

THE DETERMINANTS OF PROFITABILITY IN COMMERCIAL AND ISLAMIC BANKS IN YEMEN

Yemen'deki Ticari ve katılım Bankaların Karlılığının Belirleyicileri

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ABSTRACT

This study aims to investigate the significant factors that affecting profitability of three commercial banks and three islamic banks operating in Yemen during the period 2005-2018. In line with this goal, it has been evaluated to predict the effect of internal and external factors on the profitability of banks by using the generalized least squares technique with random effects models. When the first Model is examined, results revealed that ROA has a positive and significant relationship with the capital adequacy ratio and GDP. However, non-performing loans ratio, operational efficiency, and exchange rate factors are negatively correlated with ROA. Such as this results are consistent and similar in both islamic and commercial banks. The results concerning second model ROE indicated that deposits ratio, GDP, and inflation rate have a positive and significant influence on banks profitability determined by ROE, while the assets quality, liquidity ratio, non-performing loans ratio, operational efficiency, and exchange rate have a negative and significant effect on banks profitability determined by ROE. This paper suggests that banks of Yemen should be required to hold on an optimal financial stake of capital adequacy ratio and liquidity ratio to strengthen the portion of profits. Further, banks should manage their loan portfolio effectively, and should receive sufficient and appropriate collateral for the size loan, otherwise the the profitability and performance of banks will be adversely affected. It is also recommended here that banks executive management must have greater control over expenditures and an interest in how to keep costs down for the enhancement of bank profit margin.

Key Words: Banks, Internal and External factors, Profitability, Panel data, Yemen.

ÖZET

Bu çalışmada, 2005-2018 yılları arasında Yemen'de faaliyette bulunan üç ticari ve üç katılım bankasının kârlılığına etki eden faktörlerin tespit edilmesi amaçlanmıştır. Bu hedef doğrultusunda, rassal etkiler modeli ile genelleştirilmiş en küçük kareler tekniği kullanılarak, içsel ve dışsel faktörlerin bankaların kârlılığı üzerindeki etkisi değerlendirilmiştir. Sonuçlar ilk model incelendiğinde, ROA'nın değişkenlerden sermaye yeterlilik oranı ve GSYİH'nın ile pozitif ve anlamlı bir ilişkiye sahip olduğunu, takipteki krediler oranı, operasyonel verimlilik oranı ve döviz kuru ile ise negatif ve istatistikî olarak anlamlı bir ilişkiye sahip olduğunu göstermektedir. Bu bulgular hem ticari hem de katılım bankalarında tutarlı ve benzerdir. İkinci modele göre yapılan analiz sonuçları ise ; ROE'nin değişkenlerden mevduat oranı, GSYİH ve enflasyon oranı ile arasında pozitif ve anlamlı bir ilişki tespit edilmiştir. Ancak, aktif kalitesi oranı, takipteki krediler oranı, operasyonel verimlilik oranı, likidite oranı ve döviz kuru ile ise negatif ve istatistikî olarak anlamlı bir ilişkiye sahip olduğunu göstermektedir. Bu çalışmada, Yemen bankalarının kâr payını güçlendirmek için sermaye yeterlilik oranı ve likidite oranından oluşan optimal bir finansal hisseye sahip olmaları gerektiğini önerilmektedir. Ayrıca, bankalar kredi portföyünü etkin bir şekilde yönetmeli, kredi tahsilatları için bankanın kredi karşılığında yeterli ve uygun teminatı olmalıdır, aksi takdirde bankaların kârlılığı ve performansı olumsuz yönde etkilenecektir. Banka üst yönetiminin harcamalar üzerinde daha fazla kontrole sahip olması ve banka kar marjının artırılması için maliyetlerinin nasıl kontrol altında tutulacağı konusuna ilgi duyması gerektiği de tavsiye edilmektedir.

Anahtar Kelimeler: Bankalar, İç ve Dış faktörleri, Kârlılık, Panel veri, Yemen

1. INTRODUCTION

Banks play an important part in any country's economy since they are a financial mediator between surpluses and deficits. A healthy and profitable bank system contributes greatly to full systemic stability through resisting possible negative shocks (Delis & Staikouras, 2006). Consequently, banks of all sorts are considered the economic mainstay and the principal engine of economy, for they work in collecting savings and mobilizing them for supporting sustainable development of economy through analyzing the bank policy in all sectors, be it direct to developmental project funding or by investing in securities and support to local projects of development. Banks, by nature are experiencing an extreme competition among them in all areas where all their policies meet to serve the main goal, that is, to maximize profits to the extreme, and reduce the possible recurrence of risks where available.

The research problem is that recently an economic and administrative phenomenon has emerged in connection with a decline in Yemeni banks' profitability despite the growing trend of Yemeni banks' indicators in terms of size of assets, size of deposits, and size of loans. However, results of financial statements show that the banks' profitability of ROA and ROE got down during the period 2005 – 2018. As banks have special policies and multi-party features and play an important role in a country's economic and social development. This research study is motivated by the idea that efficiency of banking sector is significant for Yemeni economy as being the major and sole source to finance business society in the absence of the capital market. As understanding the determinants of bank's profitability is a must not just for bank management, but also for other beneficiaries. The present study attempts to seek an answer for the question: What are the internal and external factors that affect the bank's profitability by looking at macroeconomic changes and legal environments of the banking sector of Yemen.

In order to detect any possible correlation, we have run Generalized Least Squares (GLS) test by assessments of fixed and random effects on the set of financial statements which consist of three Commercial and three Islamic banks on quarterly basis starting from the third quarter of 2005 to the second quarter of 2018. The internal factors of the bank include capital adequacy, quality of assets, liquidity ratio, bank size, size of deposits, non-performing loans, and operational efficiency. The external factors, however, include GDP, inflation, and change of exchange rate. To achieve the objectives of research, the present study is divided into five sections: an introduction, literature review, methodology (variables and data), econometric findings and interpretations, and conclusion given in the form of a summary of findings and recommendations.

2. LITERATURE REVIEW

A lot of research has been done in many countries to examine the factors affecting bank's profitability. Studies done in this respect may be classified as: First, studies on the determinants of bank's profitability which have been tested experimentally in some parts of the globe. For instance, Masood, et al., (2015) aimed at identifying the effect of internal and external determinants on bank's profitability during 2007 – 2012 on the basis of balanced Panel data for some selected member states of Organization of the Islamic Cooperation (OIC). The results show that the more size of assets is, the more it contributes to ROA. Liquidity affects positively bank's profitability in terms of ROE. While non-performing loans affect negatively on ROA, it positively effects on ROE. It is also shown by this study that while operational efficiency has a negative effect on the Islamic banks' ROA, it has a positive effect on both Islamic and Convention banks in terms of ROE.

Boitan, (2015) study collected data from 13 socially responsible banks of European Union for 9 year and applied Panel regression data to the study fixed effect model. The results showed that ROA was positively affected by GDP and negatively affected by inflation rate.

A study by Pasiouras & Kosmidou, (2007), on how bank determinants and the general banking environment affect profitability of Commercial banks and foreign banks working within 15 states of European Union during 1995 – 2001. The results showed that the effect of GDP growth and inflation rate on ROA was high in all cases with adverse signs in Commercial and foreign banks. Also, the results showed that the capital adequacy ratio was positively association with the profitability ratio. The size variable, however, was found negatively association with the profitability ratio.

Second, studies on the determinants of bank's profitability either among the different banks or of a specific type of banks in a particular country. For instance, Herdhayinta & Supriyono, (2019) both analyzed the

financial statements of 27 banks in Indonesia through running test on ROE and ROA for the period 2011 – 2015 using regression models. The results show that rates of non-performing loans, operational efficiency, GDP rate, and real interest rate have negative effects on bank's profitability, whereas, capital adequacy, liquidity rate, bank size, and inflation rate affect positively bank's profitability.

