Factors Affecting Banks' Profitability: Evidence from Sudan

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Abstract: the aim of this study is to investigate the determinants of profitability of banks operating in Sudan. The study use panel data regression analysis on 25 banks during the sample period from 2012 to 2017. The dependent variable is banks profitability measured by the net income of banks, the independent variables are bank specific variables and macroeconomic variables. The bank specific variables are total deposits, and the investment, used as measures of a bank size. The inflation rate, and the GDP are the macro variables. The findings reveal that the bank size and the investment variables are positively and significantly affecting profitability of the banks. This result implies that larger banks are more profitable, than smaller size banks and investment activities affect their financial performance. The inflation factor is also significant but negative, the GDP is positive but insignificant. The implication of these results is that banks can improve their profitability by controlling their internal factor, that's by attracting more deposits to avail more resources for investment and to improve their investment policies so as to ensure the selection of the more profitable investment opportunities, taking into consideration their credit risk.

Key Words: Determinants, profitability, banks, Sudan.

1. INTRODUCTION

Financial recourses are scares, therefore to achieve economic growth we need to use these recourses efficiently. Banks play an important role in the economy that's by allocating the savings of the surplus units to the deficit units with the most profitable investment opportunities. In Sudan the banking system dominate the financial sector activities, it finance economic activities of the public as well as the private sectors. The profitable banking industry is better able to withstand negative shocks and

contribute to the stability of the financial sector of the country. Hence, the determinants of banks profitability have attracted the interest of academic research as well as regulators, and bankers.

This paper investigates the factors that influence the profitability of the Islamic banks operating in Sudan; the factors included in the study are divided into two groups, internal and external factor.

The reminder of the paper is organized as follows; section two presents the literature review, section three includes data and the methodology, the analysis part is provided in section four, and the final section concludes the paper.

2.   LITERATURE REVIEW

The Literature has provided many evidences which identify the major determinants of banks profitability. Some studies are conducted on a particular country and others on group of countries. Also some studies include only internal factors and others use both internal and external factor as determinants of banks profitability.

Wasiuzzaman and Tarmizi (2014) use data of 16 Islamic banks/windows in Malaysia to investigate the determinants of Islamic banking profitability. Bank-specific determinants include, capitalization, asset quality, liquidity and operational efficiency were regressed against profitability. In addition, macroeconomic variables like gross domestic product and inflation were also included in the analysis. The results of this study shows that capital and asset quality have an inverse relationship with bank profitability while liquidity and operational efficiency have a positive influence. In addition the findings reveal that both inflation and growth domestic product have positively influenced the bank profitability.

Li (2007) investigates the impact of banks specific factors and macroeconomic factors on UK banks profitability, over the period 1999-2006. The results show that the loan loss reserves has a negative impact on profit and statistically significant. This implies that higher credit risks result in lower profits. The result for liquidity is mixed and not significant. Capital strength was one of the main determinants of UK banks performance providing support to the argument that well capitalized banks face lower costs of going bankrupt, which reduces their cost of funding. Finally, macroeconomic variables, that inflation, interest rate and GDPGR have insignificant impact on performance.

Obamuyi (2013) study the effects of bank capital, bank size, expenses management, interest income and the economic condition on banks' profitability in

Nigeria. Fixed effects regression model was employed on a panel data obtained from 20 banks from 2006 to 2012. The results indicate that improved bank capital and interest income, as well as efficient expenses management and favorable economic condition, contribute to higher banks' performance and growth in Nigeria.

Jabbar (2014) use a sample of 31 commercial banks operating in Pakistan for the period 2009-2012, to analyze the impact of internal factors on banks profitability. The results show that banks profitability is significantly impacted by CAP and size while loan loss provision, deposit growth have negative and significant effects.

Cãpraru and Ihnatov (2014) assess the main determinants of banks' profitability in five selected central and eastern European countries over the period from 2004 to 2011. As proxy for banks profitability they use the return on average assets, the return on average equity and net interest margin. The results show that management efficiency and capital adequacy growth influence the bank profitability for all performance proxies, while credit risk and inflation determine only the ROAA and ROAE. The study notices that banks with higher capital adequacy are more profitable.

