFGR	1.0000	-0.2925	-0.0717	0.5485	0.0820	0.0478	-0.4643	-0.6752
GDPGR	-0.2925	1.0000	0.2106	0.0861	-0.5657	-0.1838	0.3112	0.2348
GDPPCGR	-0.0717	0.2106	1.0000	-0.1963	-0.0997	-0.3718	-0.0477	0.4064
HDI	0.5485	0.0861	-0.1963	1.0000	-0.3685	0.4952	-0.3207	-0.7577
CLI	0.0820	-0.5657	-0.0997	-0.3685	1.0000	-0.2255	-0.7004	-0.1311
PORI	0.0478	-0.1838	-0.3718	0.4952	-0.2255	1.0000	-0.0453	-0.3804
PFI	-0.4643	0.3112	-0.0477	-0.3207	-0.7004	-0.0453	1.0000	0.5945
PI	-0.6752	0.2348	0.4064	-0.7577	-0.1311	-0.3804	0.5945	1.0000

Source: Author's Calculation using E.Views.10 based on data of table1

Table4 shows that variables BFGR, PFI, and PI are correlated highly but their correlation problem is insignificant since the study will go to estimate separately each dependent variable in its relation to changes in the banking finance provided to the economic sectors.

Table 5 Stationary Results (ADF Test)

Variables	**5% ca. Value**	**P-value at Level**	**P-value at 1st or 2nd**	**Status**	**Format of Estimation**
BFGR	-3.320969	Not Required	0.0159	I(1)	D(BFGR)
GDPGR	-3.320969	Not Required	0.0049	I(1)	D(GDPGR)

GDPPCGR	-3.212696	0.0242	Not Required	I(0)	GDPPCGR
HDI	-3.320969	Not Required	0.0008	I(2)	D(HDI,2)
CLI	-3.320969	Not Required	0.0524	I(2)	D(CLI,2)
PORI	-3.403313	Not Required	0.0739	I(2)	D(PORI,2)
PFI	-3.259808	Not Required	0.0039	I(1)	D(PFI)
PI	-3.259808	Not Required	0.0453	I(1)	D(PI)

Source: Author's Calculation using E.Views.10 based on data of table1

The first step in the empirical analysis is to examine whether the considered variables are stationarity or not. The famous test for data stationarity is unit root testing using augmented Dickey-Fuller. Table5 shows that GDPPCGR is stationary at the level. BFGR, GDPGR, PFI, and PI are stationarity at 1st difference while HDI, CLI, and PORI are stationarity at 2nd difference.

Table 6 Influence of Banking Finance on GDP Growth

Dependent Variable: D(GDPGR)				
Method: OLS				
Sample (adjusted): 2012 2021				
Included observations: 10 after adjustments				
Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*
C	-0.317887	0.779583	-0.407766	0.6941
D(BFGR)	-0.010035	0.024121	-0.416043	0.6883
R-squared	0.021178	Mean dependent var		-0.350000
Adjusted R-squared	-0.101174	S.D. dependent var		2.337734
S.E. of regression	2.453145	Akaike info criterion		4.809475
Sum squared resid	48.14335	Schwarz criterion		4.869992
Log-likelihood	-22.04737	Hannan-Quinn criteria.		4.743088
F-statistic	0.173092	Durbin-Watson stat		1.659243
Prob (F-statistic)	0.688315			

Source: Own Calculation, using E.Views.10 based on data of table1

As seen in the table (6), the DW statistic reached a value of 1.7 nearly closed to the standardized value of 2 showing that regression does not suffer from high autocorrelation. Criteria of Standard Error, Akaike, and Schwarz represent that the optimal model is not selected compared to the value of R2. The value of Adjusted R- Squared is -0.1 because the estimated parameter BFGR appeared with a weak negative sign of -0.01and has a probability value of 0.6883 telling that if IBs expand grant financing to economic activities would probably reduce the GDP growth. This result does not agree with the theory of banking and finance but it tells us that the banking sector in Sudan inefficiently operates or the banking finance might direct to funding unreal activities leading not add real value to the economy.

