

## Banking Sector's Financial Performance and Economic Growth (1998-2018) The Case of Sudan

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**Abstract:** This study mainly aims to examine the impact of the banking sector's financial performance on the economic growth in Sudan. The study used the consolidated data for all Sudanese banks for the period from 1998 to 2018. Data were collected mainly from secondary sources such as reports of the Central Bank of Sudan and those of Sudanese commercial banks. In this study, Gross Domestic Product Growth Rate was applied as a measure of economic growth used as a dependent variable. Bank Return on Assets, Liquidity ratio, and Finance over deposits ratio were taken as representatives of banking sector financial performance and have been used as explanatory variables. The result of this study provided evidence that all the finance over deposits ratio (finance provision) has a positive (0.148427) influence on the Gross Domestic Product Growth Rate. The other explanatory variables have a negative impact on Gross Domestic Product Growth Rate, meaning that the banking sector's financial performance has a weak impact on the economic growth in Sudan. This study suggests that the concerned authorities should emphasize the reform of the banking sector thereby accelerating economic growth. This study provides some noteworthy information to researchers, governments, financial analysts, banking policymakers, and supervisory authorities.

**Keywords:** economic growth; commercial banks; gross domestic product; return on assets; liquidity ratio; finance provision.

### 1. INTRODUCTION

Banks have always been perceived as an engine of growth in an economy because they perform a resource allocation function, by mobilizing and channelling resources from surplus economic units to deficit units. They help in stimulating the level of

economic activities in various sectors of the economy (Alex, 2012). At the same time, a well-functioning banking sector and other financial institutions play many other important roles. They reduce the cost of transactions, asymmetric information, and moral hazard problems. They help to reduce the exposure of investors to risk through the process of risk-sharing and diversification, playing an important role in specifying the most efficient investment projects and improving corporate governance mechanism.

The objective of this paper is to examine the proposed relationship between banks' financial performance and economic growth in Sudan during the period 1998-2018.

The paper addresses the questions of whether commercial banking financial performance in Sudan has a positive or a negative impact on economic growth. Which one causes the other economic growth or the banking sector's financial performance? In order to answer these questions, the present study focuses on analysing the relationship between return on assets, liquidity ratio finance provision from customers deposits net exports as proxies for the financial performance of commercial banks while gross domestic product proxies economic growth over the period of 1998–2018, using Augmented Dickey-Fuller test, Granger causality test and Ordinary Least Square (OLS) for empirical analysis.

According to the best of my knowledge, there is no research about the impact of banking financial performance on economic growth for the period from 1998 to 2018 (before and after the separation between Sudan and South of Sudan). This is maybe the main contribution of this paper.

The rest of the paper is structured as follows: Section 2 presents a review of some relevant literature; the used data and estimation methods are presented in Section 3; Section 4 reports the results obtained with the estimations; finally, Section 5 concludes and presents recommendations.

## **2. LITERATURE REVIEW**

To find out the research gap in the selected field of the study, to find out the variables for the required model, and formulate a plan for conducting the present study, a number of related literatures have been reviewed.

Literature in this field has been mainly focussed in two directions: first, on understanding the concepts of economic growth and bank performance and, second, shed some light on the Sudan economy and banking sector.

## **2.1. Economic Growth**

Economic growth is an increase in the production of goods and services over a specific period. It can be measured in nominal or real (adjusted for inflation) terms. Traditionally, aggregate economic growth is measured in terms of gross national product (GNP) or gross domestic product (GDP), although alternative metrics are sometimes used. However, the gross domestic product (GDP) is considered as the most important economic indicator because it tells us about the overall health of the economy. Government and economic decision-makers generally use GDP in planning and formulate the policies (Hamza and Khan, 2014; Alkhazaleh, 2017).

## **2.2. Banking Sector Financial Performance**

Theoretical analysis of bank performance determinants identifies two main theories: the Market Power theory that relates bank performance to external factors and the Efficiency Structure theory that explains banking performance using internal factors. Each of these theories can be split into two models. Thus, according to the Market Power theory, bank performance is determined by the behavior of agents on the market and by its structure (Structure-Conduct-Performance model) or by the market shares (Relative Market Power model). As for the Efficiency Structure theory, the X Efficiency model postulates that the best performing banks are those with lower costs while the Scale Efficiency Hypothesis states that banks achieving high scale economies are the best performers (Ferrouhi, 2017).

