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Banks` Performance and the Implications of Micro Risks - Empirical Study

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Abstract

The study aims to investigate the impact of risk factors on the performance of Jordanian commercial banks listed at Amman Stock Exchange - ASE, in addition to explore the mediating role of Asset-Liabilities Management in determining the performance of Jordanian commercial banks through micro risk factors based on a sample of 13 banks' data for 15 years from 2006 – 2020. Regression model was used as the study tool. The results indicated that, Jordanian commercial banks performance is significantly affected by micro risk factors in dissimilar direction. Liquidity risk influenced positively banks' performance, while the credit risk and operational risk affected negatively on the bank's financial performance. Finally, the Asset-Liabilities Management strategy improved the performance of Jordanian commercial banks by 20% to 25%. Subsequently, banks` healthy liquidity position should be sustained to enhance performance, and banks` management should focus more on adopting better approaches in order to constringe credit and operational risk. Additionally, as ALM contemplate a positive impact on financial performance, more concentration should be practiced by management on this technique in order to elevate financial performance to function as a cushion in future unexpected events.

Keywords: Micro; Risks; ALM; Performance; Credit.

Introduction

Banks are financial institutions that play a pivotal role in the stability and development of the economy, as they are a major contributor to the national gross domestic product (GDP). This role becomes more difficult to maintain with raising a risk exposure of banks. So it is of a major concern to understand the main risk determinants that may impact banks' performance and stability (Ramadan, et al.,2011). The nature of

banking services has changed, so they manage their businesses, to maintain their market position while maximizing profits and meeting stakeholders' expectations. In recent decades, the increasing cross-border economic exchanges and the liberalization of the financial markets have increased the speed, size, and scope of capital flow across borders with significant risk implications for the banking system saddled with the onerous task of facilitating international transactions. Due subprime mortgage financial crisis which erupted in 2007, and the eruption of COVID-19 pandemic, Jordanian financial institutions became keen in managing their risks. Accordingly, over the past few years, there has been a dramatic increase in developing frameworks for Risk Management, including; Assets-liabilities Management, Value at Rate, Capital Adequacy, Basel I, II & III, among else. Yet the issue of risk identification and quantification still present challenges with the extreme risk exposures that may result in insolvency, bankruptcy, and crises (Rose & Hudgings, 2013).

This study focuses on examining the micro risks (unsystematic) factors influencing banks' performance within the volatile and challenging economic market. Where the macroeconomic risk refers to the possible influence of external factors that may affect banks' operational performance. Such factors are normally uncontrollable by the financial institutions, as they affect all organizations operating under a similar domain and that should be hedged and faced by them. At the same time, there is another type of risk that does impose an effect on the financial firm's performance which is called micro risk, it is micro as it affects only a particular organization due to the influence of internal factors prevailing within an organization and normally controllable by an organization through remedial actions should be taken by them to eliminate such risks effect. The problem becomes more chronic when a country experiences a financial crisis that significantly aggravated macroeconomic or micro risks, and may lead to organization failures and bankruptcy (Alireza et al., 2014). Based on the aforementioned, this study will investigate the impact of macroeconomic and micro risks on Jordanian banking sector performance. Additionally, the study will also demonstrate the scale of Asset-Liabilities Management (ALM) impact on the financial performance of Jordanian Commercial Banks for the period of 15 years (2006 – 2020).

1. Theoretical Framework:

The conventional business of banks is matching between depositors and borrowers in a manner that matches bank`s risk appetite (Vyas, 2012, p.2). Recently, contemporary banking industry has gone further beyond matching depositors and borrowers, to engage in more complicated transactions which expose banks to more risks, where Competition has been described as the most significant driver of risks in the banking industry, as banks may be ranked by profitability, size, and sometimes their client base (Danielsson & Zigrand, 2015). The Financial system is an

