

# Evaluating the Performance of Saudi Commercial Banks Using CAMELS Methodology

Dr. Mohammad Nadem Dabaghie \*

Business School, Al-Ahliyya Amman University, PO box 19328 Amman- Jordan

Dr. Khaled Subhi Rajha

Business School, Shaqra University, PO box 11961, Saudi Arabia

## Abstract

This study aims to evaluate the Saudi commercial banks performance using CAMELS methodology with a sample of 12 Saudi commercial banks listed on the Saudi Stock Exchange during the period 2010-2016. The study measures the performance by calculating the rate of return on assets, while the independent variables included elements of the CAMELS model, in addition to the rate of growth, inflation and the bank size. The study results show that capital adequacy, asset quality, management efficiency, and profitability have a statistically significant positive impact on the performance of Saudi commercial banks. Liquidity and market risk sensitivity were a significant negative impact on the performance of Saudi commercial banks. As well, growth and volume had a positive and statistically significant impact while inflation had a negative and statistically significant impact on the banks performance. The study recommends increasing attention to the preparation of training courses in the evaluation of banks using the CAMELS model in order to develop regulatory systems. The study also recommends that SAMA should make more efforts to reduce non-performing loans

**Keywords:** Return on Assets, Inflation, Growth, CAMELS Model.

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## 1. Introduction

The banking sector in the kingdom of Saudi Arabia is considered as the most important economic sectors, where it was able to record quantitative and qualitative growth, and provided adequate funding to Saudi economy (Ishaq, Kareem, Zaheer and Ahmad, 2016). In general, banks play the mediation role in the economy through practicing the traditional function of collecting savings in the form of deposits, and granting the necessary funding for different categories and segments of society. Banks also play a major role in economic development, in the redistribution of funds and in risk management (Yung, 2009).

Many researchers have pointed out that the integrity of the national economy and the effectiveness of monetary policy for any state depends on the integrity of financial system particularly banks (Ongore & Kusa, 2013; & Yung, 2009).

The prudent supervision of banks includes a range of activities aimed at identifying and addressing any practices that could threaten the bank's safety or long-term stability. These activities include ensuring compliance with legislation, regulations, and addressing non-compliance, and monitoring any unsafe practices or incorrect and imposing addressing of such practices (Sangmi & Nazir, 2010). Central banks can use several ways to ensure prudent control of banks including office control and field control, where the field supervision provides a lot of detailed information about the financial situation of the banks and the qualitative variables in it such as, internal control, performance of Board of Directors and risk management strategies (Hirtle and Lopez, 1999). Sarker (2005) mentioned that required a long time and high cost because it based on periodic visits to the bank from the supervisory institution. The study added that the office control is a checking way that depends on the reports and periodic financial disclosures issued by the bank, in order to analyze the information and calculating the main financial ratios of the bank's performance.

Accordingly, this study aims to evaluate the performance of Saudi banks through using CAMELS methodology to identify the effect of this methodology on the measurements of Saudi banks performance.

## 2. The Study importance

The importance of this study comes from the importance of banking performance in general and the importance of assessment of banks performance by applying CAMEL model, one of the most widely using tools in controlling and evaluating banks institutions (Thagunna & Poudel, 2013). CAMEL model is characterized to achieve a comprehensive evaluation for the bank performance and its financial robustness through relying on six main dimensions that represent the most important areas of banking business, which are capital adequacy, asset quality, efficiency of management, profitability, liquidity and market risk sensitivity (Rose & Hudgins, 2010). Thus, the evaluation of Saudi banks performance through using CAMELS model provides integrated and comprehensive idea about the general performance of the bank in terms of identification the strengths and

weaknesses.

The importance of this study also lies in that it examines the banks performance under three groups of independent variables to identify the influencing variables on the Saudi banks performance measures. These independent variables consist the elements of CAMELS model as internal measures for the banks under study, in addition to external variables related to the banking sector and macroeconomic, and some control variables.