Table 7 Influence of Banking Finance on GDP Per Capita

Dependent Variable: GDPPCGR				
Method: OLS				
Sample (adjusted): 2012 2021				
Included observations: 10 after adjustments				
Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*
C	-10.06114	5.150440	-1.953452	0.0865

D(BFGR)	0.076605	0.159356	0.480715	0.6436
R-squared	0.028075	Mean dependent var		-9.816000
Adjusted R-squared	-0.093416	S.D. dependent var		15.49932
S.E. of regression	16.20709	Akaike info criterion		8.585632
Sum squared resid	2101.359	Schwarz criterion		8.646149
Log-likelihood	-40.92816	Hannan-Quinn criteria.		8.519245
F-statistic	0.231087	Durbin-Watson stat		1.385290
Prob(F-statistic)	0.643590			

Source: Author's Calculation using E.Views.10 based on data of table1

Table7 shows that the estimated parameter of growth of banking finance (BFGR) has a weak positive sign to (GDPPCGR) because the probability value is so less than 0.05 (0.6436). An increase in the growth of banking finance by one percent might lead to improving GDPPCGR by (0.028075) percent.

Table 8 Influence of Banking Finance on Human Development

Dependent Variable: D(HDI,2)				
Method: OLS , Sample (adjusted): 2013 2021				
Included observations: 9 after adjustments				
Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*
C	-0.003516	0.004941	-0.711554	0.4998
D(BFGR)	0.000166	0.000145	1.141790	0.2911
R-squared	0.157001	Mean dependent var		-0.002778
Adjusted R-squared	0.036572	S.D. dependent var		0.014973
S.E. of regression	0.014697	Akaike info criterion		-5.409248
Sum squared resid	0.001512	Schwarz criterion		-5.365420
Log-likelihood	26.34161	Hannan-Quinn criteria.		-5.503828
F-statistic	1.303684	Durbin-Watson stat		2.792349
Prob(F-statistic)	0.291090			

Source: Author's Calculation using E.Views.10 based on data of table1

Table 8 shows that the estimated parameter of BFGR performed a little positive influence on the HDI because the probability value of BFGR is less than (0.05) approximately (0.2911) exhibiting that the increase in the growth rate of banking finance by one percent maybe leads to an enhancement the human development by (0.000166) percent. On the other hand, as shown in table3 the descriptive statistics of HDI denotes that the position of human development in Sudan is below the standardized score from 2011-to 2021.

Table 9 Influence of Banking Finance on Civil Liberties

Dependent Variable: D(CLI,2)				
Method: OLS				
Sample (adjusted): 2013 2021				
Included observations: 9 after adjustments				
Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*
C	0.667153	0.716500	0.931128	0.3828
D(BFGR)	-0.025109	0.021096	-1.190255	0.2727
R-squared	0.168321	Mean dependent var		0.555556

Adjusted R-squared	0.049509	S.D. dependent var	2.185813
S.E. of regression	2.131017	Akaike info criterion	4.544206
Sum squared resid	31.78863	Schwarz criterion	4.588033
Log-likelihood	-18.44892	Hannan-Quinn criteria.	4.449626
F-statistic	1.416707	Durbin-Watson stat	2.145689
Prob(F-statistic)	0.272742		

Source: Author's Calculation using E.Views.10 based on data of table1

Table 9 illustrates that the estimated parameter of BFGR showed a positive sign (probability of 0.2727) representing that a rise in banking finance by one percent would probably drop the CLI by almost -0.03 percent consequently enhancing the position of civil liberties. On the other hand, as shown in table2 the descriptive statistics of CLI presented in table2 supported the estimated results. Since early 2018 Sudan has been swept by an internal revolution (civil liberties) in line with the Arab spring revolutions. Sudan's revolution aims to improve the economic position and raise the standard of living for citizens. Someone might ask how bank finance and civil liberties are linked? The estimated answer is that in the absence of a theoretical basis, this study attempts to shed light on the importance of developing new methodologies that lead to bridging the research gap and helps explain the relationship between the development of the banking sector and world rankings indices.