important component of every country's economy, as it provides mechanisms for facilitating payments, matching supply and demand of financial, as well as, enhancing market transparency by performing risk transfer and risk management functions. Risk is the company exposure to any possible event that may affect pre-determined objectives (Hopkin, P. 2018). (Gitman, 2015), defined risk as "a measure of the uncertainty surrounding the return that an investment will earn". In other words, the fluctuation of returns associated with a given asset will be affected by any changes in company`s financial condition. (Islam, 2009) stated that, business sector identified risks as an "invisible and intangible opportunity that might occur in adverse spread of profitability or future losses". Banking activities entail various risks that affect the performance of banks. The banking risk is mainly associated with financial risks because, by nature of the activities they carry out, banks are the first and most affected by the worsening financial and economic conditions in the countries where they operate. Thus, in banking field, risk can be defined as any unexpected changes in the cash flows (Islam, 2009).

Risks that may affect financial institutions can be into Systematic risk, and Unsystematic risk (Outreville, 1998); (Hopkin, 2018). Therefore, Gupta & Gurjar (2014) study considered the Systematic risks and Unsystematic risks as the major risk categories that affect banking sector financial performance. This study will focus only on unsystematic (micro) risks impact on Jordanian commercial banks financial performance.

Micro (Unsystematic) Risk is a part of a risk that is not related to general market movements. So, it's controllable by planning and hedging strategies (Kumah & Sare 2013; Gadzo. et al., 2019). It is that part of a risk that is not related to general market movements, it erupts mainly due to lack of business operating efficiency or due to its inability to maintain a competitive edge or achieve stable profit. Hence, it's controllable by planning and nominating hedging strategies. According to Kumah & Sare (2013); Gadzo et al., (2019) the internal factors governing systematic risks are credit risk, liquidity risk, and operational risk. Credit Risk (CR), Liquidity Risk (LR) and Operational Risk (OR) will be the study proxy of independent variables (micro risks), whereas the ROA and ROE will represent banks` financial performance, and ALM will work as the study moderating variable.

2. Literature Review:

Bank's risks factors attracted several scholars and researchers; within the last few years, as many studies have addressed the discipline into the impact of unsystematic and systematic risks on performance and the practice of risk management within the banking industry. The following is an attempt to summarize the main conclusions of some selected studies.

Tarawneh, (2006) in his study on Omani Commercial Banks, concluded that, banks with higher total capital, deposits, credits, or total assets do not always imply that they have better financial performance, and he revealed that there is a positive correlation among the dependent variables (operational efficiency, asset management, and bank size) and the financial performance (ROA, Interest Income and Size). Al-Tamimi, (2007), examined the degree to which the UAE banks use risk management practices and techniques in dealing with different types of risk. The main results indicated that, the three most important types of risk facing the UAE commercial banks are foreign exchange risk, followed by credit risk, then operating risk, and the UAE banks are efficient in managing risk to a certain extent.

Tafri, et al. (2009), Found that commercial banks ROA & ROE are positively affected by interest rate risk, and there's a negative relationship between credit risk and liquidity risk with ROA and ROE.

Ali, et al. (2011) results showed that, there's a significant positive impact of micro risks indicators such as size, operating efficiency, portfolio composition and asset management on ROA, and, and negative impact of capital and credit risk. Alper. & Anbar (2011) analysed bank-specific factors in addition to macroeconomic factors (GDP, Inflation, and Interest Rate) on Turkeys'` bank's profitability of 10 commercial banks in Turkey over the period 2002 - 2010. The outcome of the study pointed out that that bank`s specific factors have a negative and significant impact on bank's profitability (ROA). Kosmidou, et al. (2012) stated that the capital strength and liquidity has a positive and dominant influence on their profitability (ROA). the other significant factors being efficiency and bank size. In another study by Ćuraka, et al. (2012) conducted in Macedon, results imply that the main determinant of bank profitability is operating expense management, in addition to solvency risk and liquidity risk.