Traditional performance measures are similar to those applied in other industries, with return on assets (ROA), return on equity (ROE), or liquidity ratio (LQTY). In this paper, we use (ROA), LQTY, and add to them the finance provision from deposits (FIDEP) as the main source of finance in the Sudanese banking sector due to lack of credit lines from foreign correspondents which still follow economic sanctions against Sudan. ROE was dropped due to a lack of sufficient data. The return on assets (ROA) is the net income for the year divided by total assets, usually the average value over the year.

$$\text{Return on assets} = \text{net income} / \text{average total assets}$$

$$\text{Liquidity ratio} = \text{current assets} / \text{current liabilities.}$$

$$\text{FIDEP} = \text{finance} / \text{deposits}$$

Nahidu, Ruhul, and Molla, (2019) have studied the relationship between Gross Domestic Product Growth Rate as a measure of economic growth which has been used as a dependent variable. Whereas, Bank Size, Return on Equity, Return on

Investment, and Operating Profit Growth Rate was taken as a representative of banking sector financial performance have been used as explanatory variables. The study represents a case of Bangladesh for the period 1990-2018. A positive relation between economic growth and banking sector performance has been found.

Alkhazaleh, (2017) investigated whether the performance of commercial banking contributes to economic growth. The aim is to examine the association between profitability, deposit, and credit facilities as a proxy for the performance of commercial banks while gross domestic product proxies' economic growth. The population of the study is characterized by the Jordanian banking industry; the study enclosed a period of six years from 2010 to 2015 constructed on the annual report of thirteen chosen banks. Using Ordinary Least Square, the regression outcomes found a significant positive association between measures of bank performance and economic growth. Findings demonstrate that measures of bank performance in particular profitability deposits credits have a positive relationship with economic growth as measured by GDP. The study recommended that the policy creators should make arrangements to augment and prompt the banking sector in Jordan on account of its key significance in making and advancing the development of the economy.

Ayadi (2013) explores the relationship between financial sector development and economic growth, using a sample of northern and southern Mediterranean countries for the years 1985-2009. The authors included several variables to measure the development of the financial sector to account both for quantity and quality effects. The results indicate that credit to the private sector and bank deposits are negatively associated with growth, which confirms deficiencies in credit allocation and weak financial regulation and supervision.

Pierre (2008) studied the relationship between the degrees of banking sector stability and the subsequent evolution of real output growth and inflation. Adopting a panel VAR methodology for a sample of 18 OECD countries, he finds a positive link between banking sector stability and real output growth.

Sami Ben-Naceur (2013) explores the relationship between banking efficiency and economic growth across the Mediterranean. He found that the size of the financial system positively contributes to economic growth but was unable to display any relationship between financial structure and economic growth. The direction of causality is different according to the period and the area investigated.

On the other hand, many other studies found evidence of a baking-economic growth relationship. For instance, Harrison *et al.* (1999) argue that economic growth

increases banking activity and profits and promotes the entry of more banks. Liang and Reichert (2006) found strong evidence of Granger causality between output and financial sector development suggesting that Granger causality runs from economic growth to financial sector development. Finally, Rachdi and Ben Mbarek (2011) found a long-term relationship between financial development and growth for the OECD and MENA countries. They also found that the causality is bi-directional for the OECD countries and unidirectional (from economic growth to financial sector development) for the MENA countries.

### **2.3. Sudan Economy and Banking Sector**

Sudan Economy and Banking System since 1998 till now witnessed booms and busts. Until the second half of 2008, Sudan's economy boomed on the back of increases in oil production, high oil prices, and large inflows of foreign direct investment. GDP growth registered more than 10% per year in 2006 and 2007. However Sudan has experienced many social conflicts, civil war, and, in July 2011, has lost three-quarters of its oil production due to the secession of South Sudan. Since the economic shock of South Sudan's secession, Sudan has struggled to stabilize its economy and make up for the loss of foreign exchange earnings.

The banking sector is comprised of Bank of Sudan (the central bank) and thirty-seven (37) banking institutions. These were comprised of the following: thirty-three (32) commercial banks, out of which seven (7) foreign banks. There are four (4) pure government-owned banks, five (5) specialized banks.