Ally (2014) investigates the effect of bank specific and macroeconomic factors on banks' profitability in Tanzania using a panel data of 23 banks for period from 2009 to 2013. The bank specific factors used in this study were bank size, capital adequacy, assets quality, expenses management and liquidity management. GDP, Inflation rate and real interest rate are the macroeconomic factors. The results of the study the bank size, capital adequacy, assets quality, expenses management and liquidity management have statistically significant impact on banks' profitability in Tanzania. Yet, macroeconomic factors do not seem to significantly affect profitability.

Petriaa, Caprarub, & Ihnatov (2015) assess the main determinants of banks' profitability in EU27 over the period 2004-2011. The study includes bank-specific (internal) factors and industry specific and macroeconomic (external) factors. The return on average assets and the return on average equity are considered as proxies for banks profitability. The empirical findings show that credit and liquidity risk, management efficiency, the diversification of business, the market concentration/competition and the economic growth have influence on bank profitability.

Akhtar, Ali & Sadaqat (2011) use a sample composed of Islamic banks of Pakistan from period 2006 to 2009. It is evident from both statistical multivariate regression models that the relationship of gearing ratio and capital adequacy ratio found to have a positive relation and are statistically significant, whereas the asset management is statistically significant in model I and insignificant in model II with

positive relation in both models. Size of the bank reported negative and insignificant relation in both models, which can be explained with the fact that most of the Islamic banks are facing losses in recent years. Moreover capital adequacy found to have significant relation in both models, as prudential regulations tighten by the State bank of Pakistan.

Bashir (2003) analyzes how bank characteristics and the overall financial environment affect the performance of Islamic banks across eight Middle Eastern countries between 1993 and 1998. A variety of internal and external banking characteristics were used to predict profitability and efficiency. Controlling for macroeconomic environment, financial market structure, and taxation, the results indicate that high capital-to-asset and loan-to-asset ratios lead to higher profitability. The results also indicate that foreign-owned banks are likely to be profitable. Everything remaining equal, the regression results show that implicit and explicit taxes affect the bank performance and profitability negatively while favorable macroeconomic conditions impact performance measures positively.

Bashir (1999) examines the effects of scale (total assets) on the performance of Islamic banks, using data from two Sudanese banks. The relationships between size and profitability measures are statistically significant, indicating that Islamic banks become more profitable as they grow in size. However, the negative relationship between size and the ratio of equity to capital implies that the larger bank is systematically highly levered. Moreover, the negative and statistically significant relationship between size and the risk index indicates that large size is economically efficient. The negative and slightly significant relationship between size and market valuation contradicts the predictions of theory.

3.   DATA AND METHODOLOGY

The data used in this study is secondary data, it consist of annual financial and economic data. The financial data drawn from the financial reports of the banks operating in Sudan, whereas the macroeconomic data drawn from the Central Bank of Sudan reports (CBoS).

The study sample consists of 25 banks operating in Sudan, and their value of total assets represent about 83% of the value of the total assets of the banking sector in the country. The sample period is five years from 2012 to 2017.

The dependent variable in this analysis is the banks' profitability, measured by the net income of the banks in the sample. The independent variables consist of

two bank specific variables, as well as two macroeconomic variables. More specifically, bank specific variables include a bank size, measured by total deposits, and the investment variable include murabaha, musharakah, mudarabah, mugawala, salam and istisna financing modes. The macroeconomic factors include the inflation rate, and Gross Domestic Product (GDP).

The Methodology

Panel Data regression: Panel data refers to data sets consisting of cross-sectional observations over time, or pooled cross section and time series data. They have two dimensions, one for time and one for the cross section entity. We use a subscript $t = 1, 2… T$ to the time variable for T observations at the T time points. For the cross Section data, the entity can be individuals, firms, banks or countries. The subscript n to the variable is usually adopted to represent the cross section dimension, with $n = 1,2,…N$ for N observations for N different entities, e.g. N firms.