Shrestha, S. (2015), examined the impact of ALM on commercial banks' profitability in Nepal. It concluded that, ALM impacts ROA positively and varies across assets, and that assets composition influence profitability positively. Adegbie. et al., (2013) study on how Asset and Liabilities Management – ALM are effective in banks as distress resolution in Nigerian banking industry, discovered that there is poor ALM, as banks do witness a growth rate in assets more than liabilities. Belete, (2013) study analysis results stated that all current assets, affect positively the commercial banks' profitability, while all liabilities have a negative significant effect on commercial banks' profitability.

Al-Tamimi & Obeidat, (2013) based on their study on Jordanian Commercial Banks, they pointed-out that, there is a significant positive correlation between the degree of capital adequacy with liquidity risk and return on assets, on the other hand, there is an inverse relationship between the degree of capital adequacy with Return on Equity and

Interest Rate Risk. Mihaela, L. (2015), study results show that the bank's size, loans to assets ratio, and liquidity do not have a significant impact on performance, while financial leverage possesses a negative impact. Altarawneh & Shafie, (2018), indicated that operation risks, credit risks, and banks' age have a significant negative impact on ROA, while liquidity risks and bank size reflected insignificant positive impact on ROA.

3. Methodology:

The study adopted a deductive approach, in testing the risk factors impact on Jordanian commercial banks' performance, using this approach we will to examine the study hypothesis testing the real-life case in Jordanian commercial banks (Robson, 2002) and (Thietart, 2001). Cross-section time-series data for 15 years (2006-2020) will be utilised to assess the impact of internal determinants on banks' performance under the Assets-Liabilities Management framework. Hence, Regression Model (multiple regressions, hierarchical regression), to test the hypothesis. The study will focus on (13) commercial banks listed at Amman Stock Exchange – ASE.

3.1 Verification of Data Validity for Statistical Analysis:

In order to identify the extent to which study possesses the characteristics to apply regression analysis, and to remove the outliers through the statistical program (SPSS) which determines the outliers by using the Mahalanobis test within the explore application. As for the researchers (Cox, 2018; Obayashi et al., 2018), the normal distribution of quantitative variables is the most important of these conditions, and according to (Silverman, 2018), if quantitative variables do not follow the natural distribution, it is necessary to replace the parametric tests with nonparametric tests in statistical analysis, and as for (Thompson et al., 2017; Field, 2013; Hayduk & Littvay, 2012). The second condition for using parametric tests to confirm the absence of linear interference between the independent study variables and the moderating variable in the model. The results of these tests were as follow:

3.2 Normal Distribution Test:

(Kolmogorov-Smirnov) test was employed to examine the study model data normal distribution characteristic; the test results were as follows:

Table 1: Normal Distribution Test Results

Variables	Type	Variable	Sig	(K-S)
Micro Risks	Independent	Liquidity Risk (LR)	0.053	0.203
	Independent	Credit Risk (CR)	0.061	0.211
	Independent	Operational Risk (OR)	0.065	0.271
	Moderating	Asset-Liabilities Management (ALM)	0.072	0.127
Performance	Dependent	ROA	0.097	0.190
	Dependent	ROE	0.086	0.112

Based on the above table outcomes, we notice that the probability value (Sig) for all variables is above 5%. Thus, as per (Fang & Chen, 2019) governing rule, we can judge that all variables of the study follow normal distribution.

3.3 Multi-Collinearity Test:

The prediction ability of the study models was also tested to assure that there are no self-correlation problems within the study model, and there is no linear interference dilemma between independent variable, and the outcome were as follows:

Table 2: Validity of the Study Data

Model	Variables	Variable's	Multicollinearity	
			Tolerance	VIF
Micro Risks	Independent	Liquidity Risk (LR)	0.881	1.135
		Credit Risk (CR)	0.903	1.107
		Operational Risk (OR)	0.956	1.046
	Moderating	Asset-Liabilities Management (ALM)	0.997	1.003
Durbin-Watson = 1.921				