In the studies of Atemnkenf & Joseph, (2006), ROA, ROE, and ROC indicators were used for analyzing of financial efficiency of three major Commercial banks in Cameroon during the period 1987 – 1999. The explanatory variables used were non-performing loans, size of assets, and total deposits. As shown by the results, the bank size has been found to have no high effect on profitability. The study provided evidence that a positive association exists between calculated risks measured by loan rates and total deposits with bank's profitability.

Ramadan, Kilani, & Kaddumi, (2011), evaluated the internal and external determinants of bank's profitability Through a balanced set of data of Jordanian banks during the period 2001 – 2010. As findings, the study showed that banks with strong capitals, high lending activities, low non-performing loans, and efficient cost management tend to be more profitable.

Acaravci & Çalim, (2013), aiming at identifying the impact of banking and macroeconomic determinants on the profitability of Commercial banks in Turkey collected data from three largest governmental, non-governmental, and foreign banks in the country for the period 1998 – 2011. ROA, ROE and net profit margin were used as variables for banks' profitability. The results show that total deposit, bank size and liquidity ratio have effects on bank's profitability. As for the macroeconomic determinants of the study, the GDP and the exchange rate had an impact on profitability. Inflation rate, however, has been found to have no effect on profitability.

Alshatti, (2014), tried to understand the effect of liquidity management on the profitability in 13 Jordan Commercial banks during the period 2005 – 2012. The results showed that the rapidly increasing ratio of investment made with available funds increase profitability. High capital ratio and liquidity ratio of assets, however, decreased profitability of Commercial banks of Jordan.

Anbar & Alper, (2011) examine the bank-specific and macroeconomic determinants of the bank's profitability in Turkey over the time period from 2002 to 2010. The results of internal determinants show that asset size and non-interest income have a positive and significant effect on bank profitability. However, size of credit portfolio has a negative and significant impact on bank profitability. As regard to macroeconomic variables, it was found that only real interest rates affect positively on the performance of banks.

Saeed, (2011) tried to understand the impact of bank-specific, industry-specific and macroeconomic variables on the profitability in 73 UK Commercial banks during the period 2006 – 2012. The results showed that that bank size, capital ratio, loan, deposits, liquidity, and interest rate have positive impact on ROA and ROE while GDP and inflation rate have negative impact.

Despite many more studies have been done on the impact of bank's internal determinants and economic factors on the performance of banks in many countries, there is still a lot of work to be done in this respect in many developing countries like Yemen where studies undertaken are few and almost limited to either investigating the internal determinants of Commercial banks or to one or two external determinants. For this reason, the present research paper, in comparison with what have been already investigated as regards the situation of banks across the world, is intended to investigate the impact of internal and external factors on both Islamic and traditional Commercial banks of Yemen. Consequently, results vary clearly depending on the differences in data, timing, sample size and factors considered. This is in addition to its unique nature being based on a diverse sample of banks.

3. DATA AND METHODOLOGY

3.1. Data collection and Sample

Data collected for this study is from secondary sources: data that were collected in the form of audited annual reports from banks' electronic websites or from the financial affairs departments of the said banks used as study sample. The external factors data including particularly GDP rate, exchange rate, and inflation rate was collected from various sources such as Central Bank of Yemen and international

monetary fund data. In addition, the study made use of other sources such as monthly bulletins, books, thesis, articles, and other related materials.

The first step of data collection process concerned extracting data from balance sheets and income statements of three Islamic and three Commercial banks of Yemen for the period (2005–2018). The next step concerned the calculation of all ratios to be used for the experimental study. In some countries, economic researchers often encounter a challenge represented by the unavailability of long-time data series or the distribution of time series which appears at (e.g. annual) low frequency and does not meet standard constraints. Consequently, temporal classification has been extensively examined in previous economic and statistical studies and numerous possible solutions have been suggested for these problems such as derivation of a smooth path for the unobserved series (Moauero & Savio, 2001).

In view of this, the data made available on an annual basis has been converted into quarterly data using dizz method (Farazmand, Mansouri, & Afghah, 2014 ; Diz, 1970). So, in this paper panel balanced dataset covers a period of 14 years (2005–2018) for three Islamic and three Commercial banks of Yemen, thus resulting in a total quarterly view of 156 per bank set.

3.2. Variable Specification

Two regression models have been used to measure the impact of internal and external factors on the profitability of Islamic and Commercial banks of Yemen. ROA has been identified as the first model's dependent variable, whereas ROE has been identified as the second model's dependent variable. This is in addition to the identification of 10 independent variables (7 are bank's related variables, and 3 are bank's unrelated variables) each included in its specific model.

3.2.1. Dependent Variables

Most of the previous studies (e.g., Herdhayinta & Supriyono, 2019; Acaravci & Çalim, 2013, Anbar & Alper, 2011, and Sulieman Alshatti, 2014) have commonly used ROA and ROE variables for measuring banking profitability. ROA has been calculated on net income divided by total assets that giving the ratio of profits from the invested capital. ROE, however, has been calculated on net income divided by total shareholders' equity that giving the ratio of profits from the amounts invested by shareholders.

3.2.2. Independent Variables

Capital Adequacy Ratio (CAR) is one of the basic ratios to determine the strength of capital. It is expected that the need for foreign funding decreases and bank's profitability is raised as CAR increases. This means that the bank is capable of absorbing losses and handling risks of exposure with shareholders (Anbar & Alper, 2011; Ongore & Kusa, 2013). However, it has been shown by both Sangmi & Nazir, (2010) that the high capital adequacy ratio indicates that the bank is conservative and has not yet employed the whole capital potentials. The first relevant hypothesis is below:

H0: Capital adequacy ratio has not a significant impact of on bank's profitability.

H1: Capital adequacy ratio has a significant impact of on bank's profitability.

Asset Quality Ratio (AQ): Asset quality refers to the overall risk attached to the different assets held by an institution. Banks commonly use this ratio to identify the number of assets at financial risk and the amount of possible losses that may be incurred (Nzoka, 2015). The ratio of loans to total assets has been widely used in the previous studies to measure asset quality. Consequently, the ratio of loans to total assets measure is expected to affect bank's profitability negatively as excessive loans increase the exposure to credit default of customers.

H0: Asset quality ratio has not a significant impact of on bank's profitability.

H1: Asset quality ratio has a significant impact of on bank's profitability.

Liquidity Ratio (LIQ): Higher liquidity ratio means that banks preserve a lot of liquid assets and accordingly an opportunity cost of higher return may arise. However, high ratio of liquidity may cause profitability getting lower, if a lot of assets are preserved in cash instead of being channeled into loans for borrowers (Tuladhar, 2017:29; Hamedian, 2013:31). In most previous studies, liquid assets ratio divided by total assets has been used as an indicator to measure liquidity ratio. Studies showed varying results on the correlation between liquidity ratio and bank's profitability. Abdulrahim, 2013 found out that liquidity

ratios have a profound positive impact on bank's performance. In contrast, Anbar & Alper, (2011) found no impact by liquidity ratio on bank's performance. The third hypothesis is as follows:

H0: Liquidity ratio has not a significant impact of on bank's profitability.

H1: Liquidity ratio has a significant impact of on bank's profitability.

Deposits ratio (DEP) : Deposits are the principal source of bank's funds; and though deposits constitute another liquidity indicator, it remains but a commitment. However, banks are required to maintain adequate liquidity to meet customers' demand (Gul, Irshad, & Zaman, 2012). Most of the previous studies have used the ratio of total deposits to total assets to measure deposit ratio (Acaravci & Çalim, 2013; Gul et al., 2011; Anbar & Alper, 2011). The fourth hypothesis is:

H0: Deposits ratio has not a significant impact of on bank's profitability.

H1: Deposits ratio has a significant impact of on bank's profitability.

Bank Size(Log Size): In most finance literature, bank size is measured by the natural logarithm of total assets. Empirical results of the relationship between size and profitability are mixed. Some studies find negative significant relation between size and profitability such as Djalilov & Piesse, (2016) ; Pasiouras & Kosmidou, (2007). In contrast, Gul et al., (2011); Acaravci & Çalim, (2013); Saeed, (2011); Anbar & Alper, (2011) mentioned that bank size has a positive effect on and a considerable link with profitability. The fifth hypothesis is as follows:

H0: Bank size has not a significant impact of on bank's profitability.