The basic regression equation for panel data is

$$y_{it} = x_{it} B + w_{it} \tag{1}$$

where, $i = 1,… N; t = 1,…T.$

The variation in time and cross-sections can be captured by a constant or a random variable, giving rise to fixed effects models, and random effects models. Moreover, the coefficients may be different for each individual entity, which corresponds to a random coefficients or random parameter models; and in that case B also has a subscript i to become B_i.

Various effects associated with the intercept can be formulated by decomposing w_{it} in different ways.

The fixed effects model assumes that:

$$W_{it} = c_i + \varepsilon_{it} \tag{2}$$

Where: c_i is individual specific and time invariant unobserved heterogeneity and is a constant for entity i, cov $(c_i, x_{it}) \neq 0$. Cov $(\varepsilon_{it}, X_{it}) = 0$, $var(\varepsilon it) = \sigma_\varepsilon^2$ and ε_{it} is pure residuals uncorrelated with each other and uncorrelated with independent variables.

The random effects model with individual effects assumes that:

$$w_{it} = \mu_i + \epsilon_{it} \tag{3}$$

Where:

μ_i is a random variable $(\mu_i) = 0$, $var(\mu_i) = \sigma^2 \mu$, $cov(\mu_i, x_{it}) = 0$ cov $(\mu_i, \epsilon_{it}) = 0$, $E(\epsilon_{it}) = 0$, var $(\epsilon_{it}) = \sigma_\epsilon$

And $\in_{it}$ is pure residuals uncorrelated with each other and uncorrelated with independent variables.

The relation between the dependent variable and the independent variables in this study can be written as follows:

$$\text{Profitability}_{i,t} = \propto + \beta \, \text{size}_{i,t} + \beta \, \text{investment}_{i,t} + \beta \, \text{inflation}_{i,t} + \beta \, \text{GDP}_{i,t} + w_{it} \quad (4)$$

Where:

Profitability$_{i,t}$ is the dependent variable, which is the net income of bank i, at time t, $\propto$ is a constant. size$_{i,t}$ is the bank size explanatory variable for bank i, at time t. investment$_{i,t}$ is investment explanatory variable for bank i, at time t. inflation$_{i,t}$ is the inflation rate at time . GDP$_{i,t}$ is the GDP at time t. W$_{it}$ = c$_i$ + ε_{it}, where, ci represent bank specific effect where ε_{it} is random error term.

4. THE ANALYSIS

The table below shows the results of panel data regression for the sample of 25 banks operating in Sudan during the sample period 2012-2017, using pooled, fixed, and random effect models to explain the determinants of banks' profitability. It shows the impact of four factors on banks profitability. Specifically it includes two bank specific variables which are the investment and the bank size, as well as two macroeconomic factors which are the inflation and the Growth Domestic Product (GDP). The results of the three models are consistent, in terms of the coefficients significance as well as their signs. The three models fitness indicators, R-squared, F–statistic, Akaike info. Criterion, and log likelihood all indicate the relevance of the explanatory variables in explaining the variability of banks' profitability. The R-squared indicates that the fixed effect model explanatory variables explain about 87% of the profitability variability, while the pooled model explains about 68% of the profitability variability, and the random model explains 66%. The F- statistic shows the significance of the three models as indicated by the p- value statistics. Furthermore, the Akaike info. Criterion and log likelihood both support the fixed effect specification compared to the pooled specification.

The findings of the three models in the table below indicate that the two bank specific variables, the investment, and the bank size are positively and significantly associated with the profitability. On the other hand, the inflation factor is negatively but significantly associated with the profitability according to both, the fixed and the random effect models. The results of the GDP factor reveal its positive but insignificance association with profitability variable. These findings are consistent

with the findings of the previous studies except of that of the inflation. Some studies conclude that the inflation is positively associated with profitability, (Bashir 2003, and Wasiuzzaman,Tarmizi 2014), and others find that it's not significant, (Ally 2014, Li 2007). Moreover, Akhtar, Ali & Sadaqat (2011) report negative effect of the size variable.

