

PERFORMANCE MEASUREMENT OF COMMERCIAL BANKS IN JORDAN USING THE CAMELS RATING SYSTEM

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ABSTRACT

This study aims to present a comprehensive financial evaluation of commercial banks listed on the Amman Stock Exchange by using the parameters of the CAMELS (Capital adequacy, Asset quality, Management efficiency, Earning quality, Liquidity, and Sensitivity to risks) rating system. The study also aims to determine the effect of the CAMELS system on the performance of the banks. The study relies on an analysis of the available annual reports of all commercial listed banks (13) for the period of 2012–2018 which were extracted from the Amman Stock Exchange website. Multiple linear regression and other statistical methods were used to obtain the descriptive results and to measure the effect of the CAMELS dimensions on the performance of commercial banks.

The study concluded that there is a significant effect of the CAMELS dimensions management efficiency, earning quality, liquidity, and risk sensitivity on the financial performance of commercial banks, but there is no statistically significant effect of the CAMELS dimensions capital adequacy and asset quality on the performance of commercial banks.

Keywords: CAMELS, Commercial banks, Performance, Amman Stock Exchange.

INTRODUCTION

The banking sector in Jordan plays an important role in the economy; this is evident when looking at the main indicators related to these banks, where statistics indicate that the assets of licensed banks reached USD 71.82 billion at the end of 2018, while the credit facilities reached USD 36.82 billion in the same period (Association of Banks in Jordan report, 2019).

The significance of the above indicators is evident given that GDP reached USD 42.2 billion in 2018 (Department of Statistics report 2019), which mean that assets of banks represent (170%) of GDP.

The performance measurement is an important area that researchers have studied over decades; the Basel Committee has been concerned with the use of financial solvency indicators to assess and monitor banks since 1992. Another important system and tool that is used to evaluate and measure the performance of banks is CAEMELS.

The CAMEL rating system (Capital adequacy, Asset quality, Management efficiency, Earning quality, Liquidity) was adopted by the Federal Financial Institution Examination Council in 1979 and then adopted by the administration of the National Credit Union in October 1987 (Dang, 2011).

The CAMELS rating system (with Sensitivity to risks) is a regulatory classification system that was adopted by the Federal Council in 1997. It aims to evaluate financial institutions

on six critical dimensions: capital adequacy, asset quality, management efficiency, profitability, liquidity, and market risk sensitivity (Opez, 1999).

CAMELS was also used by the American government to deal with the global financial crisis of 2008 and to decide which banks to provide special assistance to (Dahiyat, 2012).

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Several works have studied the CAMELS system as a way of carrying out performance evaluations, and there are several studies looking at the link between the parameters of CAMELS adoption and performance.

One of the early studies on this topic (Cole & Gunther, 1995) used CAMEL ratings to evaluate the performance of the banks and compare it with an off-site monitoring system based on available annual reports. Khatri (2018) used CAMELS to rank the banks in India; he found that there is no significant difference between the performance of public sector banks and private sector banks working in India. Another study conducted in Jordan by Dahiyat (2012) developed a framework that consisted of performance indicators on which the Jordan Securities Commission³ can rely to evaluate the performance of brokerage firms using CAMELS. A study by Bastan et al. (2016) found that capital adequacy, quality management, and asset quality are the most important parameters of Iranian banks.

Munir & Bostamam (2017) carried out a study on banks in Malaysia and Indonesia during the period of 2010–2015. The result indicated that CAMEL analysis has a significant relationship with bank profitability. Rostami (2015) used the CAMELS model to evaluate the performance of banks and financial institutions and found a significant relation between each category of CAMELS and bank performance.

Rozzani & Rahman (2013) examined the performance of both commercial and Islamic banks in Malaysia. The study concluded that the levels of performance for both commercial and Islamic banks in Malaysia were highly similar. Ghasavi & Bayraktar (2018) analysed the performance and financial credibility of six Turkish banks for the period of 2005-2016 using CAMELS. Ebrahimi et al. (2017) found that capital adequacy, management quality, and earning quality have a negative statistical effect on banks' profit management, while liquidity has a positive statistical effect on it. Moreover, asset quality does not have a statistical effect on banks' profit management.