Table 10 Influence of Banking Finance on Political Rights

Dependent Variable: D(PORI,2)				
Method: OLS				
Sample (adjusted): 2013 2021				
Included observations: 9 after adjustments				
Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*
C	0.109323	0.355508	0.307512	0.7674
D(BFGR)	-0.024598	0.010467	-2.349975	0.0511
R-squared	0.441001	Mean dependent var		0.000000
Adjusted R-squared	0.361144	S.D. dependent var		1.322876
S.E. of regression	1.057354	Akaike info criterion		3.142547
Sum squared resid	7.825987	Schwarz criterion		3.186374
Log-likelihood	-12.14146	Hannan-Quinn criteria.		3.047967
F-statistic	5.522382	Durbin-Watson stat		2.330847
Prob(F-statistic)	0.051089			

Source: Author's Calculation using E.Views.10 based on data of table1

Table10 explains that the DW statistic shows that regression is free from autocorrelation because the value of DW is approximately 2.0. The value of the Regression Standard Error (S.E 1.09: fall within plus/minus indicates that the regression model is closer to the fitted line. The value of the Akaike information criterion is 3.1 clarifies the optimal model has been selected compared to the value of R2. The value of the Schwarz Criterion (3.1) is moderated compared to the value of the Akaike criterion. The value of Adjusted R- Squared of 0.36 displays that the explanatory power (BFGR) described %36 of total changes in the PORI. Consequently, the value of the F-statistic is significant because it has a probability of 0.05. The projected parameter of BFGR showed a significant negative relationship between the growth of banking finance and political rights in Sudan. Because it has a probability of 0.0511 presenting that a one percent

rise in banking finance would probably reduce the PORI by 0.024598 percent consequently enhancing the position of political rights.

Table 11 Influence of Banking Finance on Press Freedom

Dependent Variable: D(PFI)				
Method: OLS				
Sample (adjusted): 2012 2021				
Included observations: 10 after adjustments				
Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*
C	-3.487854	4.006712	-0.870503	0.4094
D(BFGR)	-0.021608	0.123969	-0.174303	0.8660
R-squared	0.003783	Mean dependent var		-3.557000
Adjusted R-squared	-0.120744	S.D. dependent var		11.90956
S.E. of regression	12.60808	Akaike info criterion		8.083409
Sum squared resid	1271.709	Schwarz criterion		8.143926
Log-likelihood	-38.41705	Hannan-Quinn criteria.		8.017022
F-statistic	0.030381	Durbin-Watson stat		2.728447
Prob(F-statistic)	0.865958			

Source: Author's Calculation using E.Views.10 based on data of table1

Although the estimation results presented in table11 exhibit an insignificant negative relationship between BFGR and PFI because the value of the F-statistic is very little with a probability of 0.865958. But we can conclude that a one percent increase in the growth of banking finance may lead to reducing the PFI by 0.02160 percent as well as the lowest value of PFI is preferred. The theatrical basis between BFGR and PFI remains a challenge. Looking into the definition of PFI we can conclude some relationship between BFGR and PFI. The new methodology defines press freedom as "the effective possibility for journalists, as individuals and as groups, to select, produce and disseminate news and information in the public interest, independently from political, economic, legal and social interference, and without threats to their physical and mental safety." To reflect press freedom's complexity, five new indicators are now used to compile the Index: the political context, legal framework, economic context, sociocultural context, and security (Reporters Without Borders, 2022). If the legal framework and economic context allow IBs in Sudan to fund press activities without imposing restrictions, the empirical relationship between banking finance and PFI will establish.

