Does Profitability of Jordanian Commercial Banks Get Affected by Risk Management Practices?

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Abstract

Results of several studies have indicated that risk management practices have important role in determining the profitability of companies and banks around the world. Therefore, the current study tries to explore this role in (13) Jordanian commercial banks during the period (2010-2015). Data regarding variables were collected from the annual financial statements of the sample study. Return on assets represents the profitability of banks, while risks management practices consist of liquidity, operational, credit and market risks. The study used two ratios to symbolize each type of risk. The ordinary least square method (Fixed effect and Random effect) was used to test the hypothesis. The study revealed that, risk management practices as a whole explains a significant part of the variation in banks profitability. The results also showed that, only operational risk management practices significantly affect the profitability, while liquidity, credit and market risks have insignificant effect. The implications of these results indicated that Jordanian commercial banks (JCB) have successfully managed liquidity, credit, operating income and market risks during the study period, but at the same time failed to manage operational risk represented in overheads.

Keywords: risk management practices, profitability, Jordanian commercial banks.

1. Introduction

Banks represent the financial heart of any modern society. They can be used as a core of savings to many individuals or institutions, and it also can be used for investments, lending, and planning for others.

Banks worked to ease the run of commodities and services between the members of the community by providing them with ease and advance payment methods. In the seventies, Business banks took simple risks which were easy to control. But after the seventies of the last century the banking market witnessed many developments and new practices such as, volatility of the interest rates, floating exchange rate, introduction of many products, and spread of the banks globally and domestically. The new era of changes in banks after the seventies, caused and increased volume of work, wave of deregulation, and intensive competition.

The new changes of banking practices after the seventies, continued to affect the financial markets and the work of banks, which forced them to squeeze profit margins for the competition, and consequently led to a decline in banking profit. Also those new practices especially in the last two decades led to the increase of the risks faced by these banks in all countries, where the banking business risk is no longer limited to the risks of borrowers, and even beyond that to the experience of several risks, some of which result from the bank decisions which will increase or decrease the risk.
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and consequently affect its profitability. Liquidity risk consider as the most important factor affect continuity and survival of bank, thus, if the bank was able to manage this risk, this mean he will be able to execute the obligations towards the depositors, in addition to that, the liquidity in the bank will improve the profitability and consequently lead to maximize the wealth of its shareholders. Also, credit risks which results when the counterparty fails to meet its obligations timely and fully in accordance with the agreed terms, leading to losses as a result of this failure. In addition to that operational risk represents the losses that result from the failure of internal processes, personnel and systems. Finally, risks out of bank control are represented by market risk, which caused by macroeconomic factors such as a change of interest rates, inflation rate, volatility of prices, currency exchange rates.

The success and continuity of banks, linked to its efficient role in the first order to determine irregular risks and trying to avoid them. This topic has become an area of concern of a number of researchers and analysts in business and finance environment locally and internationally, but these studies addressed this issue through studying these risks individually, especially in the Jordanian environment. As it is observed from the researcher, there is only one study which has been applied on the Islamic banks, While studies in commercial banks have dealt with the impact of risk management practices on performance individually. Therefore, this study attempts to analyze the impact of risk management practices on the profitability of Jordanian commercial banks as a whole and individually.

2. Problem Statement
The banking sector has been exposed to many risks affecting its activities of lending and investing in the light of the continuing changes in the economic environment, which will be reflected on its profitability. Some of these risks refer to the bank itself but others are out of its control. Depending on that, commercial banks in Jordan are trying to avoid or reduce these risks in order to improve its profitability through practicing risk management of (Liquidity risk, Credit risk, operating risk and Market risk). So this leads to asking the following question: Does profitability of Jordanian commercial banks get affected by risk management practices?

3. Research Objectives
This study is trying to achieve the following objectives:
   a. To explore the risks that Jordanian commercial banks face.
   b. To explore the effects of the risk management practices as a whole and separately on the profitability of commercial banks.
   c. To find out which of the risk management practices affect the profitability of Jordanian commercial Banks?

4. Research Hypothesis
Depending on previous questions and the objectives of the study, the following hypotheses have been constructed:

   Main Hypothesis
   H0: The Profitability of Jordanian commercial banks is not significantly affected by risk management practices.

   Sub Hypotheses
   H01: The profitability of Jordanian commercial banks is not significantly affected by liquidity risk management practices.
   H01.1: The Profitability of JCBs is not significantly affected by Liquidity.
H01.2: The Profitability of JCBs is not significantly affected by capital.

H02: The Profitability of JCBs is not significantly affected by Operational Risk Management practices.
  H02.1: The Profitability of JCBs is not significantly affected by Efficiency.
  H02.2: The Profitability of JCBs is not significantly affected by Income.