Therefore, the hypothesis of the study is as follows:

H1: CAMELS has a statistically significant effect on the performance of commercial banks listed on the Amman Stock Exchange.

RESEARCH METHODOLOGY

Study Population Sample and Data Resources

The study sample comprises all 13 commercial banks listed on Amman Stock exchange¹.

The data were collected from the annual reports of these banks during the period of 2012–2018 (Table 1).

	Bank name
1	Arab bank
2	Arab Banking Corporation (Jordan)
3	Arab Jordan Investment Bank
4	Union Bank
5	Bank of Jordan
6	Cairo Amman Bank
7	Capital Bank of Jordan
8	Invest Bank
9	Jordan Ahli Bank
10	Jordan Commercial Bank
11	Jordan Kuwait Bank
12	Societe Generale de Banque
13	The Housing Bank For Trading & Finance

OPERATIONALIZATION OF VARIABLES

Independent Variables

The independent variables and the method of measurement of these variables are as below:

1. **Capital adequacy:** Measured by dividing total equity into total assets (Dahiyat, 2018; Anbar & Alper, 2011).
2. **Asset quality:** measured by non-performing receivables, which are calculated by dividing the allowance for the impairment of receivable into net revenue. A decrease in non-performing accounts leads to an increase in asset quality (Dahiyat, 2018; Kadioglo et al., 2017).
3. **Management efficiency:** measured by dividing net income into total revenues (Salhuteru & Wattimena, 2015).
4. **Earning quality:** measured by return on assets (ROA) (Roman & Şargu, 2013; Rozzani & Rahman, 2013).
5. **Liquidity:** measured by the quick acid ratio (Dahiyat, 2016; Gibson, 2009)
6. **Sensitivity to risks:** measured by dividing long-term deposits into the total deposits (Rostami, 2015).
7. **Dependent variable (performance):** measured by Tobin's Q ratio (Rostami, 2015; Vafeas & Theodorou, 1998).

This ratio is calculated by the following equation:

$$\text{The total market value of the bank} / \text{total asset value of the bank.}$$

RESEARCH METHOD

To evaluate the banks and examine the relation between CAMELS and performance, the researchers considered correlation, multiple linear regressions with a normal distribution, multicollinearity and Pearson, and other statistical methods using the Statistical Package for the Social Sciences (SPSS) for the 13 listed banks, which represent the whole study population over the period from 2012 to 2018.

Statistical Tests and Empirical Results

Normal Distribution Test

The one-sample Kolmogorov-Smirnov test was used to confirm whether the data followed a normal distribution. Table 2 indicates that the data distribution was normal because the data Significance value is greater than 0.05 and the Kolmogorov–Smirnov test (KS) value is less than 5 (Doane & Seward, 2015).

	Capital Adequacy	Assets Quality	Management efficiency	Earning Quality	Liquidity	Sensitivity to risks	Performance
K-S	1.1207	0.902	1.1206	0.714	1.049	0.667	1.351
Sig	0.109	0.390	0.109	0.687	0.221	0.765	0.052

Multicollinearity and Pearson

The variance inflation factor and the tolerance were extracted. Table 3 indicates that the tolerance for the independent variables was less than 1 and greater than 0.01. In contrast, the inflation coefficient values were less than 5. This is an indication that there is not a high correlation between independent variables, which indicates acceptance of the values and is suitable to perform multiple linear regression analysis (Hair et al., 2018).

Independent Variables	VIF	Tolerance
Capital Adequacy	1.214	0.824
Assets Quality	1.362	0.734
Management efficiency	2.186	0.457
Earning Quality	1.514	0.66
Liquidity	1.141	0.877
Sensitivity to risks	1.774	0.564

To confirm the previous result, Pearson correlation between the dimensions of the independent variable was used.

The results indicate that the highest correlation between the independent variables is 0.646, while the values of the correlation coefficient between the other independent variables are lower. All values are less than 80%, and therefore the sample is free from the problem of high linear multiple correlation (Gujarati & Sangeetha, 2017) (Table 4).