The banking sector experiencing many challenges that related to poor levels of capitalization, poor corporate governance, and risk management practices, regulatory arbitrage, high inflation rates, fluctuating exchange rate, and Sudan is also subject to comprehensive US sanctions despite the formal lifting of economic sanction by USA authorities since Sudan is still on the list of terrorist countries. Combinations of these factors are perceived to hinder the banking sector's impact on economic growth and may lead to the collapse of some banking institutions in the coming few years, if not manipulated.

## **3. METHODOLOGY AND DATA**

The section describes used data, defines the dependent and independent variables and their measurements, and develops a model to answer the questions of the study.

### 3.1. Data

Through this study, we make use of yearly frequency data for twenty years (less frequent data unavailable) for the period from 1998 to 2018. The data were obtained from the publications of the Central Bank of Sudan Statistical Bulletin, Annual Reports, and Statement of Accounts, National Bureau of Statistics, the World Bank website, and other secondary types of data, collected from the different official publications and academic Journals.

### 3.2. Methodology, Variables' Definition, and Model Specification

The econometric model used for assessing the analysis of the data is the ordinary least squares (OLS), a simple regression model. In order to achieve the stated objective, the model is hereby specified in line with the hypothesis that:

H0: banking financial performance has no significant impact on the growth of the Sudan economy.

H1: banking financial performance has a significant impact on the growth of the Sudan economy.

The Granger's causality test is based on the joint F-statistic calculated for each equation. The null-hypothesis that, suggest that  $x(2,t)$  does not Granger-cause  $x(1,t)$ . Conversely, if the null-hypothesis:

$H_0$ : banking financial performance has no significant impact on the growth of the Sudan economy.

$H_1$ : banking financial performance has significant impact on the growth of the Sudan economy.

The hypothesis will be tested at a 5% level of significance.

To test the stationary behaviour of each data series, the augmented Dickey-Fuller (ADF), and Phillips and Perron unit root tests employed, since these tests are well documented in the literature, for such purpose, and to avoid spurious regression.

Granger causality is used to test the direction of the relationship between banking sector performance indicators (X) and economic-growth (Y), applying the following t-tests

$$\Delta x_{1t} = \alpha_0 + \sum_{i=1}^k \alpha_{1i} \Delta x_{1t-i} + \sum_{i=1}^k \alpha_{2i} \Delta x_{2t-i} + e_{1t} \quad (1)$$

$$\Delta x_{2t} = \beta_0 + \sum_{i=1}^k \beta_{1i} \Delta x_{1t-i} + \sum_{i=1}^k \beta_{2i} \Delta x_{2t-i} + e_{2t} \quad (2)$$

The Granger's causality test is based on the joint F-statistic calculated for each equation. The null-hypothesis that:  $H_0 : \alpha_{21} = \alpha_{22} = \dots = \alpha_{2k} = 0$ , suggest that  $x(2,t)$  does not Granger-cause  $x(1,t)$ . Conversely, if the null-hypothesis:

$H_0 : \beta_{12} = \beta_{13} = \dots = \beta_{1k} = 0$ , is not rejected, then  $x(1,t)$  does not Granger-cause  $x(2,t)$ .

The econometric model of this functional relationship is given as:

$$\text{GDPG} = \alpha + \beta_1 \text{FIDEP} + \beta_2 \text{LQTY} + \beta_3 \text{ROA} + \mu \quad (3)$$

Where,

(GDP) is the rate of growth of domestic product Used as the dependent variable and as a proxy for economic growth.

Three measures of banking financial performance are used in this study as control variables.

The amount of total banking finance as a percentage of total deposits (FIDEP) represents the general level of finance provisions provided by the banking sector. These provisions are the main pool from which banks finance effective economic projects.

Return on assets (ROA), as a measure of banking financial performance. ROA is used as an indication of banks' profitability.

LQTY: as the main liquidity indicator, here the current ratio is applied, which is the classic liquidity ratio, it measures the ability of the bank to meet its short term debts.

$\alpha$  = Autonomous factor when banking sector indicators is held constant

$\beta$  = Coefficient of the banking sector financial performance indicators;

$\mu$  = Error term

Time series data usually suffer from many problems like, non-stationarity, serial correlation, heteroskedasticity, and others. The validity of the data used in the analysis has been examined for such mentioned problems (see appendix 2).

We expect a positive relationship between the dependent variable and independent variables. Eviews has been used as the main statistical package for all statistical analysis in this paper.