Referring to Variance Inflation Factor (VIF) values to determine interference between independent variables. Kraha et al., (2012) stated that, VIF value should not be greater than 10, and as we can see that all VIF values ranges between 1.003 – 1.135. Hence there is no interference dilemma between independent variables. Regarding self-correlation between the independent variable, the problem exists if Tolerance Coefficient value is less than 10%, then the problem exist otherwise it does not (Salmerón et al., 2019). It's clear that Tolerance Coefficient for all independent variables is above 10%. The Autocorrelation test was also conducted to ensure that there was no autocorrelation issue in the models using the (Durbin-Watson) test. According to Field (2013), the problem arises when the contiguous values of the variables are correlated. (Lee, 2016), stated that the appropriate range for this (D-W) test is between (1.5 to 2.5), based on the above calculated (D-W) value of the study model reached (1.921), which falls within the appropriate range which indicates that there is no autocorrelation problem that may impacts the validity of the models.

4. Hypotheses Testing

Regarding the acceptance or rejection of the sub-hypotheses, the value of significance (Sig.t) was adopted where the ruling decision states that there is a statistically significant influence when (Sig.t) is less than 5%, also coefficient value was used to determine the degree of influence and its nature for each independent variable on the performance of Jordanian commercial banks.

4.1 Study Model (1):

H0.1: The Performance of Jordanian commercial banks measured by ROA is not significantly affected by micro risks factors.

Table 3: Model (1) Multiple Regression Results

Variable	Coefficient (β)	Sig. T	Std. Error	T-Statistic
Constant	----------	0.000	0.001	12.346
aLR	0.212	0.000	0.002	5.613
CR	-0.126	0.001	0.006	-3.372
OR	-0.098	0.007	0.000	-2.708
Adjusted R^2	0.046			
R^2	0.049			
R	0.222			
F-Statistic	13.027			
Sig. F-Statistic	0.000			

ROA = $\alpha_0 + \beta i_1 (LR) + \beta i_2 (CR) + \beta i_3 (OR) + e_{i,j}$

Based on table (4) outcomes, the independent variables as a proxy for micro risks (liquidity risk, credit risk, and operational risk) collectively reflected a significant impact on ROA as (Sig. F-statistic =0.000), implying that: "The Performance of Jordanian commercial banks measured by ROA is significantly affected by micro risks factors". Additionally, F value of 13.027 which is materially significant at 5% level, indicating that the proposed study model was appropriate. Also 4.6% of the changes in commercial banks` ROA is attributed to changes related to internal factors, and the coefficient values can be judged as low in the prediction and interpretation process, as there are some other factors that may own an influence on the commercial banks' financial performance.

In order to determine the impact of each micro risks on of Jordanian Commercial Banks performance measured by ROA, the results of the multiple regression test relied on the following hypothesis as follows:

H0 1.1 The Performance of Jordanian Commercial Banks measured by ROA is not significantly affected by liquidity risk.

H0 1.2 The Performance of Jordanian Commercial Banks measured by ROA is not significantly affected by credit risk.

H0 1.3 The Performance of Jordanian Commercial Banks measured by ROA is not significantly affected by Operational risk.

It is noticeable from the above results (Table-4) that (Sig.t) for all independent variables are below 5%, meaning that they have significant impact on commercial banks ROA, with different nature and volume. The highest impact refers to (LR), β-coefficient = 21.2%, while other two independent variable (CR) and (OR), the β-coefficient was equal to -12.6% and -9.8% respectively, as the nature of their impact is adverse, in

comparison to positive impact of (LR). Subsequently, all the above null hypotheses will be rejected.

4.2 Study Model (2):

H0.2: The Performance of Jordanian commercial banks measured by ROE is not significantly affected by micro risks factors.