H03: The Profitability of JCBs is not significantly affected by Credit Risk Management Practices.
  H03.1: The Profitability of JCBs is not significantly affected by Credit Interest / Credit Facilities, Net.
  H03.2: The Profitability of JCBs is not significantly affected by Risk.

H04: The Profitability of JCBs is not significantly affected by Market Risk Management Practices.
  H04.1: The Profitability of JCBs is not significantly affected by Inflation.
  H04.2: The Profitability of JCBs is not significantly affected by Interest rate.

5. Risks in Commercial Banks
The risk accompanies all organizations and businesses. Each organization manages these risks according to the size and nature of their operations, hence without managing these risks no organization can survive for a long term. Risk management can be defined as the procedures where the managers satisfy their risk taking needs by recognizing key risks and acquiring consistent comprehensive operational risk measures, to decide which risks reducing and increasing and by what means. Also, managers have to creating procedures to monitor the output risk position, in order to achieve the goals of the firm (Ozturk & Aktan, 2007). According to Bessis (2002) commercial banks face four kinds of risks (operational, credit, liquidity and market). All these risks need to be managed through understanding, identification, assessment, monitoring and analysis, thus these procedures called risks management practices (Shafiq & Nasr, 2010).

6. Literature Review
6.1 Theoretically Literature Review
Risk management practices and its impact on banks profitability are challenges for both commercial and Islamic banks. Many researchers and analysts in the literature gave high attention for the subject of Risk management practices. The researcher in this section will discuss the potential kinds of risks which may face the commercial banks in Jordan through making a clear understanding of its effects on their performance. Previous studies on this field will be reviewed as follows:

6.1.1 Defining Risk
Any investment faces two kinds of risks, systematic risks and non-systematic risks (Ross et.al, 2007). The first one affects a large number of assets in different degrees. These risks are related to macroeconomics variables, and hence sometimes it is called market risks due to its market wide influences. Those kinds of risks are not avoidable by diversification. The second one, non-systematic risks affect a single asset or a small group of assets, because these risks related to individual companies or assets, and this type of risk can be avoided or reduced by diversification. According to finance perspective, risk can be defined as the possible variation between the expected return and the actual return or anything that hinders from meeting certain objectives (Petty et al., 2004).

6.1.2 Risk Management and Bank Performance
The main aim of bank management is to increase shareholders' return by enhancing bank performance. To achieve this goal, the result will sometimes be at the expense of increased risk. Bank faces different
kinds of risks such as, operational risk, credit risk, liquidity risk and market risk (Tandelilin et al., 2007). Banks practice risk management due to their fears of the negative effects of risks on its profitability and the shareholders returns.

So, if the Banks practice risk management in proper manner, their reputation and opportunity in attracting more customers will be increased and consequently this will lead to improving its efficiency and profitability (Adeusi et al., 2014). Cebenoyan and Strahan (2004) in their study gave evidence that banks which practice risk management in sophisticated manner have achieved a large credit rather than reducing the risk in the bank; a viability of larger credit will give the bank the opportunity to increase the productive assets and its profitability. The process of risk management involves (Soyemi et al., 2014): risk identification through recognizing and understanding risks that may arise from both existing and new business initiatives. After risks are identified, there should be measures to determine their impact on the banking profitability, capital, and risk monitoring by using effective information systems to monitor risk level and facilities timely review of risk positions and exceptions. Lastly, the risk control comes after measuring risks; the bank should establish and communicate risk limits through, policies, standards, and procedures which define responsibility and authority. These limits should serve as means to control exposure to various risks associated with the banking institution’s activities.

6.1.2.1 Credit Risk
Credit risk arises when borrowers are unable to meet their obligations fully and timely in accordance with the agreed terms, resulting in losses that not only cause liquidity problems but can result in a decrease in the superiority of the bank's assets (Imane, 2014). Credit risk management, meanwhile, is the practice of mitigating those losses by understanding the adequacy of both a bank’s capital and loan loss reserves at any given time – a process that has long been a challenge for financial institutions (Alshatti, 2015, a).

6.1.2.2 Liquidity Risk
Liquidity risk is related to the Bank's ability to meet its obligations to depositors or to provide funds to borrowers when they need through transferring the assets into cash quickly without big losses (Gup & Kolari, 2005). Liquidity risk could happen in two ways (Wood & Kellman, 2013). First, depositors might try to cash in their claims immediately. In this case the bank may resort to cover the claims by borrowing funds or selling assets. Second, if borrowers decide to draw on their loan commitments, this must be funded immediately.

6.1.2.3 Operational Risk
According to Bessis (2002) operational risk are losses resulting directly or indirectly from several activities: external events, failed of internal processes, inadequate processes, or people and systems, but this definition doesn’t include reputational risk or the risk resulting from strategic decisions; it just includes the legal risk (Imane, 2014).