#### 4. THE EMPIRICAL RESULT

This section includes data examination, model regression outputs, and causality test results and their various implications.

#### 4.1. Descriptive Statistics

Table number (4.1) shows a brief descriptive statistics for the given data.

**Table 4.1: Descriptive statistics**

	<i>FIDEF</i>	<i>GDPG</i>	<i>LQTY</i>	<i>ROA</i>
Mean	70.55714	5.747619	26.99524	3.700000
Median	76.40000	5.700000	21.00000	3.900000
Maximum	93.20000	10.80000	52.00000	5.300000
Minimum	40.50000	1.100000	16.00000	1.500000
Std. Dev.	18.94140	2.482059	10.67874	1.080740
Skewness	-0.599348	0.177932	0.731259	-0.624653
Kurtosis	1.800811	2.599755	2.330913	2.562426
Jarque-Bera	2.515563	0.250982	2.263307	1.533208
Probability	0.284284	0.882064	0.322500	0.464588
Sum	1481.700	120.7000	566.9000	77.70000
Sum Sq. Dev.	7175.531	123.2124	2280.710	23.36000
Observations	21	21	21	21

*Source:* author's E-views Output, 2020

Table 1 indicates that the skewness and kurtosis coefficients of all variables are positive values with except of *FIDEF*, and *ROA* which show negative skewness so the probability of variability is high. The lower the value, the flatter the distribution is. The Jarque-Bera statistic can be used to test for normal distribution with the null hypothesis stating that the variable is normally distributed. The Jarque-Bera statistic as shown in table (1) indicates normal distribution, as p-values (Probability) are more than 0.00000, so we cannot reject the null hypothesis.

#### 4.2. Unit Root (Testing for Stationarity)

Before we run our regression we test our variables for stationarity test to avoid spurious regression. Table (4.2) shows that the data is stationary after the first difference. Table 4.2 highlighted the findings of the Augmented Dickey-Fuller (ADF) test. We reject the null hypothesis of a unit root at level 5% significance level.

**Table 4.2: Unit Root Tests**

	<i>GDPG</i>	<i>FIDEF</i>	<i>LQTY</i>	<i>ROA</i>
t Statistic	-5.313508	-5.554137	-3.696785	-4.065872
p- value	0,00005	0,0003	0.0132	0,0061

*Source:* author's E-views Output, 2020



### 4.3. Regression Analysis and Implications:

Before the model was estimated two important diagnostic tests have been done to assure that there is no spurious regression. As shown in appendix (D) and appendix (E) that there is no serial correlation or Heteroskedasticity. Now the multiple regressions can be run using OLS as shown in table (4.3)

**Table 4.3: The Regression Outputs**

<i>Variable</i>	<i>Coefficient</i>	<i>Std. Error</i>	<i>t-Statistic</i>	<i>Prob.</i>
Constant	4.215218	1.472291	2.863033	0.0113
FIDEP	0.148427	0.366827	0.404624	0.6911
LQTY	-0.948559	0.337291	-2.812291	0.0125
ROA	-0.117592	0.349245	-0.336704	0.7407
R-squared	0.440347	Mean dependent var	1.623079	
Adjusted R-squared	0.335413	S.D. dependent var	0.554985	
S.E. of regression	0.452436	Akaike info criterion	1.428516	
Sum squared resid	3.275174	Schwarz criterion	1.627662	
F-statistic	4.196388	Hannan-Quinn criter.	1.467391	
Prob (F-statistic)	0.022743	Durbin-Watson stat	1.427033	

*Source:* author's E-views Output, 2020

From the regression's result, the R-squared ( $R^2$ ) value of 0.44 which shows that the explanatory variables (jointly) explain 44% of changes in the dependent variable, the rest is explained by other variables.

The overall model is statistically significant as can be seen from the value of f statistic of 4.1964 and the probability of .0227. Based on the Probability value (of F-statistic), the null can be rejected ( $p=0.0227 < p=0.05$ ), accordingly the independent variables affect the dependent variables in the research three models.