H1: Bank size has a significant impact of on bank's profitability.

Operational Efficiency Ratio(OPEF) : Operational efficiency is a key factor of bank's profitability, for it indicates the extent to which the bank is efficient to use its resources to achieve maximum production. It also reflects the degree to which the bank can achieve incomes by making effectively manages over its expenditures. Low ratio of efficiency often shows that the bank is efficiently operating and the vice versa (Aguenaou, Lahrech, & Bounakaya, 2017). In most literature, bank's operational efficiency ratio is calculated by divided total expenditure to run a business operation to the total revenues obtained from the business as shown in Moin, 2008, Halkos & Salamouris, (2004), and Rashid & Jabeen, (2016). Hence, the sixth hypothesis can be given below:

H0: Operational efficiency ratio has not a significant impact of on bank's profitability.

H1: Operational efficiency ratio has a significant impact of on bank's profitability.

Non-performing loans (NPL): Non-performing loans is by far the most significant risk faced by banks and the success of their business depends on accurate measurement and efficient management of this risk to a greater extent than any other risk (Sarihan & Başarır, 2017). Given the importance of non-performing loans in financial institutions, many studies have been carried out to investigate the relationship between non-performing loans and financial performance. It seems that researchers arrive at similar conclusions. In the studies of Djalilov & Piesse, (2016); Akın, (2016); Athanasoglou et al., (2006) non-performing loans was found to have an adverse effect on bank's profitability. Hence, the seventh hypothesis can be given below:

H0: Non-performing loans ratio has not a significant impact of on bank's profitability.

H1: Non-performing loans ratio has a significant impact of on bank's profitability.

Inflation Rate (INF) is defined as the change in the overall level of rates in the economy during a particular period where it has a great impact on purchasing power of money and production cost. Inflation affects the real value of costs and incomes (Anbar & Alper, 2011). The effect of inflation on the bank's performance depends on whether inflation is fully forecast or not. In this, banks can adjust interest price to raise revenues over costs; and accordingly, there will be a positive effect on profitability. Conversely, if inflation is not forecast, banks cannot make appropriate adjustments to interest price, thus leading costs to increase faster than incomes. This, of course, will negatively affect the bank's profitability (Tan & Floros, 2012). In this context, the correlation between inflation and profitability may have a positive or negative effect on profitability. The eighth hypothesis is posed as follows:

H0: Inflation rate has not a significant impact of on bank's profitability.

H1: Inflation rate has a significant impact of on bank's profitability.

Gross Domestic Product (GDP) is the total market capitalization of commodities and services produced by a certain country's economy during a specific time period where bank's profitability is sensitive to macroeconomic conditions (Herdhayinta & Supriyono, 2019:7). At general level, high economic growth may lead to more lending, thus resulting in change of interest margin size. As shown by the previous studies with regard to nexus between economic growth and development of financial sector, it can be projected that real GDP per capita has a positive effect on bank's profitability. Studies of Dönmez, 2019; Boitan, 2015; Ongore & Kusa, 2013 confirm this finding. The ninth hypothesis is made as follows:

H0: Gross domestic product rate has not a significant impact of on bank's profitability.

H1: Gross domestic product rate has a significant impact of on bank's profitability.

Exchange rate (EXH) means the manner in which a certain country manages its currency in connection with foreign currency positions and foreign exchange market. Exchange rate is closely linked with a country's monetary policy. Fluctuations in exchange rate have a direct or indirect impact on banks. The direct impact of risks of foreign currency exchange generates when bank maintains assets or liabilities with foreign currencies. Fluctuations of exchange rate change local currency values of these assets, thus affecting the bank's capital and profits. Foreign currency exchange rate, however, has an indirect impact on banks through its impact on the extent of foreign competition, loan demands, and other banking conditions (Chamberlain, Howe, & Popper, 1997). The tenth hypothesis, therefore, is as follows:

H0: Exchange rate has not a significant impact of on bank's profitability.

H1: Exchange rate has a significant impact of on bank's profitability.

3.3. Methodology

Panel data estimate is used together with balanced data to examine the effect of internal and external determinants on Islamic and Commercial banks of Yemen. Two measures of profitability (ROA and ROE) have been used to ascertain the determinants of the bank's performance. According to Gujarati, 2004, and Baltagi, 2005, Panel data is used owing to its advantage; it helps to examine the behavior of each bank in the course of time. From his side, Sarihan & Başarır, (2017) points out that Panel data yields better results than traditional time series analyses for the same reason that it contains both time dimension and segment size. Diagnostic tests have been used for selecting, from among Panel various techniques, appropriate statistical tests for regression model, unit root test, cointegration tests, and Huasman test in particular.

First, unit root test has been used for testing time series integration. Stationarity test of time series is of a great importance owing to econometric methodologies that assume stationarity in time series. While if it is actually not stationary, routine statistical tests may be inappropriate and conclusions are likely to be false and misleading (Barwary & Abazari, 2019). To accomplish this, Levin, Lin ve Chu & Im, Pesaran ve Shin & Augmented Dickey Fuller ve PP – Fisher test can be used. After all these tests were carried out, it was shown that time series have a unit root, i.e., they are not stationarity at level. However, while applying the first difference test, it was noted that all variables used in the model were stationary at first difference.

The second step of this study is to investigate the long-run nexus among variables by using cointegration test that is considered to be a traditional technique commonly employed in empirical studies. Cointegration theory centers on analysis of time series which are not stationary at level. This test shows to the co-movement between two or more variables in the long-run and this is applied to determine the existence of the long-run relationship between variables (Sifuba, 2018). Aksoy & Yıldız, (2014) mentioned that if a cointegration nexus exists among the series, there will be no spurious regression challenges encountered while analyzing series level values.

3.4. Model Specification

Regression analysis is one of the most common and appropriate econometric techniques used for analyzing Panel data. It describes nexus between dependent and independent variables. The present study has been used Generalized Least Squares (GLS) technique for calculating the appropriate quality of tests, estimates of parameters and standard errors of total regression. GLS is used to handle problems related to heteroscedasticity by dividing each noted standard deviation connected with the error diverting the model. GLS is likely preferred to ordinary-squares regression based on the underlying assumptions on heteroscedasticity, autocorrelation since this latter lacks the nexus of assembled series (Wooldridge, 2002). We applied the generalized least squares methods of fixed effects (FE) and random effects (RE) models,

which according to Athanasoglou et al., (2006), allow researchers to examine at once the differences between cross-sectional units and the differences within the individual units with the passage of time, thus enhancing the credibility of coefficient.

According to the above commentaries on the use of Panel data as the basis of analysis, the researcher has created the three models to be used for investigating the impact of internal and external variables on Yemeni banks' ROA and ROE. To examine determinants of the banks' profitability, Panel data that includes time series and cross-sectional elements called Panel data of long data. In Panel data, dataset consists of (I) cross-sectional units referred to as $i = 1, 2, \dots, I$ noted at each time period $t = 1, 2, \dots, T$. In dataset, the broad remark is $I \times T$. Consequently, the basic framework of Panel data should be identified in accordance with the following regression model (Brooks, 2014; Baltagi, 2005:11):

$$y_{it} = \alpha_0 + \beta X'_{it} + \epsilon_{it} \quad (1)$$

Multi-variable regression should be conducted by using model containing two types of variables, dependent and independent. As shown by equation (1), in the regression model used here, 'y' for express the profitability (dependent variables). ' α ' represents is the intercept term on the explanatory variables, and 'x' stands for independent variables which are internal and external factors impacting banks in Yemen. Banks' performance can be measured by means of ROA and ROE. Internal variables include capital adequacy (CAR), assets quality (AQ), liquidity ratio (LIQ), deposit (DEP), operational efficiency (OPEF), size of assets (SIZE), and non-performing loans (NPL). External variables, however, include GDP, inflation rate (INF), and exchange rate (EXH). Equation (1), therefore, can be restructured and expanded to include two comparisons for profitability as follows:

Model 1

$$ROA_{it} = \alpha + \beta_1 * CAR_{it} + \beta_2 * AQ_{it} + \beta_3 * LIQ_{it} + \beta_4 * DEP_{it} + \beta_5 * NPL_{it} + \beta_6 * SIZE_{it} + \beta_7 * OPEF_{it} + \beta_8 * EXH_{it} + \beta_9 * GDP_{it} + \beta_{10} * INF_{it} + \epsilon_{it} \quad (2)$$

Model 2

$$ROE_{it} = \alpha + \beta_1 * CAR_{it} + \beta_2 * AQ_{it} + \beta_3 * LIQ_{it} + \beta_4 * DEP_{it} + \beta_5 * NPL_{it} + \beta_6 * SIZE_{it} + \beta_7 * OPEF_{it} + \beta_8 * EXH_{it} + \beta_9 * GDP_{it} + \beta_{10} * INF_{it} + \epsilon_{it} \quad (3)$$

4. DATA ANALYSIS AND RESULTS

4.1. Descriptive statistics

This section summarizes the characteristic of dependent and independent variables in the light of descriptive statistic results using E-views program to reach mean, median, standard deviation, minimum and maximum values of all internal and external variables of Commercial and Islamic banks of Yemen. Descriptive statistics can be also used to describe the basic features of study data and the main trends of variables (e.g., charts, major classifications, and percentages of data analysis) during the period of this study is selected.

Table 1: Description analysis for Commercial and Islamic Banks of Yemen.

| | | ROA | ROE | AQ | CAR | LIQ | DEP | LogA | NPL | OPEF | GDP | EXC | INF |
|------------------|-----------|--------|--------|-------|-------|-------|-------|-------|-------|-------|--------|-------|-------|
| Commercial banks | Mean | 0.012 | 0.152 | 0.232 | 0.263 | 0.272 | 0.857 | 8.059 | 0.229 | 0.520 | -0.017 | 0.167 | 0.148 |
| | Median | 0.013 | 0.150 | 0.215 | 0.306 | 0.275 | 0.856 | 8.051 | 0.213 | 0.507 | 0.028 | 0.160 | 0.120 |
| | Maximum | 0.016 | 0.231 | 0.429 | 0.446 | 0.348 | 0.896 | 8.803 | 0.330 | 0.871 | 0.072 | 0.350 | 0.300 |
| | Minimum | 0.004 | 0.040 | 0.158 | 0.089 | 0.197 | 0.824 | 7.520 | 0.170 | 0.367 | -0.025 | 0.040 | 0.050 |
| | Std. dev. | 0.003 | 0.046 | 0.067 | 0.092 | 0.033 | 0.018 | 0.318 | 0.046 | 0.119 | 0.081 | 0.089 | 0.068 |
| | Observ | 156 | 156 | 156 | 156 | 156 | 156 | 156 | 156 | 156 | 156 | 156 | 156 |
| Islamic banks | | ROA | ROE | AQ | CAR | LQ | DEP | LogA | NPL | OPEF | GDP | EXC | INF |
| | Mean | 0.003 | 0.026 | 0.279 | 0.177 | 0.421 | 0.771 | 8.098 | 0.113 | 0.585 | -0.017 | 0.167 | 0.148 |
| | Median | 0.002 | 0.017 | 0.243 | 0.160 | 0.414 | 0.775 | 8.219 | 0.081 | 0.550 | 0.028 | 0.160 | 0.120 |
| | Maximum | 0.009 | 0.116 | 0.467 | 0.292 | 0.576 | 0.947 | 8.729 | 0.293 | 0.772 | 0.072 | 0.350 | 0.300 |
| | Minimum | -0.002 | -0.041 | 0.159 | 0.099 | 0.327 | 0.639 | 7.186 | 0.023 | 0.438 | -0.025 | 0.040 | 0.050 |
| | Std. dev. | 0.002 | 0.038 | 0.098 | 0.042 | 0.056 | 0.058 | 0.451 | 0.082 | 0.091 | 0.081 | 0.089 | 0.068 |
| Observ | 156 | 156 | 156 | 156 | 156 | 156 | 156 | 156 | 156 | 156 | 156 | 156 | 156 |

Based on the table (1), the results demonstrate that the trend of ROA continued decline throughout the study period, but with varying degrees for each bank group. Also Fig.1 shows, Islamic banks' ROA ratios was very low during the study period which came out to be on average 0.3 %. The highest average 1% was

in 2005 and the lowest -2% was in 2011. However, Commercial banks' ROA ratios were 1.2% as an average. The highest rate 1.6 % was in 2005, and the lowest rate 0.3 % was in 2017. This finding demonstrates the fact that Commercial banks' profitability was relatively better than that of Islamic banks.

Similarly to ROA, as shown in Fig.2 and Table.1, Islamic banks return on equity ratio was poor enough which came out to be on average 2.6 %, with the highest 11.6 % in 2005 and the lowest -4.1 % in 2014. However, Commercial banks' ROE ratios were 15% as an average. The highest rate 23 % was in 2007, and the lowest rate 4% was in 2017. This result reflects the fact that Commercial banks' profitability was relatively better than that of Islamic banks.

Considering the behavior of capital adequacy ratio (CAR) indicator, the average ratios for both Islamic and Commercial banks are displayed in the Fig.3 and table 1. It shows that the study sample banks had maintained a high capital adequacy during the study period at a higher rate than 8 % which is the minimum rate accepted internationally. Commercial and Islamic banks' average shows that both kinds of banks were strong enough to limit losses and protect lenders and depositors alike. The average of Commercial banks reached 26.3%, which is approximately three times minimum rate accepted internationally. Islamic banks' capital adequacy ratio reached 17.7%, which is approximately a double minimum rate accepted internationally.

Considering the behavior of asset quality (AQ) indicator as Fig.4, the graph movement for Commercial and Islamic banks explains that despite the decline in asset quality ratio of both groups of banks during 2005–2018. However, the banks on average are still experiencing a high rate of this ratio, which indicates that the banks' asset quality is low. Consequently, there would be a high exposure to non-performing loans reflecting a negative nexus with profits. Lower ratio is favorable as the risks of loans to become uncollectable decreases and asset quality improves. The highest average of asset quality indicator in terms of Islamic banks was around 28%, whereas it was about 23 % for Commercial banks. This denotes that Commercial bank maintain a better management over assets.

Based on the Table.1 and Fig.5, one can say that Commercial banks maintain an average of 27% of liquidity (LIQ), whereas 42% of liquidity is maintained by Islamic banks. This reflects the more liquid relative position of Islamic banks during 2005 – 2018 compared with Commercial banks. However, this indicates that there are inoperative financial resources cannot be found in safe investment and strong credit opportunities, because Islamic banks do not require to have a high level of liquidity compared to Commercial bank.

Considering deposit (DEP) size indicator, as shown in Fig.6 and Table.1, it is clearly noted that the ratio of deposit to assets ratio in Islamic banks reflects more varying amount during the study period. The average amount of customer's deposits reached 77%, the biggest ratio of deposits with the Islamic banks was in 2005 making 95% and the lowest was in 2007 making 64% of total assets of these banks. During the whole study period the deposit to asset ratio of Commercial banks didn't fell below 82% indicating that much of asset may spent for the payment of customers' deposits. Consequently, this ratio may create liquidity problem for the banks if the customers rush to withdraw their money in bad economic situations.

As we understand from above table and Fig.7, a comparison of operational efficiency is important to show the efficiency of one over the other mode of banking. Commercial banks' average ratio of operational efficiency indicates that around 52% of the returns was used as operational expenses, whereas 58% of the returns was used as operational expenses in Islamic banks. This difference allows us to clearly understand that Commercial banks' operational efficiency is better than that of Islamic banks. This is probably because Islamic banking is a very recent industry with no considerable experience of management compared to Commercial banks. So, they should have greater control over expenditures.