6.1.2.4 Market Risk
According to the World Bank’s definition (2009), market risk defined as “risk of capital loss resulting from adverse market price movements related to commodity, equity, fixed interest and commodity markets”. Hence, these factors may affect Profitability of banks. From these factors, interest rates and relative values of currencies are considers to be very important to the banking sector because of their significant impact on performance. For this reason, majority of banks closely observe interest rate risk by assessing and managing the company's exposure to interest rate changes (Adeusi et al., 2014).
6.2 Empirically Literature Review

Several studies have examined the impact of risk management practices on the profitability of banks around the world, some of which took into consideration all kinds of risks, while others studied risks individually. The following review of some studies:

6.2.1 Studies in the Jordanian Banking Sector

Alshatti (2015, b) examined the influence of liquidity management on profitability of Jordanian commercial banks. Profitability measured by ROA and ROE, while liquidity management was represented by the following ratios (investment ratio, quick ratio, capital ratio, net credit facilities/total assets and liquid assets ratio). The most important results showed that, profitability (ROE) of bank increase when quick ratio and the investment ratio increased, while profitability decreases when the capital ratio and the liquid assets ratio increase. Also, profitability (ROA) of bank increases when the capital ratio increases. Alshatti (2015,a) investigated the effect of credit risk management on financial performance of Jordanian commercial banks. ROA and ROE used to measure Performance, while credit risk was represented by (capital adequacy Ratio, credit interests/credit facilities ratio, provision for facilities loss/net facilities, leverage ratio and the level of non-performing loans). The results showed that ROA and ROE were affected positively by non-performing loans/Gross loans ratio, and were affected negatively by provision for facilities loss/net facilities ratio. Further, the Capital adequacy ratio and the credit interest/credit facilities ratio don't affect ROA and ROE. Smhan and Al-khatib (2015) examined the determinants of financial performance of Jordan Islamic banks. Performance measured by ROA, ROE and return on unrestricted investments accounts (ROUIA), while determinants of performance were represented by (bank specific factors: liquidity ratio, equity ratio, total income to total assets, debt ratio, and bank size), macroeconomic variables: (unemployment rate, GDP, and inflation). The most important results of the study revealed a significant positive relationship between equity ratio, inflation, and bank size and ROA. Also, the relationship between ROA and total income to total assets and liquidity ratio is insignificant. Alzorqan (2014) examined the relationship between bank liquidity risk and performance of the Jordanian commercial banks. Performance was measured by (ROI & ROE), while current and loans to deposits ratios represent liquidity risk. The results of the study concluded that current and loans to deposits ratios effect ROI and ROE significantly. Imane (2014) tested the impact of risk management practices on financial performance of the Islamic banks in Jordan. ROA and ROE are measures of the performance, while, Liquidity risk, Operational risk, Credit risk and Market risk represent risk management practices. The study concluded that the performance of Islamic banks in Jordan was affected negatively and significantly by liquidity risk, credit risk and operational risk, while performance was affected positively and significantly by market risk. Almumani (2013) tested the impact of managerial factors on profitability of Jordanian commercial banks. Profitability measured by (ROA), while managerial factors represented by the following ratios (cost efficiency, liquidity, credit composition, credit risk and capital adequacy). The main results indicated that cost efficiency is the main managerial factor impact the profitability of the commercial banks in Jordan while the other variables have insignificant effect. Ramadan et al. (2011) explored the relationship between the profitability of Jordanian banks and the characteristics of internal and external factors. Profitability of banks measured by ROA and ROE, while (bank-specific, industry specific and macro-economic) determinants of profitability are represented by (assets composition, capital adequacy, credit risk, cost management, market concentration, GDP and inflation). Results showed that the Jordanian bank’s characteristics explain a significant part of the variation in bank profitability. Jordanian banks characterized with high profitability tend to be associated with well-capitalized banks, high lending activities, low credit risk, and the efficiency of cost management. Khrawish et al. (2011) explore the factors that might affect the Jordanian Islamic banks’ profitability. The study concluded a significant positive relationship between (capital adequacy, provision for credit facilities plus interest in suspense divided by credit facilities, and total income) and ROA. Furthermore; the results showed a significant and negative relationship between GDP, Inflation rate and ROA.
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6.2. 2 International Studies
Rundassa and Batra (2016) examined the impact of credit risk management on the financial performance of Ethiopian commercial banks. ROA and ROE were used to measure the financial performance, while credit risk management was measured by asset quality, capital adequacy, earning, management soundness, and liquidity ratio. The study concluded that, asset quality and capital adequacy ratios are insignificant to affect ROA, while management soundness, earnings and liquidity ratio are significant. Maqsood et al. (2016) tested the effect of liquidity management on profitability in banking sector in Pakistan. ROA measured profitability while current and cash ratios measured liquidity. Results showed a significant relationship between profitability and liquidity management. Ajibike and Aremu (2015) tested the impact of liquidity on the profitability of Nigerian bank. ROA used to measure the profitability while cash and deposit/total assets used to measure liquidity. Results showed that liquidity is a significant determinant of bank performance. Adeusi et al. (2014) examined the relation between risk management practices and financial performance of Nigerian banks. Performance measured by ROA and ROE, while risks management was represented by (capital, credit and liquidity). Results showed a negative relationship between doubt loans and financial performance, while capital asset ratio was found to be positive and significant. The results also showed a significant relationship between risk management and banks performance. Soyemi et al. (2014) investigated the relationship between performance of Nigeria deposit money banks and risk management practices. Performance was measured by ROA and ROE, while risk management practices were represented by (credit, liquidity, operating and capital risk practices). Results indicated that, risks management practices are significantly impact the financial performance of Nigerian deposit money banks. Ferrouhi (2014) explored the relationship between liquidity risk and financial performance of Moroccan banks. Performance was proxies by ROA, ROE, ROAA and Net Interest Margin, while the liquidity risks of bank were measured by six ratios. Results indicated that Moroccan bank’s performance is mainly determined by 7 determinants, one of which is liquidity ratios. Kurawa and Garba (2014) tested the effect of credit risk management on the profitability of Nigerian banks. Profitability was measured by ROA, while credit risk management was measured by (capital adequacy ratio, cost per loan asset, default rate, and age). The results indicated that default rate, cost per loan assets and capital adequacy ratio affect return on asset positively but only default rate and cost per loan assets are statistically significant. Lartey et al. (2013) examined the relationship between profitability of banks listed on the Ghana Stock Exchange and liquidity. Profitability was measured by ROA, while liquidity was represented by temporary investment ratio. The results of the study indicated a very weak positive relationship between the profitability of banks and liquidity.