### 3. Problem Statement and Questions

It can be argued that the problem of this study comes from the lack of clarity of the relationship between the elements of the CAMELS models and the performance of banks. CAMELS model used in order to measures an aspect of banking performance by regulatory bodies includes six elements. Thus, it becomes necessary to identify the direct reflections of these elements on the measures of banks performance and to determine which of these elements has the most impact on the performance, in order to evaluate the effectiveness of these elements and their ability to interpret the performance of banks. Accordingly, the main question related to this study is:

What is the effect of CAMELS model elements on the measures of Saudi banks performance? Moreover, six sub-questions arise from this question:

- 1- What is the effect of capital adequacy ratio on the Saudi banks performance measures?
- 2- What is the effect of assets quality on the Saudi banks performance measures?
- 3- What is the effect of management efficiency on the Saudi banks performance measures?
- 4- What is the effect of the banks' profitability on the Saudi banks performance measures?
- 5- What is the effect of bank's liquidity on the Saudi banks performance measures?
- 6- What is the effect of market risk sensitivity on the Saudi banks performance measures?

### 4. The Study Objectives

The main objective of this study is to test the effect of CAMELS model elements on the Saudi banks performance measures. This objective is divided into six sub-objectives as follows:

- 1- To identify the impact of capital adequacy on Saudi banks performance measures.
- 2- To identify the impact of assets quality on Saudi banks performance measures.
- 3- To identify the impact of management efficiency on Saudi banks performance measures.
- 4- To identify the impact of bank's profitability on Saudi banks performance measures.
- 5- To identify the impact of bank's liquidity on Saudi banks performance measures.
- 6- To identify the impact of market risk sensitivity on Saudi banks performance measures.

### 5. The Study Hypotheses

According to the study questions and objectives, the following are the study hypotheses:

- 1- HO<sub>1</sub>: There is no statistically significant effect at the level ( $\alpha = 0$ ) of the capital adequacy ratio on the performance measures of Saudi banks.
- 2- HO<sub>2</sub>: There is no statistically significant effect at the level ( $\alpha = 0$ ) of the asset quality on the performance measures of Saudi banks.
- 3- HO<sub>3</sub>: There is no statistically significant effect at the level ( $\alpha = 0$ ) of the management efficiency on the performance measures of Saudi banks.
- 4- HO<sub>4</sub>: There is no statistically significant effect at the level ( $\alpha = 0$ ) of the bank profitability on the performance measures of Saudi banks.
- 5- HO<sub>5</sub>: There is no statistically significant effect at the level ( $\alpha = 0$ ) of the bank liquidity on the performance measures of Saudi banks.
- 6- HO<sub>6</sub>: There is no statistically significant effect at the level ( $\alpha = 0$ ) of the market risk sensitivity on the performance measures of Saudi banks.
- 7- HO<sub>7</sub>: There is no statistically significant effect at the level ( $\alpha = 0$ ) of the inflation on the performance measures of Saudi banks.
- 8- HO<sub>8</sub>: There is no statistically significant effect at the level ( $\alpha = 0$ ) of the growth on performance measures of Saudi banks.
- 9- HO<sub>9</sub>: There is no statistically significant effect at the level ( $\alpha = 0$ ) of the size on performance measures of Saudi banks.

### 6. The Study Limitations

The spatial limits: this study was conducted on the local banks listed in Saudi Exchange. As well, time limits because the Study covers the period 2010-2016.

## 7. Previous studies and Theoretical framework

### 7.1 Previous studies

Study by Athanasoglou, Brissimis, & Delis (2008) under the title: "Bank-Specific, industry, Specific and macroeconomic determinants of bank profitability." The study aimed to evaluate the effect of variables related to banks, and variables related to the banking sector and macroeconomic variables on Greek banks profitability during the period 1985-2001. The results showed that the banks maintained their profits during the studied period, which means that the market structure is a little far from the full competition. The results showed also that all the variables related to banks except the bank size have important effect on the profitability of the bank.

Study by Ali & Ahmed (2011) entitled: "Bank-Specific and Macroeconomic indicators of profitability- Empirical evidence from commercial banks of Pakistan." The study aimed to examine the indicators of profitability in Pakistanian banks during the period 2006-2009. The study used the banking and macroeconomic indicators as the independent variables to identify their impact on the performance indicators of the banks in terms of ROA and ROE. Through descriptive statistics and the analysis of correlation and regression the results showed that management efficiency, operational efficiency and economic growth positively affect the performance measures of banks, while the credit risk has a negative impact on performance.

