

# The Effect of the Interest Rate Risk on the Lending of the Jordanian Commercial Banks

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**Abstract**—The current study has been intended to evaluate the impact of interest rate risks on the financial performance and the bank lending of commercial banks of Jordan that are registered on the Amman Stock Exchange. In this study, the researchers relied on the analytical regression statistical method to indicate financial risks on the financial performance and lending of the Jordanian commercial banks listed on the Amman Stock Exchange. The statistical analysis is done with the help of the Statistical Package for Social Sciences (SPSS) and excel sheets, which help to analyse the results. The study sample indicates the significance of the p-value index, including the rejection of the hypothesis and the acceptance of the alternative hypothesis that there is no significant relationship between capital risk and the degree of banking security in banks.

**Keywords**—Financial Risks, Interest Rate, Jordanian Commercial Banks, Credit Risk, Lending, Financial Performance.

## I. INTRODUCTION

### A. Background

Any bank should have a risk management strategy approved by the board of directors and demonstrates an appropriate risk tolerance to determine the level of risk that can be tolerated (Sleimi, 2020). The existence of strategies, policies and procedures that are consistent with the nature and size of the bank's activities, appetite risks, as well as tolerance risks must be in place (Safari et al., 2016). Prior to formulating risk management strategies, every organisation must consider a number of aspects, including the size of the financing of the bank and the follow-up (Girling, 2021). Follow-up involves reviewing the practice periodically and taking the necessary action in the event of any violations thereof, provided that it is appropriately documented. Moreover, there is a need for independent risk management that defines the powers, responsibilities and tasks of those in charge with an emphasis on separating the competencies of each of the control tasks and operational tasks to avoid a conflict of interest (Zaidan et al, 2024).

### B. Problem Statement

Stressful situations have become an important tool and a major part of the risk management process, as these tests have become more important recently in light of the current crises (financial, economic and social). The process of evaluating the financial statements and the results derived from them is one of the

matters that management and users of the financial statements must attach great importance to, especially in this critical period, which is witnessing situations of sacrifice and economic instability. Due to economic conditions and the policy surrounding the region, economic instability may lead to an increase in these risks. Thus, evaluating the financial statements assist in familiarising the potential aspects that the banks are expected to encounter in the future and, in turn, anticipating the risk, hedging it, and attempting to find solutions to problems (Birdawod, 2022).

Risks could affect the bank's financial performance so that the administration gets out of the reaction cycle and is ready for urgent matters. A key indicator of how well the nation's economy is doing is the banking sector (Massoudi & Birdawod, 2023). It promotes economic and business activities through various financial services.

The effectiveness of the banks must be assessed, as must the degree of their susceptibility to various financial risks, including credit risk. This study was conducted to assess the effect of financial risks on the financial performance of commercial banks listed on the Amman Stock Exchange because the nature of the banks' business exposes them to various sorts of risks.

### C. Research Questions

Banking industries are most exposed to risks, as these risks vary and change due to the constant revolutions and progression within this division. Risks, in general, have dramatically increased at the end of the last century due to rapid technological development and the advent of novel and innovative finance-related instruments.

The management of banks is giving the topic of risk and its management a lot of attention since banks are susceptible to risks in varying degrees, as well as their influence on the bank differs depending on the approaches adopted to address it. Consequently, the study addresses the following main question: Q. Does financial risk affect the financial performance and the lending of commercial banks listed on the Amman Stock Exchange?

This leads us to the following sub-questions:

1. Does the financial success of commercial banks listed on the Amman Stock Exchange depend on credit risk?
2. Is the lending activity of commercial banks listed on the Amman Stock Exchange impacted by credit risk?

#### D. Research Objectives

Financial risks are among the foremost issues that the banking sector encounter, especially at present, given the economic and political instability in the region and because of the many attempts of banks to search for stability, especially in the high competition between banks for different customer segments, while maintaining financial performance and lending. Banks are also seeking to achieve the highest possible level of profits and trying to avoid any negative effects resulting from low interest in risk and how it is managed.

Future recommendations and important conclusions are drawn at the end of the study, which summarises all the aspects of the topic and the relationship between interest rates and bank lending.