The effect of the size indicator on banks' profitability is positive and significant, which implies that larger banks are more profitable. This positive association can be explained as that banks with large deposits are able to make high profits because these banks have more available resources that can be invested to generate income, and the cost of these resources are less than the income it generate therefore it positively affect banks profitability. The positive and significant effect of the investment variable indicates that banks invest their funds in profitable investment opportunities.

The negative sign of the inflation factor implies that as the inflation rate increases bank's profitability decreases. This inverse relation can be explained as that, as inflation increase, banks expenses increase at a rate greater than the rate of increase in their revenues, therefore the final effect is income reduction.

The positive effect of GDP on banks profitability indicates that as GDP growth increase banks profitability increase, this result is a reflection of the reality of Sudan

The determinants of banks profitability

Variable	Pooled		Fixed Effect		Random Effect	
	Coefficient	P-value	Coefficient	P-value	Coefficient	P-value
C	46874928	0.0736**	72111094	0.0016*	58419955	0.0110*
Investment	0.014804	0.0000*	0.017556	0.0000*	0.016499	0.0000*
Size	0.017257	0.0000*	0.008057	0.0996***	0.012795	0.0005*
Inflation	-1.15E+08	0.1212	-1.67E+08	0.0045*	-1.40E+08	0.0113*
GDP	1.68E+08	0.6751	2.76E+08	0.3378	2.19E+08	0.4424
F-statistic	79.15316	0.0000*	28.68393	0.00000*	71.45033	0.00000*
R-squared	0.685884		0.869069		0.663418	
Akaike info criterion	39.05313		38.49803			

*significant at 1% level. ** significant at 5% level. ***significant at 10% level.

1. The investment variable includes Islamic modes of finance: murabaha, musharakah, mudarabah, mugawala, salam and istisna financing.

2. The size variable measured by banks total deposits.

economy where banks play the dominant role in the financial sector, therefore any change in the economic performance affect banks performance.

The implications of these results is that banks are able to enhance their profitability by controlling internal factor, that's through attracting more deposits and set internal policies that lead to allocate these recourses to the most profitable investment opportunities, taking into consideration efficient credit granting policies to minimize the credit risk. Moreover, the monetary policy officials should control the high levels of inflation in the country because it harms banks profitability, and in the long run it will erodes their capital therefore threatens their existence.

5. CONCLUSION

This study aims at analyzing the factors that determine the profitability of banks operating in Sudan. The sample consists of 25 banks covering the period from 2012 to 2017. The study applied three panel data regression models, pooled, fixed and random effects. The results of the three models are consistent in terms of signs and significance of the variables. The dependent variable is banks profitability which is measured by the net income of the sampled banks. The determinants of banks profitability are two groups, bank specific (internal) and macroeconomic factors. The bank specific factors include the bank size that is measured by the total deposits of the banks, and the investment. On the other hand, the macro variables are the inflation and the GDP. The findings reveal that both of the bank specific variables are positively and significantly affecting banks profitability. This implies that larger banks, in terms of total deposits, are more profitable. Moreover, the positive sign of the investment variable reveals that as the investment increases the profitability increases too, that means banks use to invest in profitable investment opportunities. Regarding the macroeconomic variables, the inflation factor is negatively but significantly affecting banks profitability. This inverse relation means as the inflation increase the profitability decrease, this result can be explained as that, when the inflation increase the expenses of the banks increases higher than its revenues therefore the resulted effect is reduction in their profit. The GDP has positive but insignificant effect on the profitability; this implies that the increase in GDP growth lead to increase in banks profitability.

The policy implications from these findings are that, the internal factors have greater impact on banks profitability therefore it should be controlled by the banks management to achieve higher profit rates. Banks managers should try to attract more deposits and to make use of them in investment activities that maximize

profitability while keeping moderate levels of credit risk. The high levels of inflation rates should be controlled and reduced by the monetary policy officials so as to protect the banks performance and to ensure their growth.

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