Table 12 Influence of Banking Finance on Prosperity

Dependent Variable: D(PI)				
Method: OLS				
Sample (adjusted): 2012 2021				
Included observations: 10 after adjustments				
Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*
C	-0.119254	0.153086	-0.779002	0.4584
D(BFGR)	-0.007421	0.004737	-1.566660	0.1558
R-squared	0.234774	Mean dependent var		-0.143000
Adjusted R-squared	0.139120	S.D. dependent var		0.519188
S.E. of regression	0.481722	Akaike info criterion		1.553955
Sum squared resid	1.856445	Schwarz criterion		1.614472

Log-likelihood	-5.769777	Hannan-Quinn criteria.	1.487568
F-statistic	2.454423	Durbin-Watson stat	2.350863
Prob(F-statistic)	0.155829		

Source: Author's Calculation using E.Views.10 based on data of table1

Legatum Institute (2022) defines the Prosperity Index as "the framework that assesses countries on the promotion of their residents' flourishing, reflecting both economic and social wellbeing". The ranking is based on a variety of factors including wealth, economic growth, education, health, personal well-being, and quality of life. Economic prosperity refers to a country's economic growth, security, and competitiveness. Economic prosperity is important as it is a key element of quality of life and is also necessary for a country to be competitive in the global economy. Similar to the analysis of PFI we can conclude a theoretical relationship between the growth of banking finance and Prosperity. This relationship is established based on the economic context considered as a part of the definition of the PI. Moreover, the theory of banking and finance has proven that the banking sector is the backbone and basic finance line that feeds all economic sectors. As for the empirical analysis, table12 shows that the estimated parameter of the relationship between BFGR and PI appears with a small negative sign of 0.007421. In light of a probability of 0.1558, the increase in the growth rate of banking finance by one percent would probably lead to reducing the PI by (0.007421) percent. On the other hand, as shown in table3 the descriptive statistics of the growth of banking finance denotes that the mean of BFGR does not exceed of %35 during the period from 2011-to 2021. Reveals that the banking sector itself is operating inefficiently hurting social and economic development as a whole.

E. Conclusion

The key objective of the paper is to measure the efficiency of Sudan's Islamic banks in funding socio-economics development using WRsIs. Based on empirical analysis of the social development measured by WRsIs, the study concluded that except for the political rights index, the accelerated growth in Islamic finance provided to the economic sector in Sudan (2011-2021) has no significant impact on human development indicators, press freedom, civil liberties, and prosperity. On another side, the study found that there is an insignificant negative relationship between the growth of banking finance and GDP growth. This result is in contrast with the theory of banking and finance that bank finance should leave a positive impact on economic growth.

One reason that makes IBs in Sudan inefficient in promoting economic development is that they have a greater reliance on the Murabaha mode. Because it has a high return, low risks, and predetermined profit. Thus, this may also explain why the relationship between the growth of banking finance and the GDPPCGR is negative. Simply, if Islamic finance is directed through inappropriate methods to unproductive activities, it might cause a lower standard of living for citizens exhibiting a negative impact on socio-economic development.

The study recommends the CBOS (as the high Islamic monetary authority), must shed light on the importance of reviewing the practical frameworks of the operating IBs and ensure that the financing policies have a positive impact on social dimensions as well as WRsIs. Considering that the methodology used in the study is new, the study calls on researchers in future research to pay attention to developing theoretical basis and methodologies that help link and explain the nexus between banking finance and WRsIs.

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List of Non-standard Abbreviations

BFGR	Banking Finance Growth Rate
CBOS	Central Bank of Sudan
CLI	Civil Liberties Index
GDP	Gross Domestic Product
GDPGR	GDP Growth Rate
GDPPCGR	GDP Per Capita Growth Rate.
HDI	Human Development Index
IBs	Islamic Banks
OLS	Ordinary Least Squares
PFI	Press Freedom Index
PORI	Political Rights Index
PI	Prosperity Index
WRsIs	World Rankings Indicators