#### E. Research Significance

The importance of this study is highlighted in exploring the impact of financial risks on the financial performance of commercial banks listed on the Amman Financial Market, which benefits many parties, whether they are investors, shareholders, institutions or individuals, as this study helps bank departments in dealing with potential risks that Facing them, and the possibility of controlling these risks to face negative changes, search for their causes and try to avoid them, promote positive changes, search for their causes and try to eliminate them. This study also provides additional information to help the parties preserve their investments, achieve the greatest possible benefit, and avoid losses as much as possible. This study also contributes to evaluating the financial performance of the banks, which in turn helps the supervisory authorities to know the conditions of these banks, enabling them to take measures and measures that help and support the stability of banks and protect them from risks, with a positive impact on the Jordanian economy (Jami et al., 2023).

According to the researcher's knowledge, this study is one of the few that dealt with financial risks and their impact on the financial performance and lending of commercial banks listed on the Amman Financial Exchange, which emphasises the study's significance from a scientific perspective. Also, this study helps those who are interested in science and research to see new possibilities.

#### F. Work Breakdown Structure

Work Breakdown Structure (WBS) is one of the tools used in project management as it divides the project based on the main titles located. Under each heading, the researchers put the steps they will work on to reach the main outputs under the big title.

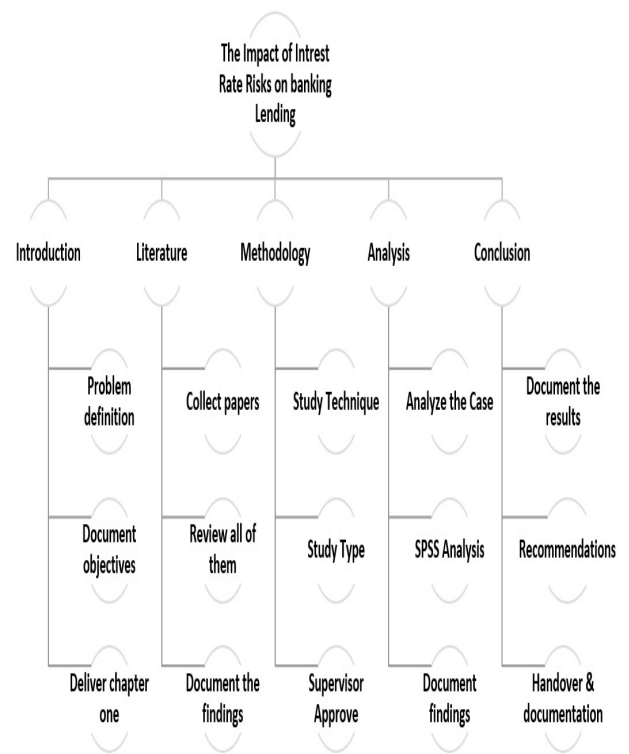


FIGURE 1. WORK BREAKDOWN STRUCTURE FOR GRADUATION PROJECT

## II. LITERATURE REVIEW

Risk is characterised as anticipated or unforeseen occurrences that have the potential to negatively affect the bank's earnings or capital. There are many different sorts of risks, including compliance risk, interest rate risk, exchange rate risk, credit risk, liquidity risk, reputation risk, price risk, strategy risk, and liquidity risk, according to the Office of the Comptroller of the Currency (OCC, 2017) of the U.S. Department of the Treasury. A bank that engages in external business is vulnerable to transfer and country risks (Al-Salami et al., 2019).

Understanding the underlying associations and interconnectedness between risks is the central issue in risk management. Typically, risks have a positive or negative correlation with one another (Frey et al., 2021). If an increment of a risk induces similar incremental changes in another, there is a positive link between risks. Sometimes lowering one risk causes the other dangers to rise. For example, commercial loans and a surge in real estate loans mitigate risks of lending and enhance the interest rate risk because the bank has a foothold in real estate loans, which are frequently protracted and thus subject to interest rate changes. All these sorts of the most significant risks that banks and procedures can face to minimise might be exposed to the bank's profits and capital by taking on credit risk (Alsheikhly et al., 2025).

In order to identify banking risks and ways to manage them, Basu (1994) conducted a study. The study enlightened the vital role of risk management in reducing the risks to which the banking systems are exposed. The results also demonstrated the

most important aspects of the committee agreement and the developments that took place there. Many conclusions and recommendations were developed by this study, such as; risk management is an integrated system that aims to confront the risks to which the bank is exposed by identifying, measuring and controlling them and finally choosing the most appropriate method for facing them and communicating reports to the board of directors.