As for non-performing loans behavior in both Islamic and Commercial banks. it is generally shown from Fig.8 and table (1) that non-performing loans permanently increased with varying degrees for each bank group during the period of study. The Commercial banks were more exposed to non-performing loans with an average of 23%. Their lowest level of credit risks exposure recorded in 2005 making 95% and continued rising to reach 35 % in 2018. Islamic banks, however, came to be the second group exposed to non-performing loans, with an average of 11%. They recorded their lowest level of exposure to these risks at 2% in 2005 and continued with varying rates to reach 30% in 2018.

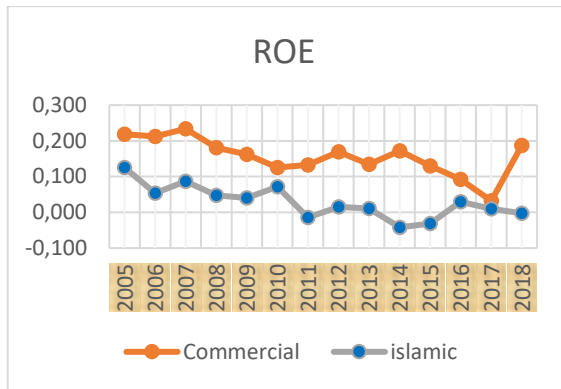


Fig.2: Return on Equity ratio

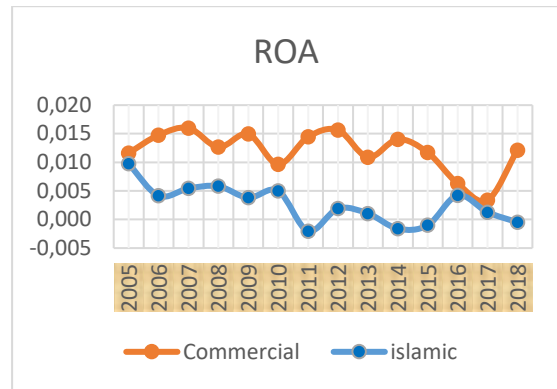


Fig.1: Return on Assets ratio

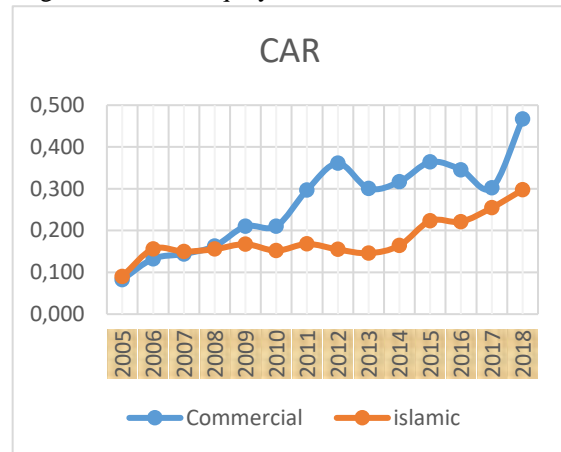


Fig.3: Capital Adequacy Ratio

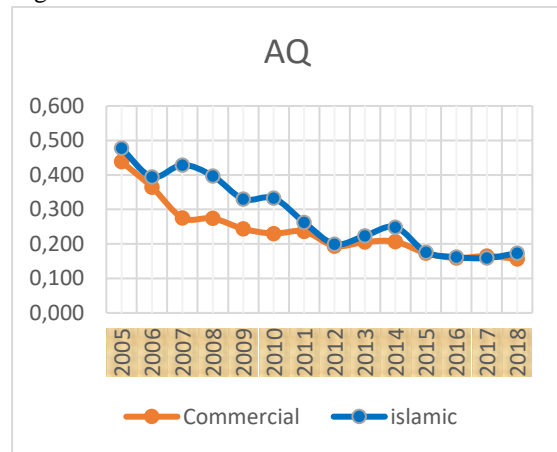


Fig.4: Assets Quality ratio

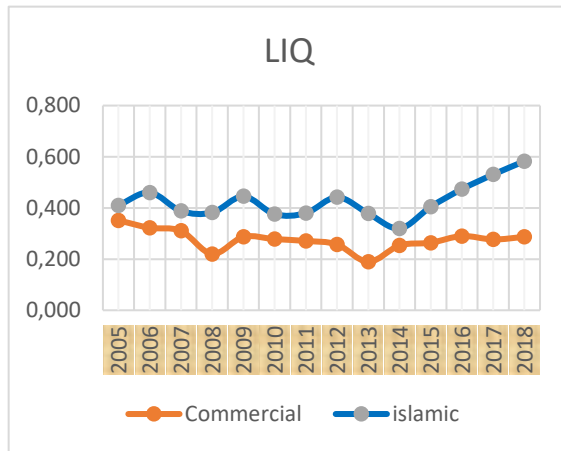


Fig.5: Liquidity ratio

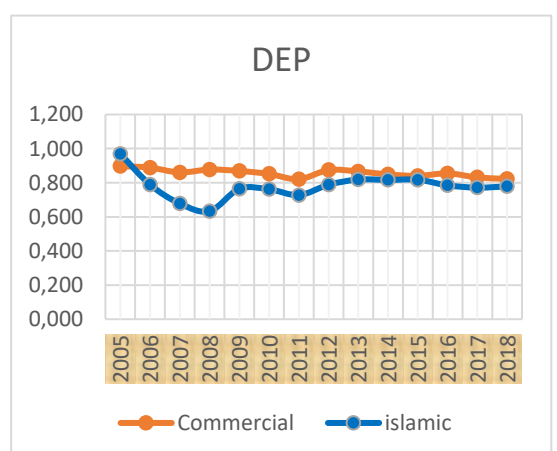


Fig.6: Deposit to Asset ratio

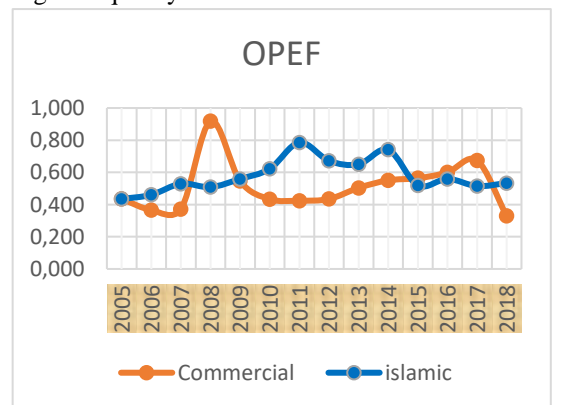


Fig.7: Operational Efficiency ratio

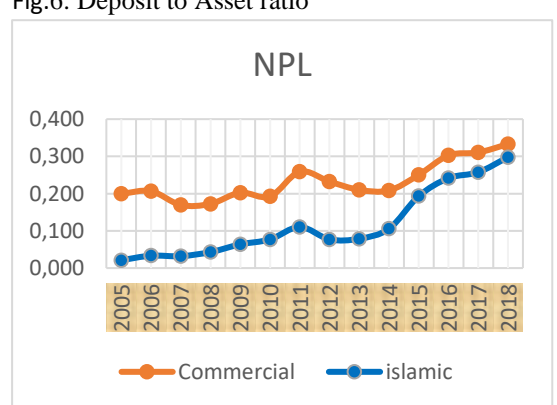


Fig.8: Non-performing loans ratio

4.2. Results of Diagnostic Tests

4.2.1. Time Series Stationarity Test of Study Variables

To start with the econometric analysis of study model requires conducting a stationarity test for Panel data through using unit root test. Levin, Lin, and Chu & Im, Pesaran, and Shin & Augmented Dickey–Fuller and PP–Fisher tests are used here to examine stationarity of variables. As shown by Appendix 1& 2 below, all Commercial and Islamic banks' variables they are not statistically significant. Therefore, we accept null hypothesis that stipulates that time series have a unit root, i.e., they are not stationary at level. However, when carrying out a test at the first difference, it is noted that all variables used in the model which are preceded by the letter (d) are stationary at the first difference. Throughout the tests done, it has been clear that all variables are statistically significant at level value was less than the approved value (0.05). Consequently, all studied variables are stationary at the first difference. Such as result will lead to reject null hypothesis and accept the alternative hypothesis that indicate series is stationary.