Study by Ongore & Kusa (2013) entitled, "Determinants of Financial Performance of Commercial Banks in Kenya." The study aimed to test the factors affecting the performance of commercial banks in Kenya during the period 2001-2010. The study used two groups of independent variables; the first one included the five elements of CAMEL model, while the second one consisted of the macroeconomic factors which are the gross domestic product and inflation rate. While the banks performance indicators have included three measures; ROA, ROE and interest rate margin. The results showed the internal factors have a major impact on the performance of commercial banks in Kenya, while the macroeconomic indicators have no impact on financial performance.

Study by Kumar & Sayani (2015) entitled: "Application of CAMEL Model on the GCC Islamic Banks: 2008-2014." The study aimed to test the strength of Islamic banks in the Gulf counters during the period 2008-2014. The study was conducted on a sample of 11 Islamic banks distributed on Saudi Arabia, Emirates, Qatar, Bahrain and Kuwait. According to the five elements of CAMEL model, the results showed that although the Islamic banks in Gulf countries have a high capital adequacy but their asset quality and profitability have declined during the study period.

Study by Alyousfi, Saha, & Md-Rus (2017) entitled "Profitability of Saudi Commercial Banks: A Comparative Evaluation Between Domestic and Foreign Banks Using Capital Adequacy, asset Quality, Management Quality, Earning Ability and Liquidity Parameters." The study aimed to evaluate the profitability of Saudi banks both the local and foreign through using the five dimensions of CAMELS model during the period 2000-2014, in the light of increasing of competition intense that due to the entrance of foreign banks to Saudi market. Through conducting the regression analysis, the results showed that the profitability of national banks was higher than of foreign banks, and the foreign banks were more subjected to credit risk than local banks. The results showed that capital adequacy rate has a positive impact on the profitability, while the rate of non-performing loans and the bank's size has a negative effect on profitability. Therefore, this study deals with how to evaluate Saudi banks using CAMELS model. This issue is of high importance because it is studying prudent supervision mechanism over banks, including office and field supervision. It can be said that there is a relative scarcity in previous studies deal with this subject with its six elements through applied analysis, especially Saudi studies.

### 7.2 Theoretical Framework

There are different definitions to performance assessment according to research opinions. For example, Reddy & Prasad (2013) defined it as: "making sure that the resources available are best used in a best way to achieve the planned goals, by examining the quality of performance and making the right decisions to reorient the courses of activities to achieve the desired goals. Others argued that performance assessment is related to actions and operations that aim to organize the relationship between the available resources and the efficiency of using them in the organization (Kouser & Saba, 2012).

Accordingly, we can conclude that performance assessment process is a part of controlling, where it measures the organization's outcomes by a group of efficiency and effectiveness indicators, and comparing them with the planned standards in order to issue valuation provisions help decision – making.

#### 7.2.1 Performance evaluation objectives

The general goal of performance evaluation process is making sure that the actual performance is consistent with the plans that were developed. But there are some other objectives for performance evaluation as follows:

- 1- Detect some administrative and organizational problems by analyzing the results of the reports.
- 2- Evaluation of the validity of human resources management systems. This evaluation is considered as attest of the safety and success of selection and recruitment methods.
- 3- Determining the responsibility of each department in the organization about the weakness in

activities performed by it, through measuring the productivity of each department from those who are related to production process, to reveal if their performance was negatively or positively which create kind of competition among departments towards the performance improvement.

- 4- Activation of regulatory bodies on the performance of their work through the information provided by the performance evaluation, which enables them to verify that companies operate efficiently (Olagunju, David, & Samuel, 2011).

### 7.2.2 The importance of performance evaluation

- 1- Performance evaluation is considered one of the most important pillars on which the control process is based.
- 2- It helps directly in problems diagnosis and solving them, and determining the weaknesses and strengths in the firm.
- 3- It is considered as an important supporter in designing the general policy whether on the level of the firm, or industry or the state.
- 4- Identifying the extent of achieving the planned goals through using financial and statistical data.
- 5- Identify the validity extent of policies and strategies during the financial year (Reddy & Prasad, 2013).