7. Research Methodology
7.1 Sample and Data Collections
To examine whether the profitability of Jordanian commercial banks were affected by risk management practices, a sample of (13) commercial banks were chosen to achieve this goal, data was gathered from the financial statements of the study sample during the period (2010-2015) yielding a total of (78) observations.

7.2 Research Variables Measurement
Table (1) Summarize the measures of the independent and dependent variables.
Table 1: Measures of Variables Study

<table>
<thead>
<tr>
<th>Variables</th>
<th>Measures</th>
<th>Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liquidity Risk Management</td>
<td>Capital: total equity / total assets.</td>
<td>CP</td>
</tr>
<tr>
<td></td>
<td>Liquidity: net facilities / total deposits.</td>
<td>LQ</td>
</tr>
<tr>
<td>Operational Risk Management</td>
<td>Income: operating profit / total assets.</td>
<td>IC</td>
</tr>
<tr>
<td></td>
<td>Efficiency: total overheads / total assets.</td>
<td>EFFC</td>
</tr>
<tr>
<td>Credit Risk Management</td>
<td>Credit Interest / Credit Facilities, Net.</td>
<td>CICF</td>
</tr>
<tr>
<td></td>
<td>Risk: (Provision for Credit Facilities + Interest in Suspense) / Credit Facilities</td>
<td>PRCF</td>
</tr>
<tr>
<td>Market Risk Management</td>
<td>Inflation.</td>
<td>INF</td>
</tr>
<tr>
<td></td>
<td>Interest Rates</td>
<td>INT</td>
</tr>
<tr>
<td>Dependent</td>
<td>Profitability of Bank</td>
<td>ROA</td>
</tr>
</tbody>
</table>

7.3 Research Model

This study used return on assets (ROA) as a proxy for profitability of bank. ROA is considered to be the most popular comprehensive accounting measure of a bank's overall performance. ROA was used in many studies as indicator of profitability and was defined as net income or net profit over total assets. It shows the profit earning per dollar of assets (Imane, 2014). To comply with the objectives of this research, a linear regression model was build to identify and measure the effect of risk management practices on the profitability of JCBs as follows:

$$ ROA_{i,t} = \alpha + \beta_1 CP_{i,t} + \beta_2 LQ_{i,t} + \beta_3 IC_{i,t} + \beta_4 EFFC_{i,t} + \beta_5 CICF_{i,t} + \beta_6 PRCF_{i,t} + \beta_7 INF_{i,t} + \beta_8 INT_{i,t} + \epsilon_{it} $$