4.2.2. Cointegration Test

In the light of the above unit root test, it has been found that each individual variable is integrated at the first difference. This means that variables are stationary at the first difference, but not stationary at the level. Cointegration theory centers on analysis of time series which are not stationary at level. By cointegration we mean that there is a possible long-term balance among the time series that are not stationary at their level.

In this section, cointegration between time series will be tested to know whether independent variables' regression is real or spurious regression. Table (2) below represents the Kao residual cointegration test panel cointegration results supports and confirms the cointegration between the variables for all our two models in Commercial and Islamic banks.

Kao Cointegration Test According to ADF

| Model | Commercial Banks | | Islamic Banks | |
|---------------|------------------|--------|---------------|--------|
| | t-statistic | Prob. | t-statistic | Prob. |
| Model 1 (ROA) | -2.4958 | 0.0063 | -2.9106 | 0.0018 |
| Model 2 (ROE) | -3.3367 | 0.0013 | 0.0004 | 0.0126 |

Source: Prepared by the researcher based on E-view.

As shown in Table (2), the calculated value of Kao Residual Cointegration Test according to ADF test and bank groups is as follows:

- In terms of Commercial banks in the first model, the *T-statistic* calculated value reached (-2.4958), with (0.0063) significance level. In the second model, the *T-statistic* calculated value reached (-3.33672), with (0.0004) significance level. In both models the significance level value was less than the approved value (0.05). As a result, we accept the alternative hypothesis, but reject the null hypothesis that states the absence of cointegration among independent variables.
- As regards Islamic banks in the first model, the *T-statistic* calculated value reached (-2.9106), with (0.0018) significance level. In the second model, the *T-statistic* calculated value reached (-2.2376), with (0.0126) significance level. In both models the significance level value was less than the approved value (0.05). Thus, null hypothesis is rejected, and we accept the alternative hypothesis that finds cointegration among independent and dependent variables.

Based on the aforesaid results, it can be emphasized that there is a long run balanced nexus among internal and external factors considered as independent variables and ROA and ROE as dependent variables for each group of banks. This means that time series are not greatly separated from each other and exhibit a long run identical behavior.

4.3. Regression Analysis

4.3.1. Commercial Banks' Profitability Analysis Model

By virtue of Panel data on Commercial banks, results are analyzed and classified into two groups: bank's internal determinants and macroeconomic external determinants of profitability using ROA and ROE as dependent variables individually examined against the two categories of explanatory variables. Table (3)

shows regression estimate results obtained by using fixed effect model and random effect model in accordance with the generalized least squares technique.

As indicated in Table 3, the results show that the p value of Hausman test in the first and second models was 0.8724 and 0.9643, respectively. Thus, obtained P-value is more than 5% ($p \text{ value} > 0.05$) suggesting that random effect model is accepted and statistically preferred over fixed effect model. Consequently, random effect model showed, the R-Squared value of the first and second models reached 97% and 98%, respectively. This is to say that independent variables explain 97% of variations in the dependent variable (ROA), while for ROE, the independent variables explain 98% of the variations of ROE and the remaining percentage of variance are explained by other factors not included in the study. On the other hand, Prob F-statistic value reached (0.000), which is lower than (0.05). This means that random-effect model is generally significant.

Table 3: Regression Analysis of Commercial Banks' Profitability (ROA&ROE)

| Var | Model 1 (ROA) | | | | Model 2 (ROE) | | | |
|---------------------------|---------------------|--------|--------------------|---------|---------------------|--------|--------------------|--------|
| | Random effect Model | | Fixed effect Model | | Random effect Model | | Fixed effect Model | |
| | Coeff | Prob. | Coeff | Prob. | Coeff | Prob. | Coeff | Prob. |
| C | 0.0112 | 0.0003 | 0.0117 | 0.0002 | -0.0006 | 0.9925 | 0.0005 | 0.9804 |
| Internal variables | | | | | | | | |
| AQ | 0.0112 | 0.0003 | 0.0117 | 0.0002 | -0.1661 | 0.0000 | -0.1447 | 0.0000 |
| CAR | 0.0109 | 0.0009 | 0.0116 | 0.0017 | -0.2182 | 0.0000 | -0.1898 | 0.0000 |
| LIQ | 0.0065 | 0.0287 | 0.0074 | 0.0271 | -0.2000 | 0.0000 | -0.1639 | 0.0000 |
| DEP | -0.061 | 0.0000 | -0.0588 | 0.0000 | 0.1008 | 0.2773 | 0.1680 | 0.0564 |
| NPL | -0.0101 | 0.0013 | -0.0104 | 0.0025 | -0.4986 | 0.0000 | -0.4522 | 0.0000 |
| SIZE | 0.0081 | 0.0000 | 0.0077 | 0.0000 | 0.0531 | 0.0000 | 0.0590 | 0.0000 |
| OPEF | 0.0000 | -0.003 | 0.0000 | -0.0841 | 0.0000 | -0.091 | -0.091 | 0.0000 |
| External variables | | | | | | | | |
| EXH | -0.0590 | 0.0000 | -0.057 | 0.0000 | -0.7774 | 0.0000 | -0.7688 | 0.0000 |
| GDP | 0.0132 | 0.0031 | 0.0129 | 0.0024 | 0.1813 | 0.0000 | 0.1974 | 0.0000 |
| INF | 0.0061 | 0.3213 | 0.0064 | 0.3078 | 0.1453 | 0.0313 | 0.1621 | 0.0103 |
| R ² | | .970 | | .970 | .978 | | .983 | |
| Adj.R ² | | .968 | | .967 | .976 | | .982 | |
| F Statis | | 470.1 | | 385.7 | 654.5 | | 710.5 | |
| Prob. F test | | 0.000 | | 0.000 | 0.000 | | 0.000 | |
| No. Obs | | 156 | | 156 | 156 | | 156 | |
| Hausman test | | 0.8724 | | 0.9643 | | | | |

Source: Prepared by the researcher based on E-view Results.

- The findings of the impact of the internal variables on Commercial banks' ROA and ROE showed as follow:

As shown by random-effect model in Table 3, regard to the impact of bank's internal variables on the profitability of Commercial banks as measured by ROA. The results indicate that coefficients of AQ, CAR, and SIZE are found to have a positive and significant impact on ROA at the level of 1% ($P \text{ value} < 0.01$). LIQ coefficient has a positive impact and is highly statistically significant at 5% ($p = 0.02 < 0.05$). However, DEP, NPL, and OPEF have negative and significant impacts on the bank's ROA at the level of 1% ($P \text{ value} < 0.01$). This result is in line with Herdhayinta & Supriyono, (2019) ; Alshatti, (2015); Acaravci & Çalim, (2013); Saeed, (2011) who reported that variables such as asset quality, capital adequacy, liquidity ratio, and asset size have a positive and significant impact on bank's ROA. Also, this consistent with the findings reported by Abel & Roux, (2016); Moin, (2008); Delis & Staikouras, (2006); , Herdhayinta & Supriyono, (2019); Anbar & Alper, (2011) and Ramadan et al., (2011) as regards the negative nexus between deposit size to assets, non-performing loans ratio, and operational efficiency with ROA.

Concerning the bank's internal determinants impact on ROE as shown in the Commercial banks' second model, the results indicate that the coefficient of CAR, AQ, LIQ, NPL, and OPEF ratios are found to have a negative and significant impact on ROE at the level of 1% ($P \text{ value} < 0.01$). SIZE coefficient has a positive impact and is highly statistically significant at 1% ($p = 0.00 < 0.01$). However, DEP is found to have not significant on ROE which has p-value greater than 0.05 ($p = 0.2773 > 5\%$). This result contradicted with the results reported by Herdhayinta & Supriyono, (2019); Alshatti, (2015); Acaravci & Çalim, (2013); Saeed, (2011) who found out that CAR, AQ, LIQ have a positive nexus with the Commercial bank's ROE performance. However , This result is consistent with the findings reported by Abel & Roux, (2016);

(Moin, (2008); Delis & Staikouras, (2006); Herdhayinta & Supriyono, (2019); (Anbar & Alper, (2011); Ramadan et al., (2011) regard to the negative nexus between the non-performing loans and operational efficiency.