There are two approaches to risk management. The first method is reducing the costs of risk to a minimum, and the second method is financing risks by using the transfer to secure funds and compensate for losses resulting from risks.

There are two methods for measuring credit risk, the standard method, which depends on the existence of a rating by external agencies to evaluate loans and assess the creditworthiness of customers. The second method is based on an internal evaluation where each bank follows an internal method of Specific evaluation of its customers (Basu, 1994).

Beutler et al. (2020) aimed to introduce systems for evaluating the financial performance of banks and their various aspects, study macroeconomic policies, and get to know their types and classifications.

Nguyen et al. (2022) evaluated the impact of monetary policies on the financial performance of banks. The researchers employed a “dynamic two-step system generalised method of moments (S-GMM) estimator” on the selected sample. The results of their study revealed that the expansion of the monetary policies stimulates the performance of the banks. It was also reported that the effectiveness of monetary policy expansion’s effectiveness in regard to the operating outcomes of the banks relies upon the interaction among the heterogeneousness of the balance sheet items of the banks and the COVID-19 pandemic. Lastly, it was identified that the most noticeable effect of the performance reduction of monetary policy is on small-sized banks with low levels of capitalisation and higher credit risk and liquidity during the crisis.

Fayman and He (2008) also evaluated the financial performance of commercial banks by analysing the return and risk on a sample comprising the three National Banks. A study by Sirletti (2015) included general concepts about banks, their types, objectives and characteristics between 2009 to 2012. It also included generalities about financial performance. Sirletti, S. applied the return on ownership model, and this study tried to find out how to benefit from the information in the financial statements for the purpose of evaluating the performance of banks and identifying the appropriate indicators in evaluating the performance. The study came out with a number of recommendations, most notably the necessity for banks to adopt the rules of disclosure, transparency and keeping pace with the technology that the world is witnessing. The study also recommended the need to follow up on the developments of financial analysis in order to obtain an optimal method for evaluating the performance of banks.

Alake (2020) aimed at analysing liquidity risk and its impact on the banking business in the banking sector, where the researcher presented the financial indicators and ratios derived from the cash flow statement and the relationship between liquidity risk

and capital adequacy. This study reached the following conclusions; The results of the financial analysis showed that capital adequacy was not affected by liquidity risk. This is due to the activities that the bank engages in. The purpose of the capital adequacy standards is to ensure that the bank maintains a minimum amount of capital that enables it to face potential losses, thus giving clients and shareholders evidence of proper management performance (Issa and Al-Salami, 2023).

Alake (2020) came out with a number of recommendations, most notably the need to formulate a clear strategy to maintain adequate capital, the need to establish an internal control system that would reduce liquidity risks, and the importance of preparing a cash flow statement, in accordance with the Central Bank's instructions. Finally, the study recommends the necessity of controlling the capital adequacy ratio and relying on the decisions of the Basel Committee in this regard.

Munsterman (2019) measured the effects of applying the capital adequacy standard on commercial banks on the profitability of these banks. The study used cross-sectional time series analysis. Ten profitability indicators were developed for the 15 commercial banks from 2000 to 2007. Their study was intended to examine the impact of credit risk management on financial performance. The return on assets and the financial return on ownership are the two mathematical equations that are used in the design to measure the relationship. The study found that credit risk management has an impact on Jordanian commercial banks' financial performance, as shown by return on assets and return on ownership. The study came to the further conclusion that the financial performance of Jordanian commercial banks is significantly influenced by measures of credit risk management. According to the findings, the researcher advised banks to enhance their credit risk management in order to increase profits, where banks must consider the indicators of scattered loans, total loans, total facility losses, net facilities, and the leverage ratio.

These indicators were important in determining credit risk management, as banks should develop adequate policies to manage credit risk by imposing strict credit assessment before granting loans to clients, designing an effective credit risk management system and working through sound scientific frameworks to grant faith to improve the performance and competitiveness of banks.

### III. METHODOLOGY

#### A. Research Design

In this study, the researchers relied on the analytical regression statistical method to indicate financial risks on the financial performance and lending of the Jordanian commercial banks listed on the Amman Stock Exchange. The statistical analysis is done with the help of the Statistical Package for Social Sciences (SPSS) and excel sheets, which help to analyses the results.