Where: \( \alpha \) is a constant; \( \beta_i \) (\( \beta_1 \) to \( \beta_8 \)) is variable coefficient; \( i \) (\( i = 1 \) to \( 13 \)) number of banks; \( t \) (\( t = 2010 \) to \( 2015 \)) years of study for each bank, while \( \epsilon_{it} \) is an error term. ROA represent profitability of the bank. CP represent capital ratio of the bank and LQ represent the liquidity ratio of the bank (CP + LQ used to measure the liquidity risk), IC represent asset employment for the bank and EFFC represent efficiency of the bank (IC + EFFC used to measure the operational risk), CICF represent Credit Interest / Credit Facilities, Net for the bank and PRCF represent Provision for Credit Facilities + Interest in Suspense / Credit Facilities of the bank (CICF + PRCF used to measure the credit risk), INF the inflation rate and INT the interest rate both of them used to measure the market risk.

7.4 Data Analysis

7.4.1 Descriptive Statistics

Table (2) shows the descriptive statistics (mean, standard deviation, minimum and maximum values) of variables of the sample banks in Jordan.

<table>
<thead>
<tr>
<th>Variables</th>
<th>ROA</th>
<th>LQ</th>
<th>CP</th>
<th>EFFC</th>
<th>IC</th>
<th>CICF</th>
<th>PRCF</th>
<th>INF</th>
<th>INT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>1.26</td>
<td>61.15</td>
<td>14.39</td>
<td>2.60</td>
<td>4.37</td>
<td>11.35</td>
<td>8.06</td>
<td>4.07</td>
<td>8.11</td>
</tr>
<tr>
<td>Maximum</td>
<td>2.050</td>
<td>86.18</td>
<td>21.96</td>
<td>4.38</td>
<td>5.98</td>
<td>15.66</td>
<td>25.97</td>
<td>4.80</td>
<td>9.01</td>
</tr>
<tr>
<td>Minimum</td>
<td>-0.17</td>
<td>42.54</td>
<td>9.28</td>
<td>1.01</td>
<td>2.29</td>
<td>8.47</td>
<td>1.46</td>
<td>2.90</td>
<td>6.50</td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>0.50</td>
<td>9.84</td>
<td>2.51</td>
<td>0.69</td>
<td>0.84</td>
<td>1.70</td>
<td>4.12</td>
<td>0.76</td>
<td>1.03</td>
</tr>
</tbody>
</table>

From table 2 it's observed that the ROA of banks in JCBs averaged 1.26% with standard deviation 0.50%, the result indicated that the profitability of JCBs is almost low with high variation. Liquidity ratio (LQ) averaged 61.15% with std. deviation 9.84%, indicating a moderate percentage of total deposits were invested which means that JCBs keep relatively lower liquidity. The Capital ratio (CP) averaged 14.39% with std. deviation 2.51%, indicating that capital adequacy in JCBs seems far higher from Basel requirements. The efficiency ratio (EFFC) averaged 2.60% with std. deviation...
0.69% indicated that JCBs are efficiently managing overheads. The average of income (IC) is 4.37% with std. deviation 0.84% indicated that JCBs don't earn much from utilizing assets. The average of credit interests / credit facilities net is 11.35% with std. deviation 1.70% indicated that JCBs managing credit risk well. The average of (PRCF) ratio averaged 8.06% with std. deviation 4.12% indicated that JCBs allocated a good percentage of provision for credit facilities and interest in suspense out of credit facilities. Averages of inflation rate and interest rates are (4.07%, 8.11%) respectively.

7.4.2 Unit Root Test
The unit root test examines the stationary of the data over time, to conduct this test PP-Fisher method has been used, and results are reported in table (3). All results show that null hypothesis is rejected for all variables at the first level, which means that all variables are stationary during the study period.

Table 3: Unit Root Test Results of All Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>T. Statistic at first level</th>
<th>Probability</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROA</td>
<td>49.12</td>
<td>0.0040***</td>
<td>Stationary</td>
</tr>
<tr>
<td>LQ</td>
<td>36.44</td>
<td>0.0837*</td>
<td>Stationary</td>
</tr>
<tr>
<td>CP</td>
<td>49.25</td>
<td>0.0039***</td>
<td>Stationary</td>
</tr>
<tr>
<td>EFFC</td>
<td>38.60</td>
<td>0.502**</td>
<td>Stationary</td>
</tr>
<tr>
<td>IC</td>
<td>35.14</td>
<td>0.1007*</td>
<td>Stationary</td>
</tr>
<tr>
<td>CICF</td>
<td>44.26</td>
<td>0.0142**</td>
<td>Stationary</td>
</tr>
<tr>
<td>PRCF</td>
<td>48.69</td>
<td>0.0045***</td>
<td>Stationary</td>
</tr>
<tr>
<td>INF</td>
<td>43.82</td>
<td>0.0158**</td>
<td>Stationary</td>
</tr>
<tr>
<td>INT</td>
<td>148.52</td>
<td>0.0000***</td>
<td>Stationary</td>
</tr>
</tbody>
</table>

"**" ***" Significant at 10%, 5%, and 1% respectively.