- Regarding the impact of the external variables on Commercial banks' ROA and ROE, results are as follow:

The analysis in Table 3 reveals that the coefficient of exchange rate (EXH) in the first and second model has a negative impact on the bank's ROA and ROE performance and is statistically significant at 1% ($p = 0.00 < 0.01$). This means that an increase of exchange rate in 1% is offset by a decrease of (0.059%) in ROA, whereas is offset by a decrease of (0.077%) in ROE. Such a negative result is consistent with Almaqtari, Al-Homaidi, Tabash, & Farhan, (2019)

Concerning the Coefficient of GDP growth rate has been found to have a positive impact on the banks' ROA and ROE and is statistically significant at 1% ($p = 0.00 < 0.01$). This indicates that an increase of 1% in GDP growth rate is met by an increase of 0.013% in ROA, whereas there is an increase of (0.181%) in ROE. This result consistent with the results reported by of Herdhayinta & Supriyono, (2019); Dönmez, (2019); and Boitan, (2015) who found out that a positive impact on and correlation between GDP growth rate and banks' profitability.

Finally, inflation rate is found to has no effect on ROA because the p-value of this variable is higher than 5%. However, it is found to have a positive and significant impact on ROE at the level of 5% (P value < 0.05). This shows that an increase of 1% in inflation rate is offset by an increase of 0.14% in ROE. Such a positive finding is consistent with Herdhayinta & Supriyono, (2019).

4.3.2. Islamic Banks' Profitability Analysis Model

According to Panel data on Islamic banks, results are analyzed and classified into two groups: bank's internal determinants and macroeconomic external determinants of profitability using ROA and ROE as dependent variables individually examined against the two categories of explanatory variables. Table 4, shows regression estimate results obtained by using fixed effect model and random effect model in line with the generalized least squares technique.

In the case of Islamic banks as Table 4, the results clear that the p value of Hausman test in the first and second models was 0.9642 and 0.9982 respectively. Thus, obtained P-value is more than 5% ($p \text{ value} > 0.05$) suggesting that random effect model is more appropriate and statistically preferred over fixed effect model. Consequently, Random effect model showed that the R-Squared value of the first and second models reached 91% and 95%, respectively. This means that independent variables explain 91% of variations in the dependent variable (ROA), while for ROE, the independent variables explain 95% of the variations of ROE and the remaining percentage of variance are explained by other factors not included in the study. On the other hand, Prob F-statistic value reached (0.000), which is lower than (0.05). This means that random-effect model is generally significant.

Table 4: Regression Analysis of Islamic Banks' Profitability (ROA&ROE)

| Var | Model 1 (ROA) | | | | Model 2 (ROE) | | | |
|---------------------------|---------------------|--------|--------------------|--------|---------------------|--------|--------------------|--------|
| | Random effect Model | | Fixed effect Model | | Random effect Model | | Fixed effect Model | |
| | Coeff | Prob. | Coeff | Prob. | Coeff | Prob. | Coeff | Prob. |
| C | -0.0049 | 0.6158 | -0.0028 | 0.7697 | 0.0214 | 0.4891 | 0.0242 | 0.3732 |
| Internal variables | | | | | | | | |
| AQ | 0.0024 | 0.2576 | 0.0009 | 0.6906 | -0.1103 | 0.0000 | -0.1150 | 0.0000 |
| CAR | 0.0188 | 0.0000 | 0.0180 | 0.0000 | 0.1197 | 0.0000 | 0.1194 | 0.0002 |
| LIQ | -0.0157 | 0.0000 | -0.0170 | 0.0000 | -0.1524 | 0.0000 | -0.1302 | 0.0003 |
| DEP | 0.0013 | 0.1725 | 0.0013 | 0.1361 | 0.0547 | 0.0077 | 0.0574 | 0.0070 |
| NPL | -0.0112 | 0.0001 | -0.0119 | 0.0004 | -0.1301 | 0.0005 | -0.1199 | 0.0025 |
| SIZE | 0.0002 | 0.1110 | 0.0003 | 0.0597 | 0.0062 | 0.0690 | 0.0070 | .0685 |
| OPEF | -0.0127 | 0.0000 | -0.0137 | 0.0000 | -0.1382 | 0.0000 | -0.1369 | 0.0000 |
| External variables | | | | | | | | |
| EXH | -0.0183 | 0.0000 | -0.0184 | 0.0000 | -0.3252 | 0.0000 | -0.3413 | 0.0000 |
| GDP | 0.0085 | 0.0268 | 0.0088 | 0.0178 | 0.2481 | 0.0000 | 0.2606 | 0.0000 |
| INF | 0.0045 | 0.4037 | 0.0039 | 0.4611 | 0.1999 | 0.0002 | 0.2209 | 0.0001 |
| R ² | | .915 | | .918 | | .958 | | .959 |
| Adj.R ² | | .909 | | .911 | | .955 | | .955 |

| | | | | |
|--------------|--------|--------|--------|-------|
| F Statis | 157.12 | 134.14 | 332.13 | 279.5 |
| Prob. F test | 0.000 | 0.000 | 0.000 | 0.000 |
| No. Obs | 156 | 156 | 156 | 156 |
| Hausman test | 0.9642 | | 0.9982 | |

Source: Prepared by the researcher based on E-view Results.

- The findings of the impact of the internal variables on Islamic banks' ROA and ROE showed as follow:

As shown by random-effect model in Table 4, regard to the impact of bank's internal variables on the profitability of Islamic banks as measured by ROA. The results indicate that coefficients of CAR have a positive and significant impact on ROA at the level of 1% (P value < 0.01). However, AQ, DEP and SIZE is found to have not significant on ROA which has p-value greater than 0.05 (p value >5%). Further, LIQ, NPL, and OPEF coefficients are negative, and these variables are statistically significant at 1%. This result is partially consistent with the results of Herdhayinta & Supriyono, (2019) ; Alshatti, (2015); Acaravci & Çalim, (2013); Saeed, (2011) who reported that variable of capital adequacy has a positive and significant impact on bank's ROA. However, this contradicts with their views concerning the association between liquidity ratio and asset quality with the bank's profitability (ROA). Furthermore, this finding is consistent with Abel & Roux, (2016), Moin (2008), Delis, & Staikouras, (2006); Athanasoglou, Delis, and Staikouras, (2006); Herdhayinta & Supriyono, (2019), Anbar & Alper, (2011), and Ramadan, Kilani, and Kaddumi, (2011) who indicated that a negative association between non-performing loans ratio and operational efficiency ratio with the bank's profitability (ROA).

Regarding to the Islamic banks' internal determinants impact on ROE as shown in the second model, the results indicate that the coefficient of AQ, LIQ, NPL, and OPEF ratios are found to have a negative and significant impact on ROE at the level of 1% (P value < 0.01). However, CAR and DEP coefficient has a positive and statistically significant impact on banks' ROE at 1% (p = 0.00 < 0.01). On the other hand, SIZE is found to have not significant on ROE which has p-value greater than 0.05 (p=0.069 >5%). These results contradicted with the results reported by Herdhayinta & Supriyono, (2019); Alshatti, (2015); Acaravci & Çalim, (2013); Saeed, (2011) who found out that CAR has a positive nexus with the bank's ROE. On the other hand, this result is consistent with the findings reported by Abel & Roux, (2016); (Moin, (2008); Delis & Staikouras, (2006); Herdhayinta & Supriyono, (2019); (Anbar & Alper, (2011); Ramadan et al., (2011) who indicated that a negative association between non-performing loans ratio and operational efficiency ratio with the bank's profitability (ROE).