The result obtained from the regression shows that there is a positive insignificant impact of Sudanese Banking-finance provision (FIDEP) on the rate of gross domestic products (GDP) with a coefficient of 0.015. Return on assets (ROA) shows a negative impact on the gross of domestic products (GDP) with a coefficient of -0.117592. The negativity coefficient of Commercial Banks ROA does not conform to the economic a priori expectation of a positive impact of commercial banks ROA on gross domestic product. This means that the mass of assets of Sudanese banks is not forwarded to the production field. According to the author's long

experience in this field, banks prefer short term investments rather than long term investments due to high rates of inflation and fluctuating rates of exchange.

Commercial Banks liquidity (LQTY) has a negative impact on the gross domestic products (GDP) with a coefficient of -0.948559. This result conforms to the rule of thumb since keeping liquidity affects the available resource for finance.

#### 4.4. Granger Causality Tests

One of the important steps in this study is to know the direction of causality between economic growth (proxied by GDP) and the banking financial performance variables where:

Null Hypothesis (H0): (FIDEF, ROA, and LQTY) doesn't granger cause GDPG).

The alternative hypothesis (H1): (FIDEF, ROA, and LQTY) does granger cause GDPG).

Appendix (B) presents the results of Granger Causality tests for GGDP with banking sector performance measures.

The result shows that p- values are not significant (more than 0, 05), therefore, we cannot reject H1. This suggests that neither ROA, nor LQY, nor FIDEF Granger Causes economic growth in Sudan. This confirms our previous result of the weak effect of banking financial on economic growth in Sudan.

### 5. CONCLUSION AND RECOMMENDATIONS

The main objective of this paper is to examine empirically the relationship between banking financial performance and economic growth in Sudan for the period from 1998-2018.

Based on the regression results which are generated using Eviews 9 and careful examination of various variables, it is found that the model is stable and can be used to generate verified results.

The regression result shows a weak positive relation between finance provision (FIDEF) and economic growth which indicates poor utilization of resources in the Sudanese banking system that does not trigger economic growth.

The other applied indicators of the financial performance of the banking sector in Sudan i.e. liquidity ratio (LQTY) and return on assets (ROA) show a negative effect on economic growth.

Generated profits by Sudanese banks are eroded by high inflation and volatile rates of exchange. These profits are so small to create capitals that can affect economic growth in Sudan.

The granger causality test shows that financial performance in the banking sector in Sudan does not cause economic growth for the total period from 1998 to 2018 and vice versa which reveals the role of other financial sectors (outside the banking system) in economic growth.

### **Recommendations**

The provision of finance from the deposits in the commercial banks in Sudan represents a weak effect on economic growth. Hence, commercial banks' finance provisions from deposit liabilities need more mobilization and diversification to trigger economic growth in Sudan.

Proper management for assets is required from the management in the Sudanese banking sector to ensure proper utilization.

There is an urgent need to revise the role that the banking sector should play to trigger economic growth. A monetary authority is requested to draw more attention to this relation.

Profits from operations of Sudanese banks need more revision to its utilization to reflect strong capitals and leave more effect on economic growth. These revisions may include the dividends to shareholders and distributed rates to deposit holders.

Banking reform in Sudan is now an urgent matter to enable this sector to survive and face the increasing competition, the requirement of international and regional supervisors like the required rates of capital adequacy, compliance, and derisking.

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**APPENDICES**

**Appendix (A): Model Data**

	<i>GDP%</i>	<i>ROA</i>	<i>LQTY</i>	<i>FIDEP</i>
1998	8.20	1.6	16.00	41.1
1999	4.20	1.5	16.50	40.5
2000	8.40	3	17.00	42.2
2001	10.80	3.9	20.90	40.6
2002	6.00	4	18.60	44.1
2003	6.30	5	19.20	62.3
2004	5.10	5.3	18.30	67.5
2005	5.70	5	17.90	76.2
2006	9.90	2.1	17.10	90.5
2007	8.10	2.5	21.00	93.2
2008	7.80	3	20.90	90.6
2009	6.10	3.4	27.60	87.1
2010	5.20	3.9	22.50	81.9
2011	1.90	4.2	32.00	82.3
2012	1.10	4.4	41.50	76.4
2013	4.40	3.7	39.00	84.5
2014	3.60	4	39.10	82.9
2015	4.30	4	37.40	84.3
2016	5.10	4.7	35.10	85.2
2017	5.70	3.8	37.30	73.5
2018	2.80	4.7	52.00	54.8