7.4.3 Multicollinearity Test
The multicollinearity problem means that highly correlation between two or more independent variables in the linear model is present, which produce a highly $R^2$ with few significant (t) ratios. In order to check this problem Pearson correlation matrix was applied, if the correlation between two variables is more than 80%, this means that a multicollinearity problem is present, and otherwise there is no multicollinearity problem. Table 4 presents the results of Pearson correlation matrix. It can be seen from table (4) that the highest correlation is (59.15%) between efficiency ratio and income ratio, which is less than 80%, hence we can say that multicollinearity problem in the linear model is not present.

Table 4: Pearson Correlation Matrix between Independent Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>LQ</th>
<th>CP</th>
<th>EFFC</th>
<th>IC</th>
<th>CICF</th>
<th>PRCF</th>
<th>INF</th>
<th>INT</th>
</tr>
</thead>
<tbody>
<tr>
<td>LQ</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CP</td>
<td>0.2578</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EFFC</td>
<td>0.3868</td>
<td>-0.1724</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IC</td>
<td>0.3294</td>
<td>0.0441</td>
<td>0.5915</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CICF</td>
<td>-0.5128</td>
<td>0.0544</td>
<td>-0.1001</td>
<td>0.0926</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PRCF</td>
<td>-0.0924</td>
<td>0.3341</td>
<td>0.1784</td>
<td>-0.1215</td>
<td>0.1456</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>INF</td>
<td>0.0549</td>
<td>0.1060</td>
<td>0.1521</td>
<td>0.0256</td>
<td>0.0158</td>
<td>0.2453</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>INT</td>
<td>0.0669</td>
<td>-0.0019</td>
<td>-0.2503</td>
<td>-0.0497</td>
<td>0.2775</td>
<td>-0.1817</td>
<td>-0.3774</td>
<td>1</td>
</tr>
</tbody>
</table>

7.4.4 Regression Results and Discussion
The hypotheses of the study have been tested at first difference by using ordinary Least Square (fixed effects and random effects) methods; table (5) shows the results. It can be noticed from table (5) that
the F statistics in the two models (FE and RE) are (13.62, 34.38) respectively with probability (F=0.000) which indicated a good fitness of the predictability of the models used. R2 indicates the strength of interpretation in the two models as it explained (82.69%, 79.94%) of the variation in the profitability of JCBs as measured by (ROA), respectively. Also, in the two models, the values of Durbin Watson are (2.29, 2.01) respectively, indicated that there is no autocorrelation in the error term of the linear model. These results lead to reject the main null hypothesis (H0) and accept the alternative one that

**The Profitability of Jordanian commercial banks is significantly affected by risk management practices.** This result is in line with the study's results of (Nair et al., 2014, Soyemi et al., 2014, Imane, 2014), they concluded that risk management practices impact the performance of commercial and Islamic banks.

Results of testing sub hypotheses as follows:

**H01: The profitability of Jordanian commercial banks is not significantly affected by liquidity risk management practices.**

To test this hypothesis, the variables LQ and CP were used to represent liquidity risk management in the Jordanian commercial banks as follows:

**H01.1:** The Profitability of JCBs is not significantly affected by Liquidity.

From the same table (5) the results indicated that the Profitability of JCBs (ROA) is not significantly affected by net facilities to total deposits ratio (LQ) at 5% level and the relationship between them is inverse, because the t. statistic in the two models (FE and RE) are (-1.2895, -1.0805) respectively, which means an increase in the level of liquidity in the bank the profitability will decrease. The result leads to accept the null hypothesis (H01.1). This result is supported by studies of (Smhan & Al-khatib, 2015, Almumani, 2013), they concluded a negative insignificant impact of liquidity on ROA. On the contrary, studies of (Farooq et al., 2015, Alzorqan, 2014) found a positive significant effect of liquidity ratio on profitability (ROA + ROI).

**H01.2:** The Profitability of JCBs is not significantly affected by capital.

The results of table 5 show that the Profitability of JCBs (ROA) is not significantly affected by total equity to total assets ratio (CP) at 5% level and the relationship between them is inverse, because the t. statistic in the two models (FE and RE) are (-1.5533, -1.6974) respectively, when the capital ratio in the bank increases the profitability will decrease. The result leads to accept the null hypothesis (H01.2). This result is in agreement of (Rundassa & Batra, 2016, Almumani, 2013) studies. But on the other hand, studies of (Al-shatti, 2015.b, Imane, 2014) concluded that capital ratio impact banks profitability positively.