## B. Sample Population

The study population consists of the 13 popular commercial banks listed in the Amman Financial Market between (2015-2020).

## C. Data Collection Methods

The data collection method was composed of two steps, primary and secondary data collection, which are as follows:

- **Primary Sources:** These sources are represented by the annual reports of the banks under study obtained from the official websites of the banks; or from the Amman Stock Exchange, Where the researchers used the financial statements and some disclosures necessary for the purposes of obtaining the data necessary for the study.
- **Secondary Sources:** These sources depend on previous research papers. Secondary data also relies on previous studies and data related to the topic of the research.

## D. Model Used

The researchers have used the following model for the purposes of measuring the interest rate risk on financial performance, where we are focusing here on one of the dimensions, which is the bank lending variable.

The study depends on the following model (shown in the equation below) to test the impact of interest rate risks on banks lending for commercial banks listed on the Amman Financial Market, as in previous studies.

$$Y = \alpha + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + v$$

Where;

Y: Bank Lending Variable

X1: Interest Rate Risk

X2: Capital Adequacy Ratio Risk

X3: Credit Risk

$\alpha, \beta, v$ : Constants

## E. Types of Risks in the Model (Independent Variables)

The independent variables (as mentioned in the above model) of this study are three main risks: credit risk, liquidity risk and interest rate risk. The following subsections explain each one in more detail

### III.E.1 Credit Risk

Credit risk is defined as the risk resulting from the inability of customers and other counterparties to pay their obligations to lenders on time (Alake, 2020). Normally, credit risks are compliance with loans, advances, credit facilities, guarantees, and market values of financial derivatives, among others. Credit risk is measured by several indicators. The researchers chose the non-performing loan ratio to measure it, as in many previous studies.

### III.E.2 Liquidity Risk

Liquidity risk arises through the bank's inability to meet the excess demand for deposits, its inability to increase its assets, and insufficient liquidity to carry out daily operational activities. In extreme cases, insufficient liquidity can affect the bank's financial inadequacy (Sirletti, 2015). The liquidity ratio was used as an indicator to measure liquidity risk, as in many previous studies.

### III.E.3 Interest Rate Risk

Interest rate risk is the risk resulting from the difference between the expected rate of return and the effective rate of return due to the change in interest rates in the market, where the change in the interest rate affects the profit or loss of the banks. The profit or loss is attributed to the interest's association with the bank's assets or liabilities (Beutler et al., 2020). Interest rate risk is the primary independent variable in this study, as shown by the title of the research

## IV. RESULTS AND ANALYSIS

In this study, data on study variables for the period from 2015 to 2020 were collected through the financial statements of the 13 Jordanian banks, where the sample size reached 104 views for each of the study variables, and the researchers analysed the study data using the statistical program E-views and SPSS. The researchers also used the Panel Data method for statistical analysis, and a (linear regression Test) was conducted to identify which models are more suitable (Fixed model or Random model). The ANOVA test was also used to test the stability and significance of the time series.

### A. Regression Statistics

By looking at Table 1, it is found that the average interest rate risk is 0.682. This percentage is high, meaning that banks own 68% risk-weighted assets of their total assets. This is due to the fact that the bank's assets consist mainly of investment portfolios and credit portfolios, which have a relationship. The interest rate changes directly. As for the average capital adequacy ratio, it reached 0.18, which is a good ratio since banks are subject during the study period to the criteria of the Basel 2 Committee, which set the minimum capital adequacy ratio of 8%. We find that the standard deviation of the capital adequacy ratio is approximately (0.052), meaning that there is low fluctuation in this ratio due to the fact that most banks are trying to adhere to the rate set by the Central Bank, which is equal to 12%. The average liquidity ratio is (0.33), a good indicator. The average non-performing loan ratio is (0.075). The ratio is good, coupled with the average rate of non-performing loans for a number of countries for the same period of study, and this percentage is due to the banks' pursuit of more precautionary policies in granting credit, with their keenness to structure loans before classifying them into non-performing loans.

The CAR variable stands for the Capital Adequacy Ratio, the CR stands for Credit Risk, the IR stands for the Interest Rate Risk, and the NPL is the non-performing loans.