### 7.2.3 Arising of and evolution of CAMELS model

The first use of CAMELS model was in the beginnings of 1980 by the Federal Reserve of America, where the United States was one of the first countries to use early warning standards due to bank failures since 1929. The results of the analysis that was conducted by the Federal Reserve, has imposed many questions about the credibility of this method in measuring the safety of financial situations of banks. The economic analysts have stated that the outcomes of this method in revealing the causes of banks failures, and ensuring their safety were better than using the traditional statistical analysis, the studies also have confirmed the ability of this method on determining the risk degree in the bank before revealing it by market and price mechanism. Therefore, many researchers and analysts supported the necessity of publishing these outcomes to the public, in order to provide the real information to the public, and to improve their ability to select the bank that of low risk and better performance. The researcher also proposed to disclose the results of the CAMELS analysis through financial statements that were revealed to the public that achieve a high level of transparency, according to the decisions of Basel II (Erol, Baklaci, Aydogan, & Tunc, 2014).

### 7.2.4 Definition of CAMELS Standard.

CAMELS indicator can be defined as a quick indicator of the actual financial position of a bank and its classification degree, and it is one of the direct means of control that is carried out through field inspection. Where the control bodies in America have adopted the outcomes of CAMELS criteria especially in decision-making CAMELS model is considered also as a tool for control the banks operations through relying on analyzing of the quarter outcomes sending from banks to the central bank. And then to conduct a quarterly classification and evaluation based on the six elements of CAMELS standard; capital adequacy, asset quality, profitability, liquidity, management efficiency, and the sensitivity for market risk (Rashid & Jabeen, 2016).

### 7.2.5 Elements of CAMELS Standard

- 1- Capital adequacy: capital adequacy determines the ability of the firm in facing the obstacles that may facing the balance sheet items, and the importance of the indicators of capital adequacy lies in that they take the most important financial risks in account such as exchange rate risk, credit risk and interest rate risk. The main indicators used in this field are the cumulative capital ratios and the frequency distribution of capital rates (Erol et al., 2014).
- 2- Asset quality indicators: The credibility degree of capital ratios depends generally on the degree of reliability of the indicators of asset quality. In addition, the insolvency risks in the financial firms are due mainly to asset quality and the difficulty of liquidating them. From here the importance of monitoring the asset quality stems, because these indicators should take in account the credit risks especially in external operations which imposed two kinds of evaluation:
  - a- Indicators relating to the borrowing institution such as; sector credit concentration, borrowing in foreign currency, non-performing loans-loans for loser public institutions and financial leverage indicators.
  - b- Indicators of lending institution: these indicators include the quality of loans within the lending portfolio, loans to equity ratio, profitability of firms sector, other indicators for non-financial companies, and family sector debt (Salameh & Al-Zubi, 2012).
- 3- Management efficiency indicator: The good management is very important in the performance of financial firms in particular and other different sectors in general. However, most of these indicators can be used only in the same firm, because it is not easy to be used as common indicators in this content, also they are qualitative indicators and not quantitative, so, they can be applied in operations risk. However, there are some quantitative indicators could rely on them such as;

- spending rates, revenue per employee, and expand the number of financial institutions (Ferrouhi, 2014).
- c- Profitability indicators: Declining of these ratios is the alarm of problems existing in the profitability of firms and financial institutions, while the great height of these ratios may reflects an investment policy in risky portfolios. There are a number of ratios can be used to evaluate the profitability of firms: ROA, ROE, income and spending rations, and structural indicators. The insolvency may happen because of bad management (Salameh & Al-Zubi, 2012).
  - 4- Liquidity indicator: in many cases the financial insolvency happens for firms because of bad liquidity management, therefore it becomes very important to monitor the liquidity indicators. The liquidity indicators can be concluded from both assets and liabilities sides of the balance sheet. In the liabilities side, the liquidity sources should be identified and monitored, as well, linking with the usage of assets. Where the maturity date for both must be consistent. In order to achieve the best liquidity management, the following indicates should be taken in account: Facilities provided by the Central Bank, interbank rates, deposits to loans rate, accrual date for liquid assets and liabilities, the liquidity of secondary market.
  - 5- The indicator of sensitivity for market risk: This indicator is highly related to the investment portfolios of banks, where these portfolios contain a big number of financial tools such as securities, government bonds, foreign bonds, financial bonds, financial derivatives such as options and futures. Therefore, these investments are most likely to risk occurrence which must be measured periodically through the standard scale (VAR) where it can measure the highest expected loss in the investment portfolio during a certain time period (Yung, 2009).

The following table shows a Summary of the definition of the study variables and the type of the expected relationship between the dependent variable and the independent variables.