Depending on the above results, we accept the main null hypothesis (H01): the profitability of Jordanian commercial banks is not significantly affected by liquidity risk management practices. This result is supported by the study's results of (Maqsood et al., 2016, Ajibike & Aremu, 2015, Farooq et al., 2015, Alzorqan, 2014, Soyemi et al., 2014, Ferrouhi, 2014).

**H02: The profitability of Jordanian commercial banks is not significantly affected by operational risk management practices.**

To test this hypothesis, the variables EFFC and IC were used to represent operational risk management in the Jordanian commercial banks as follows:

**H02.1:** The Profitability of JCBs is not significantly affected by Efficiency.

The results of table (5) shows that the Profitability (ROA) of JCBs is significantly affected by total overheads to total assets (EFFC) at 1% level, and the relationship between them is inverse, because the t. statistic in the two models (FE and RE) are (-10.6768, -10.7606) respectively. This means, when the ratio of overheads/assets increases the profitability will decrease. The result leads to reject the null hypothesis (H02.1) and accept the alternative one. This result is supported by studies of (Imane, 2014, Almumani, 2013, Ramadan et al., 2011).

**H0.2.2:** The Profitability of JCBs is not significantly affected by Income.

The results of table (5) shows that the Profitability (ROA) of JCBs is significantly affected by operating profit / total assets (IC) at 1% level and the relationship between them is positive, because the t. statistic in the two models (FE and RE) are (12.6742, 12.9306) respectively. This means, when
the operating income increases the profitability of banks will increase. The result leads to reject the null hypothesis (H02.2) and accept the alternative one. This result is supported by (Khrawish et al., 2011) findings, while (Smhan & Al-Khatib, 2015) in their study revealed insignificant impact. On the contrary, study of (Imane, 2014) found a negative significant impact of income on profitability.

Depending on the above results, the profitability of Jordanian commercial banks is significantly affected by operational risk management practices. The result leads to reject the main null hypothesis (H02). This result is supported by the results studies of (Soyemi et al., 2014, Imane, 2014, Ramadan et al., 2011).

H03: The profitability of Jordanian commercial banks is not significantly affected by credit risk management practices.

To test this hypothesis, the variables CICF and PRCF were used to represent credit risk management in the Jordanian commercial banks as follows:

H03.1: The Profitability of JCBs is not significantly affected by credit interest to credit Facilities, Net.

The results of table (5) shows that the Profitability (ROA) of JCBs is not significantly affected by credit interest to credit Facilities, Net (CICF) at 5% level and the relationship between them is positive, because the t. statistic in the two models (FE and RE) are (0.5527, 0.7370) respectively. This means, if the credit interest to credit facilities increase the profitability will also increase, but this result doesn't have any effect. The result leads to accept the null hypothesis (H03.1). This result is supported by (Al-Shatti, 2015,a) study.

H03.2: The Profitability of JCBs is not significantly affected by Risk (PRCF).

The results of table (5) shows that the Profitability of JCBs is not significantly affected by Risk Provision for Credit Facilities + Interest in Suspense / Credit Facilities at 5% level and the relationship between them is positive, because the t. statistic in the two models (FE and RE) are (0.8563, 0.8545) respectively. This means, if the bank increases the provision for credit facilities and the interest in suspense the profitability will increase. This result leads to accept the null hypothesis (H03.2). This result is in line with Almumani study (2013) who found insignificant positive effect of (PRCF) on the profitability. On the contrary, Al-Shatti (2015,a) in his study found a significant effect of (PRCF) on the profitability in his study.

According to above results, the profitability of Jordanian commercial banks is not significantly affected by credit risk management practices. The result leads to accept the main null hypothesis (H03). This result is supported by the studies of (Rundassa & Batra, 2016, Almumani, 2013). On the contrary, studies of (Soyemi et al., 2014, Kurawa & Garba, 2014, Hosna, 2009) found a significant effect of credit risk management practice on performance of banks.

H04: The profitability of Jordanian commercial banks is not significantly affected by Market Risk Management practice.

To test this hypothesis, the variables INF and INT were used to represent market risk management in the Jordanian commercial banks as follows:

H04.1: The Profitability of JCBs is not significantly affected by inflation.

The results of table (5) shows that the Profitability of JCBs is not significantly affected by inflation (INF) at 5% level and the relationship between them is negative, because the values of t. statistic in the two models (FE and RE) are negative (-0.0024, -0.1515) respectively. This means, if the inflation rate increases the profitability (ROA) of banks will decrease. The result leads to accept the null hypothesis (H04.1). This result is in agreement with study result of Khrawish et al., (2011), who found a negative significant relationship between inflation and performance of Islamic banks, but in the current study the effect is not significant. On the contrary, (Ramadan et al., 2011, Li, 2007)) studies concluded a positive insignificant impact of inflation. But (Smhan & Al-khatib, 2015, Imane, 2014), found that inflation impacts the performance of Islamic banks positively and significantly.