- As concerns the impact of the macroeconomic variables on Islamic banks' ROA and ROE, it has been found that:

The analysis in Table 4 reveals that the coefficient of exchange rate (EXH) in the first and second model has a negative and significant impact on the Islamic banks' ROA and ROE at 1% (p = 0.00 < 0.01). This means that an increase of exchange rate in 1% is offset by a decrease of (0.0183%) in ROA, whereas is offset by a decrease of (0.323%) in ROE. Such a negative result is consistent with (Almaqтари et al., 2019).

Concerning the Coefficient of GDP growth rate has been found to have a positive and significant impact on the Islamic banks' ROA at 1% (p = 0.00 < 0.01). Also, it has a positive and significant impact on the Islamic bank's ROE at 5% (p = 0.02 < 0.05). This indicates that an increase of 1% in GDP growth rate is offset by an increase of 0.013% in ROA, whereas there is an increase of (0.248%) in ROE. This result consistent with the results reported by of Herdhayinta & Supriyono, (2019); Dönmez, (2019); and Boitan, (2015) who found that a positive association between GDP growth rate and banks' profitability.

Finally, inflation rate is found to has no effect on ROA because the p-value of this variable is higher than 5%. However, it is found to have a positive and significant impact on Islamic banks' ROE at the level of 5% (P value < 0.05). This shows that an increase of 1% in inflation rate is offset by an increase of 0.199% in ROE. Such a positive finding is consistent with Herdhayinta & Supriyono, (2019).

Table (5) shows the association between the bank's profitability and internal and external variables. ROA as profitability measure, correlates positively with capital adequacy and GDP rate, whereas it has a negative correlation with non-performing loans ratio, operational efficiency, and exchange rate. Such as this result is congruent in all Commercial and Islamic banks operating in Yemen. However, when ROE is the profitability measure, findings find a significant positive correlation between deposits rate, GDP, and

inflation rate for both Commercial and Islamic banks, whereas it has a negative correlation between asset quality, liquidity, non-performing loans, operational efficiency, and exchange rate.

Table 5: Comparability of Results between Commercial & Islamic Banks:
Comparability of results between Commercial & Islamic Banks

| Variables | Model 1 (ROA) | | Model 2 (ROE) | |
|-------------------------------|------------------|---------------|------------------|---------------|
| | Commercial Banks | Islamic Banks | Commercial Banks | Islamic Banks |
| Internal variables | | | | |
| Asset Quality (AQ) | + | N/A | - | - |
| Capital Adequacy Ratio (CAR) | + | + | - | + |
| Liquidity Ratio (LIQ) | + | - | - | - |
| Deposits Ratio (DEP) | - | N/A | + | + |
| Non-performing loans (NPL) | - | - | - | - |
| Bank Size (Log size) | + | N/A | + | N/A |
| Operational Efficiency (OPEF) | - | - | - | - |
| External Variables | | | | |
| Exchange Rate (EXH) | - | - | - | - |
| Gross domestic product (GDP) | + | + | + | + |
| Inflation (INF) | N/A | + | N/A | + |

Note: (-) Sig and negatively related, (+) Sig and positively related, (N/A): no Significant relationship.

CONCLUSION

Profitability is an important criterion for determining a bank's performance, especially in a fluid environment. This study is mainly aiming at evaluating the impacts of the bank's internal determinants and macroeconomic (external) determinant on financial performance measures (ROA & ROE) in Commercial and Islamic banks of Yemen during the period 2005 – 2018. In this study ROA and ROE are used as dependent variables, whereas independent variables are divided into two categories. The first category includes bank's internal determinants (asset size, capital adequacy, asset quality, liquidity, deposit size, operational adequacy, and non-performing loans). The second category contains macroeconomic variables such as GDP, inflation rate, and exchange rate. Econometric model of fixed effect model and random effect model in accordance with the generalized least squares technique is used together with Panel data (cross-sectional data and time series) collected from 6 banks of Yemen for the period 2005–2018. This study came out with the following results:

The first model results show that when ROA is used as the measure of Commercial banks' profitability, the capital adequacy ratio, asset quality ratio, liquidity ratio, asset size, and GDP have a positive and significant impact on Commercial banks' ROA performance. However, it was found that there are negative and significant relations between deposit size, non-performing loans, operational efficiency, and exchange rate with Commercial banks' ROA performance. This means it rejected the null hypothesis that "there are no exist statistically significant effect of capital adequacy ratio, asset quality ratio, liquidity ratio, bank size, non-performing loans ratio, operational efficiency ratio, GDP and exchange rate on Commercial banks profitability (ROA)". In view of the finding on the effect of inflation rate on Commercial bank profitability, the null hypothesis accepted.

When ROA is used as the Islamic banks' profitability measure, the obtained results show that capital adequacy and GDP have a positive and significant impact on Islamic banks' ROA performance. However, it was found that there are negative and significant association between liquidity ratio, non-performing loans, operational efficiency, and exchange rate with Islamic banks' ROA performance. This means it rejected the null hypothesis that "there are no exist statistically significant effect of capital adequacy ratio, liquidity ratio, non-performing loans ratio, operational efficiency ratio, GDP and exchange rate on Islamic banks profitability (ROA)". In view of the finding on the effect of assets quality, deposit ratio and bank size on Islamic bank profitability, the null hypothesis accepted.

The second model results show that when ROE is used as the measure of Commercial banks' profitability, the deposit ratio, asset size, GDP, and inflation rate have a positive and significant impact on Commercial banks' ROA performance. However, it was found that there are negative and significant relations between capital adequacy, asset quality ratio, liquidity ratio, non-performing loans, operational efficiency, and exchange rate with Commercial banks' ROE performance. This means it rejected the null hypothesis that "there are no exist statistically significant effect of capital adequacy ratio, asset quality ratio, liquidity ratio, bank size, non-performing loans ratio, operational efficiency ratio, GDP and exchange rate on Commercial

banks profitability (ROA)". In view of the finding on the effect of inflation rate on Commercial bank profitability, the null hypothesis accepted.

When ROE is used as the Islamic banks' profitability measure, the obtained results show that capital adequacy, deposit size, GDP, and inflation rate have a positive and significant impact on Islamic banks' ROE. However, it also was found that there are negative and significant association between asset quality, liquidity ratio, non-performing loans, operational efficiency, and exchange rate with Islamic banks' ROE. This means it rejected the null hypothesis that "there are no exist statistically significant effect of capital adequacy ratio, assets quality, liquidity ratio, deposit ratio, non-performing loans ratio, operational efficiency ratio, GDP and exchange rate on Islamic banks profitability (ROE)". In view of the finding on the effect of bank size on Islamic bank profitability, the null hypothesis accepted. Based on data analysis, this study highlights the following recommendations:

Management of Islamic and Commercial banks in Yemen should endeavor to maintain a stable Capital Adequacy ratio, since high core capital in banking sector of Yemen means that this capital is oriented towards indirect investments in the form of deposit certificates and treasury bills at the Central Bank of Yemen rather than being channeled it properly into direct public lending and investments that would cause a negative impact on profitability if it is not transferred as loans.

Some ratios need to be adjusted to improve banks 'performance. For instance, in Islamic banks, liquidity is of high ratio compared with the locally and internationally accepted standard (25%) and (30%), respectively. Upon considering the system for utilization of funds by Islamic banks in terms of profit and loss sharing, it seems that it is relatively high. Consequently, it is indicating that there are suspended financial resources cannot be found in safe investment and strong credit opportunities, because Islamic banks do not require to have high level liquidity and are less exposed to risks of sudden cash withdrawals compared with Commercial banks.

The study also concluded that the banks suffer incompetent operational efficiency as they record high ratio greater than 55%. Therefore, the study recommends that banks should effectively manage their operational expenses and costs to ensure that their banks are efficient and to maximize profits in the long runs.

It is also noted that the non-performing loans ratio in commercial bank's was high, so bank credit portfolio should be adequately monitored by managers because a highly geared bank to may experience a negative performance over time.

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