Table 1. Dependent and Independent variables

Variables	symbol	Method of Measurement	Expected relationship
Rate of return on assets Second: Independent Variables	ROA	Net income / Total assets	
Capital Adequacy	C	Rate of capital adequacy disclosed by banks	+ / -
Assets quality	A	Non-performing loans disclosed by banks total loans	-
Management Efficiency	M	Operating expenses / Total Assets	+ / -
Earnings	E	Net income / Total equity	+
Liquidity	L	Legal liquidity disclosed by banks	+
Sensitivity to market risk Third: Macroeconomic Variables	S	Securities portfolio / Total assets	-
Inflation	INF	Inflation rate issued by SAMA	- / +
Growth Rate Fourth: Control Variables	EG	Net earnings of interests and commissions	+
Size	Size	Natural logarithm of Asset size	+

## 8. Methodology

### 8.1 The study model

Based on the methodology used in many previous studies such as, the study of Uzhegova (2010) and Erol et al., (2014). As well, the studies that examined the limits of bank's performance by using the bank's internal factors and banking sector factors or the whole economy, such as the study of Athanasoglou et al (2008). In the light of methodologies listed in studies that have used CAMELS model in evaluation the banks performance such as the study of Dey (2014); Yung (2009). The comprehensive model of the current study formulated in order to include all of the variables test banks performance under the elements of CAMELS model. Moreover, the market structure and concentration, and the variables of macroeconomic such as economic growth, and inflation rate, in addition to a group of control variables, therefore the model of this study will take the formula below:

$$PER_{i,t} = f(CAMELS_{i,t}, MS_{i,t}, ECO_i, CONT_{i,t}, \varepsilon_{i,t}) \dots (1)$$

Where:

- $PER_{i,t}$ : is the measure of banks performance on rate of return on equity (ROA).
- $CAMELS_{i,t}$ : The internal variables of banks that include the six elements of CAMELS model.
- $ECO_i$ : They are the macroeconomic variables, which include economic growth (EG) and inflation

rate (INF).

- $CONT_{i,t}$ : The control variables that include the bank size (B-size).
- $\epsilon_{i,t}$ : Random error in calculation.

Accordingly, the detailed model of this study that aims to examine the effect of the independent variables on the dependent variable, which is the rate of return on total assets (ROA), takes the following equation:

$$= \beta_0 + \beta_1 CT_{i,t} + \beta_2 A_{i,t} + \beta_3 M_{i,t} + \beta_4 E_{i,t} + \beta_5 L_{i,t} + \beta_6 S_{i,t} + PER_{i,t} + \beta_7 INF_{i,t} + \beta_8 EG_{i,t} + \beta_9 SIZE_{i,t} + \epsilon_{i,t}$$

## 8.2 The study population and sample

The study population consists of all local Saudi banks, which they are 12 banks listed in Saudi Stock market, while the sample consists of the commercial banks.

## 8.3 Data Collection

Data was collected through the annual reports issued by the banks of the sample during the period 2010-2016. These reports include the annual financial data of the Saudi commercial banks, in addition to the reports issued by SAMA, which include the economic variables, in order to get the sufficient data about inflation and the banks growth during the period under study. The study used three ways to calculate the parameters: ordinary least Square, Fixed Effects and Random-effects.

## 8.4 Descriptive statistics for the study variables:

Table No. 2 below shows a summary for the descriptive analysis for the study variables during 2010-2016.

Table No. 2 Descriptive analysis for the study variables

	<u>ROA</u>	<u>C</u>	<u>A</u>	<u>M</u>	<u>E</u>	<u>L</u>	<u>S</u>	<u>SIZE</u>	<u>EG</u>	<u>INF</u>
<b>Mean</b>	2.852	18.508	2.350	130.5	0.408	0.680	0.205	17.650	0.114	0.042
<b>Maximum</b>	14.079	21.00	7.39	275.0	0.480	0.821	0.310	20.875	0.289	0.057
<b>Minimum</b>	-1.625	12.24	0.064	45.24	0.125	0.610	0.160	11.224	-0.565	0.022
<b>Std. Dev.</b>	1.914	17.230	1.396	49.50	0.502	0.578	35.255	0.876	0.157	0.145
<b>Skewness</b>	1.451	0.424	0.276	0.000	0.081	0.248	0.000	4.428	-0.845	-3.858
<b>Kurtosis</b>	8.451	2.378	2.461	1.000	1.067	1.345	1.000	12.342	6.566	19.156
<b>Jarque-Bera</b>	144.07	5.90	4.55	18.00	16.00	18.00	16.00	17.43	44.23	126.81
<b>Probability</b>	0.000	0.000	0.467	0.116	0.000	0.184	0.000	0.215	0.000	0.000
<b>Observations</b>	84	84	84	84	84	84	84	84	84	84
<b>Cross section</b>	12	12	12	12	12	12	12	12	12	12