Dimension	Capital adequacy	Assets quality	Management efficiency	Earning quality	Liquidity	Sensitivity to risks
Capital adequacy	1					
Assets quality	0.343**	1				
Management efficiency	0.059	-0.137	1			
Earning quality	0.07	-0.332**	0.484**	1		
Liquidity	0.055	-0.139	-0.223*	0.06	1	
Sensitivity to risks	0.053	0.187	-0.646**	-0.352**	0.058	1
SIG*(0.05), SIG**(0.01)						

Descriptive Results

The mean and standard deviation were extracted to describe the study results for both independent and dependent variables during the study period of 2012–2018 and the results are shown in the Table 5.

Variable	Minimum	Maximum	Mean	Std. Deviation
Capital Adequacy	0.08	0.34	0.1442	0.03873
Assets Quality	0.0044	2.82	0.8039	0.38322
Management efficiency	1.26	6.41	2.661	0.86095
Earning Quality	0.0005	0.02	0.0125	0.00474
Liquidity	0.45	1.21	0.6111	0.12551
Sensitivity to risks	0.20	0.84	0.5118	0.14380
Performance	0.06	0.32	0.1392	0.06157

Hypothesis Test

The results of the hypothesis test using multiple linear regression showed that there is a statistically significant effect of the indicators of CAMELS at the level of $\alpha \leq 0.05$. The value of R² (0.503) indicates that CAMELS dimensions explain 50.3% of the variation in financial performance Tables 6 & 7.

The correlation coefficient R = 70.9% indicates a strong relationship between CAMELS and financial performance.

Management efficiency had the highest impact among the dimensions of CAMELS on the dependent variable (financial performance), followed by liquidity in second place, risk sensitivity in third place, and earning quality in fourth place. Capital adequacy and asset quality did not contribute to the CAMELS impact on financial performance.

Model Summery	
R	R ²
0.709	0.503

Model	Sum of Squares	Df	Mean Square	F	Sig F
Regression	0.172	6	0.029	14.182	*0.00
Residual	0.170	84	0.002		
Total	0.341	90			

Coefficient					
Model	B	Std. Error	Beta	T	T Sig
Constant	0.038-	0.051		0.736-	0.464
Capital adequacy	0.127	0.135	0.080	0.946	0.347
Assets quality	0.008	0.014	0.051	0.572	0.569
Management efficiency	0.027	0.008	0.380	3.342	*0.001
Earning quality	2.816	1.229	0.217	2.292	*0.024
Liquidity	0.152	0.040	0.310	3.771	*0.00

Sensitivity to risks	0.094-	0.044	0.221-	2.154-	*0.034
F (K-1)-(n-1) = 2.15					
T (n-1) = 1.9867					

CONCLUSION

The study found the industry averages for the period of 2012–2018 for capital adequacy, asset quality, management efficiency, earning quality, liquidity, and sensitivity to risks. These indicators may be considered as bases on which banks and other stakeholders can evaluate banks in depend of these indicators (Table 5). The suggested evaluation indicators contain indicators that are complied with previous studies such as Khatri (2018) Anbar & Alper, (2011) and Rostami (2015).

This study also examined the impact of the CAMELS system (Capital adequacy, Asset quality, Management efficiency, Earning quality, Liquidity, and Sensitivity to risks) on the performance of the banks. It is concluded that there is a statistically significant effect of the CAMELS dimensions management efficiency, earning quality, liquidity, and risk sensitivity on the performance of commercial banks. The study results was consistent with Ebrahimi et al. (2017) in that management quality, and earning quality, liquidity have statistical effect on banks' profit management.

Furthermore, there is no statistically significant effect of the CAMELS dimensions capital adequacy and asset quality on the financial performance of commercial banks.

Researchers recommended depending on CAMELS to measure the performance of commercial banks by the central bank of Jordan and other stakeholders, furthermore, it is recommended to apply CAMELS on other sectors such as brokerage companies and insurance companies.

ENDNOTE

1. Amman Stock Exchange, Annual reports of commercial banks. Retrieved from www.ase.com.jo
2. Department of statistics, Retrieved from, <http://dosweb.dos.gov.jo>
3. Jordan Securities Depository Centre, Retrieved from: www.sdc.com.jo

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