Central Bank of Sudan Annual Reports

**Appendix (B)**

Pairwise Granger Causality Tests

Date: 06/05/20 Time: 22:02

Sample: 1998 2018

Lags: 2

<i>Null Hypothesis:</i>	<i>Obs</i>	<i>F-Statistic</i>	<i>Prob.</i>
DGDPG does not Granger Cause DDFIDEP	13	1.03235	0.3992
DDFIDEP does not Granger Cause DGDPG		1.17081	0.3581
DLQTY does not Granger Cause DDFIDEP	17	2.00131	0.1778
DDFIDEP does not Granger Cause DLQTY		0.53898	0.5968
DROA does not Granger Cause DDFIDEP	17	1.29998	0.3083
DDFIDEP does not Granger Cause DROA		0.07508	0.9281

DLQTY does not Granger Cause DGDPG	14	0.23735	0.7935
DGDPG does not Granger Cause DLQTY		0.96297	0.4179
DROA does not Granger Cause DGDPG	14	2.88087	0.1079
DGDPG does not Granger Cause DROA		0.16775	0.8481
DROA does not Granger Cause DLQTY	18	0.37673	0.6934
DLQTY does not Granger Cause DROA		0.01278	0.9873

Source: author's E-views Output, 2020

#### Appendix (C): Model Statistics Output

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.215218	1.472291	2.863033	0.0113
LOG(FIDEP)	0.148427	0.366827	0.404624	0.6911
LOG(LQTY)	-0.948559	0.337291	-2.812291	0.0125
LOG(ROA)	-0.117592	0.349245	-0.336704	0.7407
R-squared	0.440347	Mean dependent var		1.623079
Adjusted R-squared	0.335413	S.D. dependent var		0.554985
S.E. of regression	0.452436	Akaike info criterion		1.428516
Sum squared resid	3.275174	Schwarz criterion		1.627662
Log likelihood	-10.28516	Hannan-Quinn criter.		1.467391
F-statistic	4.196388	Durbin-Watson stat		1.427033
Prob (F-statistic)	0.022743			

Source: author's E-views Output, 2020

#### Appendix (D): Diagnostic Tests (Serial Correlation)

Date: 05/28/20 Time: 20:03

Sample: 1998 2018

Included observations: 20

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
.   **.	.   **.	1	0.308	0.308	2.1987	0.138
. *   .	. **   .	2	-0.162	-0.284	2.8384	0.242
. **   .	. *   .	3	-0.210	-0.070	3.9777	0.264
. **   .	. **   .	4	-0.287	-0.276	6.2473	0.181
.   .	. *   .	9	0.013	-0.132	9.5862	0.385
. *   .	. **   .	10	-0.145	-0.211	10.510	0.397
. **   .	. **   .	11	-0.231	-0.250	13.115	0.286
.   * .	.   * .	12	0.093	0.185	13.589	0.328

Source: author's E-views Output, 2020

**Appendix (E): Diagnostic Tests (Heteroskedasticity Test)**

*Heteroskedasticity Test: Breusch-Pagan-Godfrey*

F-statistic	0.572883	Prob. F(3,16)	0.6410
Obs*R-squared	1.939933	Prob. Chi-Square(3)	0.5850
Scaled explained SS	1.707612	Prob. Chi-Square(3)	0.6352

Test Equation:

Dependent Variable: RESID<sup>2</sup>

Method: Least Squares

Date: 05/28/20 Time: 20:07

Sample: 1998 2018

Included observations: 20

<i>Variable</i>	<i>Coefficient</i>	<i>Std. Error</i>	<i>t-Statistic</i>	<i>Prob.</i>
C	0.079988	0.939002	0.085184	0.9332
LOG(FIDEP)	-0.169205	0.233956	-0.723236	0.4800
LOG(LQTY)	0.252898	0.215118	1.175623	0.2569
LOG(ROA)	-0.017344	0.222742	-0.077866	0.9389
R-squared	0.096997	Mean dependent var		0.163759
Adjusted R-squared	-0.072316	S.D. dependent var		0.278656
S.E. of regression	0.288556	Akaike info criterion		0.529002
Sum squared resid	1.332234	Schwarz criterion		0.728148
Log likelihood	-1.290017	Hannan-Quinn criter.		0.567877
F-statistic	0.572883	Durbin-Watson stat		1.712093
Prob(F-statistic)	0.640997			

Source: author's E-views Output, 2020

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