The average of rate of return on assets (ROA) of the banks fluctuates between (-1.625 and 14.079 %) with a standard deviation of 1.914%, which shows the differences between the profitability of Saudi banks. The results also showed that the average of capital adequacy ratio (c) amounted about 18.508, with a ratio between (-12.24-21) with a standard deviation of 17.230 which indicates a high rate of capital adequacy in general in spite the big differences among Saudi banks.

The average of asset quality (A) amounted about 2.350, while the percentage fluctuates between (-0.064-7.39) with a standard deviation of 1.396, which shows a high rate of asset quality, and significant differences between Saudi banks. Moreover, the average of management efficiency amounted about 130.5, while the percentage of this indicator lies between 45.24% - 275.0% which shows that Saudi banks are managed by effective management. The profitability average amounted (0.408) with a percentage between (0.125-0.480 %) which shows a high profitability in Saudi banks, besides some difference in this indicator between the Saudi banks.

The liquidity results showed that the average (L) amounted 0.680 and fluctuates between (0.821-0.610) and this indicates to high liquidity percentage in Saudi banks and reasonable differences between the banks in this area. Moreover, the average of sensitivity for market risk amounted 0.205 and fluctuates between the banks from 0.160-0.310, which shows a low sensitivity for the market risk in Saudi banks that due to an actual control by SAMA on all listed banks in Saudi exchange.

There are big differences in the size of Saudi banks where the average of this variable which was measured according to the total assets. These values of this average were between 11.224-20.875. The average of growth rate that was measured by net earnings from interests and commissions amounted 0.114, where the minimum ratio was (-0.565) and the maximum ratio was (0.289) which means a different degree in the efficiency of Saudi banks. The results showed that Saudi banks have affected by the inflation rate where the average of this variable amounted 0.042, while the percentage of inflation for Saudi banks was between 0.022-0.057.

The statistic of Jarque – Bera and its importance indicates that the distribution of all variables is not normal,

but this is not expected to affect the panel regression analysis, this is because the estimation of co-regression coefficients does not assume that the data follow normal distribution. Furthermore, the number of observations in this study reached 84 (12 banks × 7 years) for each variable, and the number of banks was 12 banks.

### 8.5 Results of the regression analysis of the study model

Table No. 3 below shows the results of regression analysis based on the study model.

**Table No. 3 Results of regression analysis**

Variable	ROA		
	OLS	Fixed	Random
A	0.068***	-	0.050
$\beta_1$	0.001	0.005	0.004
$\beta_2$	0.016	0.025	0.013
$\beta_3$	0.003	0.002	0.006
$\beta_4$	0.007**	0.038**	-0.006*
$\beta_5$	-0.001	-0.013	-0.018**
$\beta_6$	-0.038**	-0.024*	-0.034***
$\beta_7$	-0.039**	-0.037**	-0.007*
$\beta_8$	0.036**	0.039**	0.004*
$\beta_9$	0.034**	0.142	0.118
Hausman Test Chi square			2.595246
R <sup>2</sup>	0.3141	0.5617	0.409515
Adj. R <sup>2</sup>	0.2919	0.4430	0.381729
Durbin-Watson	1.8566	1.9280	2.118912
F-statistic	6.5951	21.5830	
Prob(F-statistic)	0.0000	0.0000	

\*\*\*, \*\*, and \* denote that coefficient is significant at 1%, 5%, and 10% respectively. White heteroscedasticity-Consistent Standard Errors & Covariance

Through the table above, we can conclude the following results:

There was full consistency between the three calculation methods in terms of the independent variables with statistically important. The capital adequacy showed a positive and statistically significant effect on return on assets (ROA) under the three calculation methods, which indicates a difference between the performance of Saudi banks, and there is a positive relationship between the capital adequacy and performance. This indicates the strength solidity of Saudi banks in the face of the shocks that hit the balance sheets of these banks, leading to strong performance of profits, good performance of the management and a decline in the volume of troubled assets.