The second study model was designed to examine the effect of micro risks on the performance of Jordanian commercial banks measured by return on equity (ROE). Table (4) below presents multiple regression test results as follow:

Table 4: Model (2) Multiple Regression Results

Variable	Coefficient (β)	Sig. T	Std. Error	T-Statistic
Constant	----------	0.000	0.006	4.234
LR	0.228	0.000	0.018	6.309
CR	-0.218	0.000	0.046	-6.091
OR	-0.224	0.000	0.001	-6.580
Adjusted R^2	0.124			
R^2	0.128			
R	0.358			
F-Statistic	37.065			
Sig. F-Statistic	0.000			
ROE = $\alpha 0 + \beta i_1 (LR) + \beta i_2 (CR) + \beta i_3 (OR) + e_{i,j}$				

It is noted the above table that the calculated F value reached (37.065) which is significant at 5% level, indicating that the proposed study model is appropriate. Also, the regression analysis results showed that the value of (Sig. F-statistic = 0.000), which is less than the test significance level of 5%. This means that micro risks determinants possess a significant impact on commercial banks ROE. Moreover, Adjusted R-square value reached (0.124), which means that only 12.4%of the fluctuations that occur in the Jordanian Commercial Banks ROE can be attributed to the changes that occur in the micro risks, and the coefficient value can be judged as low in the prediction and interpretation process as it ranges between minimum adverse impact of -22.4% for OR and a maximum positive impact of 22.8% related to LR.

Generally, we can invoke that all micro risks factors have a significant impact on ROE with differing direction and magnitude.

4.3 Study Model (3):

H03: There is no statistical moderating role of Asset-Liabilities Management (ALM) on the impact of micro risks factors on performance of Jordanian commercial banks measured by ROA.

This model and the next one will examine the role of Asset-Liabilities Management (ALM) in determining the impact of micro risks factors on

Jordanian commercial banks financial performance indicators (ROA and ROE) respectively. Table (5) below shows the results of the hierarchical regression test for the fifth study model:

Table 5: Results of the Hierarchical Regression Test for the Fifth Study Model

Variable	Coefficient (β)	Sig. T.	Std. Error	T-Statistic
Constant	----------	0.000	0.001	6.925
LR	0.239	0.000	0.002	7.384
CR	-0.147	0.000	0.005	-4.583
OR	-0.103	0.001	0.000	-3.319
ALM	0.506	0.000	0.015	16.592

First Model		***Second Model***	
Adjusted R^2	0.046	Adjusted R^2	0.301
R^2	0.049	R^2	0.304
R	0.222	R	0.552
F-Statistic	13.027	F-Statistic	82.159
Sig. F-Statistic	0.000	Sig. F-Statistic	0.000

$\Delta R^2 = 0.255$

$\Delta F = 275.300$ **Sig $\Delta F = 0.000$**

ROA = $\alpha_0 + \beta i_1 (LR) + \beta i_2 (CR) + \beta i_3 (OR) + \beta i_4 (ALM) + e_{i,j}$

The outcomes portray that the calculated F value reached (82.159) which is significant at 5% level, this suggest that the proposed study model is appropriate. Additionally, Also, (Sig. F-statistic), which is (0.000), which is below 5% the significance level of the test. Thus, we can conclude that, ALM exercise a moderating role on the impact of micro risks factors on performance of Jordanian commercial banks measured by ROA. It should be noted that the inclusion of the moderating variable in the study model did not change the suitability level of the proposed model in whole but in part, where the change between the two models reached (ΔF = 275.300), which is significant at a significance level of (0.05), in addition to a strong improvement in the explanatory power of the model after including the moderating variable with a value of (ΔR2 = 0.255), and therefore the Asset-Liabilities Management can be judged to have partially adjusted the impact of micro risks factors on ROA as a proxy of Jordanian commercial Banks financial performance.

Regarding the influential role of ALM related to each independent variable impact measured by β coefficient on ROA, we can notice that the impact is also significant and increased slightly, but the nature of each determinant impact did not change. So, we can point out that each one of the study micro factor significantly impact Jordanian commercial banks financial performance by ROA especially OR factor; as before the inclusion of ALM, β coefficient = -9.8% and after the inclusion of ALM the β coefficient was

4.4 Study Model (4):

H04: There is no statistical moderating role of Asset-Liabilities Management (ALM) on the impact of micro risks factors on performance of Jordanian commercial banks measured by ROE.