H04.2: The Profitability of JCBs is not significantly affected by interest rate.
The results of table (5) show that the Profitability of JCBs is not significantly affected by interest rate (INT) at 5% level and the relationship between them is positive, because the t. statistic in the two models (FE and RE) are (0.3218, 0.2737) respectively. This means, when interest rates in the market increased the profitability of banks increased. The result leads to accept the null hypothesis (H04.2). This result is supported by study of Imane (2014). But on the contrary, Lelissa (2014) found a positive significant impact of interest rates on (ROA), While Li (2007), found a negative insignificant impact of interest rates on (ROA).

Depending on the above results, the profitability of Jordanian commercial banks is not significantly affected by Market Risk Management practice. The result leads to accept the main null hypothesis (H04). This result is supported by the studies of (Imane, 2014, Ramadan et al., 2011, Li, 2007).

Table 5: regression results of effect of risks management practices on ROA

<table>
<thead>
<tr>
<th>Risk Management</th>
<th>Variables</th>
<th>Fixed Effect Coefficient</th>
<th>Random Effect Coefficient</th>
<th>Main Hypothesis</th>
<th>Sub Null Hypothesis</th>
</tr>
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<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>0.0007</td>
<td>(0.0277)</td>
<td>0.0007</td>
<td>(0.0251)</td>
<td></td>
</tr>
<tr>
<td>Liquidity Risk</td>
<td>LQ</td>
<td>-0.0058</td>
<td>(-1.2895)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CP</td>
<td>-0.017678</td>
<td>(-1.5533)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operational Risk</td>
<td>EFFC</td>
<td>-0.6573</td>
<td>(-10.6768)**</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>IC</td>
<td>0.735080</td>
<td>(12.6742)**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Credit Risk</td>
<td>CICF</td>
<td>0.0121</td>
<td>(0.5527)</td>
<td></td>
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<tr>
<td></td>
<td>PRCF</td>
<td>0.0075</td>
<td>(0.8563)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Market Risk</td>
<td>INF</td>
<td>-0.00007</td>
<td>(-0.0024)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>INT</td>
<td>0.0093</td>
<td>(0.3218)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>F- statistic</td>
<td>13.62</td>
<td>34.38</td>
<td></td>
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<tr>
<td></td>
<td>Probability F</td>
<td>0.0000</td>
<td>0.0000</td>
<td></td>
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<tr>
<td></td>
<td>R²</td>
<td>0.8269</td>
<td>0.7994</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Adjusted R²</td>
<td>0.7762</td>
<td>0.7762</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>DW</td>
<td>2.29</td>
<td>2.01</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Values in parenthesis are t. statistic, **: significant at 1%

8. Conclusion

The purpose of this study is to investigate the effect of risk management practices on the profitability of Jordanian commercial banks in the period (2010 – 2015). For this purpose, data from the annual financial statements of 13 commercial banks have been employed to test the hypotheses of the study. Profitability of banks was represented by Return on assets (ROA), while risk management practices were represented by (liquidity risk, operational risk, credit risk and market risk). Each risk management practice was represented by two ratios as seen in table (1). The study concludes the following results:

1. Risk management practices have vital role in explaining a large variation of the profitability of JCBs, hence the explaining power of the models (FE and RE) R² explained about (82.69%, 79.94%) respectively of variation in profitability according to the risk management practices.

Liquidity risk management practices have insignificant effect on the profitability of JCBs with negative relationship, which indicted, that the JCBs during the study period were able to manage liquidity risk and in the same time doesn’t suffered from this type of risk.
2. Operational risk management practices effect negatively and significantly the profitability of JCBs regarding only its efficiency in managing overheads, which means that JCBs suffered from this kind of risk during the study period. In contrary, JCBs during study period were able to manage the operating income risk; because the effect of income on profitability was positive and significant, which means that these banks don't suffer from managing this kind of risk.

3. Credit risk management practices don't have any significant effect on the profitability of JCBs during study period, which means that these banks don't suffered from credit risk or managing this kind of risk.

4. Market risk management practices don't have any significant effect on the profitability of JCBs during study period, which means that these banks don't suffered from market risk or managing this kind of risk.

Depending on the findings the researcher would say, that Jordanian Commercial Banks have managed liquidity, credit and market risks effectively during the study period, while these banks failed to manage operational risks represented by overheads, but at the same time they were able to manage the income risk positively.

References