As well, there is a positive statistically important effect for the quality of assets on the return on assets (ROA) under the three calculation methods in terms of a positive relationship between the assets quality and performance, which indicates that Saudi banks maintain Sufficient provisions to meet the expected losses from loans, and there is a good management for loans portfolio that due to the active control and the compliance for the management standards.

The results shows that there is a statistically positive important effect for management efficiency on the return on assets (ROA) under the three calculation methods, and there is a positive relationship between management efficiency and performance, and this due to the compliance of Saudi banks for laws, regulations and legislations issued by SAMA, besides the effectiveness of top and middle management in developing the internal policies of the banks.

Moreover, the results indicated that there were a positive statistically important effect for profitability on the return on assets (ROA) according to least squares method and fixed effect method. However, this variable showed a negative statistically important effect on return on assets according to random effect method. There were a negative statistically important effect to the liquidity on the return on assets (ROA) under the three calculation methods, and there is an inverse relationship between liquidity and performance.

The importance of this coefficient and its negative sign indicates that the increase in

Liquidity leads to a decrease in return on assets, due to the provision of liquid assets to meet the fluctuations of deposits and demand for loans naturally by providing the requirements of control and supervision of operations. There were a negative statistically important effect for the sensitivity to market risk on return on assets (ROA) under the three calculation methods, and there is an inverse relationship between the sensitivity to market risks and performance.

The importance of this coefficient and its negative sign indicates that risks decrease leads to an increase of return on assets due to the provision of liquid assets to meet the fluctuations of deposits and demand for loans

naturally by providing the requirements for control and supervision of the operations. There was a negative statistically important effect for inflation on the return on assets (ROA) in Saudi banks. This result is highly consistent with what was expected and with the results of previous studies, where the importance of this coefficient and its negative sign indicates that the increase of inflation rate affects negatively the effectiveness of banks performance.

The study continued to show that there were a positive statistically important effect for the bank's growth rate on the return on assets under the three calculation methods, and this means that the increase in the growth rate leads to increase of rate of return on assets in Saudi banks. There were a positive statistically important effect for the banks size on the return on assets (ROA) according to least square method, but this variable does not have any importance according to other calculation methods. The importance of this variable and its positive sign indicates to that the increase of bank's size leads to performance improvement, and increase in the rate of return on assets.

The value of Hausman test Chi Square reached to 2.6, so it does not have statistically importance, therefore the Random Effect method was adopted rather than Fixed Effect method. The indicator of Durbin – Watson was near the optimum value (Z) which means the lack of Autocorrelation between the values of the dependent variable.

## 9. The study Results

After conducted the data analysis, the study concludes the following results:

The average return on assets of all banks during the study period was %2.852, and this a fundamental guide to the existence of differences between the profitability of Saudi banks. The average capital adequacy ratio was 21.508%, and the percentage fluctuated between (12.24-190.00) which means a high capital adequacy ratio with big differences between the study samples.

While the average quality of assets (A) was 2.350 with a proportion between 0.064-7.39 which means a high quality of assets. The average management efficiency amounted 130.5 with a proportion of 45.24-275 which means high management efficiency in Saudi banks. The average profitability was 0.408, with a proportion between 0.125-480 which indicating a variance in the profitability of Saudi banks. While the average liquidity was 0.680, the percentage fluctuated between (0.821-610.0) these statistics indicate a high liquidity ratio in Saudi banks, with a variance among these banks.

The average sensitivity for market risk (s) was 0.230, the proportion was 0.000-1.000, which indicates a low sensitivity for market risk in Saudi banks, and this due to the active supervision of SAMA on all banks listed in Saudi Exchange. Capital adequacy, assets quality, management efficiency and profitability have a positive effect on the Saudi banks performance, while the liquidity and the sensitivity to market risks have a negative effect on the banks performance. The growth rate and the bank's size have affected Saudi banks performance positively, while the inflation has a negative effect on the performance.

## 10. Recommendations

The study recommends increasing attention to the preparation of training courses in the field of bank assessment through using CAMELS model in order to develop the controlling systems; also, the study recommends SAMA to take actions to reduce non-performing loans.

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