Table 6: Model (4) Hierarchical Regression Model

Variable	Coefficient (β)	Sig.T	Std. Error	T-Statistic
Constant	----------	0.156	0.006	-1.420
LR	0.252	0.000	0.016	7.942
CR	-0.233	0.000	0.040	-7.409
OR	-0.228	0.000	0.001	-7.367
ALM	0.450	0.000	0.122	15.099

First Model		***Second Model***	
Adjusted R^2	0.124	Adjusted R^2	0.326
R^2	0.128	R^2	0.330
R	0.358	R	0.574
F-Statistic	37.065	F-Statistic	93.115
Sig. F-Statistic	0.000	Sig. F-Statistic	0.000

$\Delta R^2 = 0.202$

$\Delta F = 227.970$ **Sig $\Delta F = 0.000$**

ROE = $\alpha_0 + \beta i_1 (LR) + \beta i_2 (CR) + \beta i_3 (OR) + \beta i_4 (ALM) + e_{i,j}$

Based on multiple hierarchical regression of the independent variables and their impact on the dependent variable (ROE) in the presence of the moderating variable ALM. It is noticeable that the calculated F value reached (93.115) at significance level of 5%, suggesting that the proposed study model is appropriate. This will denote that the existence of a statistical moderating role of ALM on the impact of micro risks factors on Jordanian commercial banks ROE. It clear that the inclusion of the moderating variable in the study model did not change the suitability level of the proposed model in whole but in part, where the change between the two models reached (ΔF = 227.970), where it also reached (Sig Δ F = 0.000), in addition to a strong improvement in the explanatory power of the model after including the moderating variable with a value of (ΔR2 = 0.202), and therefore the Asset-Liabilities Management can be judged to have adjusted the impact of micro risks factors on Jordanian commercial Banks financial performance. Moreover, ALM has increased the degree of explanation by adjusted R2 from (0.124 to 0.326). So, ALM imposed a positive impact and it can be said that ALM is effective.

Discussion and Conclusion:

Banks profitability is affected by many internal and external factors, therefore banks` management should focus more on these factors in order to protect their earning power and ensure ever-lasting

sustainability within a very volatile environment. Based on the study results we can conclude that Jordanian commercial banks are a significantly affected by micro risk factor (Liquidity risk, Credit risk and Operational risk) in a varying manner. Liquidity is a main component of commercial banks financial position statement, and banks are obliged to keep a certain percentage of their assets in liquid form as per Basel III record. As for Liquidity risk it postulates a significant positive impact on both ROA and ROE. This result was similar to the findings of Kosmidou et al., (2012), Adabenege, et al., (2015), and Altarawneh & Shafie (2018), while Tafri, et al., (2009) and Alper. & Anbar (2011) and Thejane, (2017), concluded a negative significant impact. Credit is the main channel for generating profit as it is the main activity of all commercial banks, and inspite of loan interest rate being reduced in the last 3 years in Jordan (Since COVID-19 eruption), but there was no counter reaction on loan demand due to political and economic instability. Credit risk has reflected an adverse negative impact on financial performance indicators, and this is may be attributed to loan interest rate. This result was in rhyme with Tafri, et al., (2009) and Ali, et al. (2011), and Alper & Anbar (2011), and in contradiction with Hakam & Abdulnaser (2019) which concluded a positive impact. Regarding operational risks, the study concluded negative significant impact on both ROA and ROE, this was similar to Altarawneh & Shafie (2018), while Mihaela (2015) and Chukwunulu, et al. (2019) concluded no effect of operational risks on Jordanian Commercial Banks financial Performance. The study also shed the light on the moderating role of ALM, which expresses the management's ability to balance between current assets and current liabilities, on the other hand, the relationship between liquidity and returns is naturally opposite, and therefore this may indicate there is no efficiency in Asset-Liabilities Management in banks, despite the presence of a moderating role on the relationship between liquidity risk and the performance of commercial banks, it is not in the level of changing the type of positive impact between the level of liquidity risk and performance, as this may be due to the lack of an efficient economy, as it is obvious that there should be a logical response to the circumstances that arise, while it may not be the case in an inefficient economy.

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