	CAR	CR	IR	NPL
<b>Mean</b>	0.181728	0.181728	0.181728	0.181728
<b>Median</b>	0.16685	0.16685	0.16685	0.16685
<b>Maximum</b>	0.3671	0.3671	0.3671	0.3671
<b>Minimum</b>	0.1068	0.1068	0.1068	0.1068
<b>Standard Deviation</b>	0.052312	0.052312	0.052312	0.052312
<b>N</b>	104	104	104	104

**Table 1.** Regression Analysis for the variables of the study

#### B. Pearson Correlation

To understand the relationship between the variables (especially the IR and the NPL) of the study, the Pearson correlation analysis is performed. The results of the Pearson correlation are shown in Table 2.

P-Correlations	CAR	CR	IR	NPL
<b>CAR</b>	1.00	0.18	-0.52	0.20
<b>CR</b>	0.18	1.00	-0.37	0.54
<b>IR</b>	-0.52	-0.37	1.00	-0.43
<b>NPL</b>	0.20	0.54	-0.43	1.00

**Table 2.** Pearson Correlation Analysis for the variables of the study

The Pearson correlation test between variables is used; to test the relationship between the variables of the study. It is found from the above Table that the largest correlation between the variables was some of them is 54%, which is between the credit risk and the Non-Performing Loans risk, as this ratio is generally acceptable. Another significant finding that fortifies the results is the correlation between the Non-Performing Loans and the interest rate, which equals 43%.

#### C. ANOVA Test

Table 3 shows the results of the ANOVA test of the study variables, as the value of the Fisher test index to test the significance of the model ( $F = 92.39$ ), which is a good value and its significance score ( $\text{sig} = 0.001$ ) which is less than (0.05), which indicates the significance of the Fisher factor for the significant test. The model indicates that this model is significant and has a statistical indication of the variables of forecasting and prediction of changes of the dependent variable (banking lending) depending on and gives a very good independent score.

Analysis of Variance (ANOVA)	F	P-value
<b>CAR</b>	39.72	0.020
<b>CR</b>	44.98	0.017
<b>IR</b>	55.83	0.0025
<b>NPL</b>	92.39	0.001

**Table 3.** ANOVA Test for the variables of the study

#### D. Regression Test

Table 4 shows the results of the linear regression analysis for the variables under study.

Model	Coefficients	B	Std. Error	Beta	t	Sig.
1	<b>Constant</b>	.081	.022		3.724	.001
	<b>CAR</b>	-.069	.033	-.155	2.081	.044
	<b>CR</b>	.099	.056	.132	1.779	.083
	<b>IR</b>	.289	.030	.807	9.554	.000

**Table 4.** Linear regression model for the variables of the study

The linear regression model shows the variables of the model (Capital Adequacy Ratio, Credit Risk and Interest Rate Risk). Through the t-test of the model, it is noted that: with regard to the non-performing loans variable, has shown the value of the interest rate risk was (0.099) - and its significant value was ( $\text{sig} = .080$ ), which is greater than the standard score (0.05), which indicates the significance of the p-value index, and from which the hypothesis is failed to be rejected (Accepted). There is a statistically significant relationship between interest rate risk and bank lending security. The study sample and accepting the alternative hypothesis that there is no clear influential relationship between the capital rate risk and the degree of banking safety in the banks, the study sample. As for the credit risk variable, Table 4 shows that the credit risk report has a value of (0.289) and the significance value of the test index ( $\text{sig} = 0.00$ ), which is less than the standard score (0.05), which indicates a statistical significance of the rejecting the null hypothesis or in other words (there is no statistically significant impact relationship).

Again the Interest rate values in Table 4 showed the value of the test index of interest rate risk, as its value reached (0.099) - and the significant value of the test index was ( $\text{sig} = 0.083$ ), which is greater than the standard score (0.05), which indicates the insignificance of the rejecting the null hypothesis or including accepting the null hypothesis (there is a statistically significant impact relationship between interest rate risk and banking lending security in banks) and rejecting the alternative hypothesis that there is no effective relationship between interest rate risk and the degree of banking lending security in Jordanian banks.

#### E. Summary of the Results & Analysis

For the capital risk variable, Table 4 showed the value of an index that was very weak for the capital risk test, as its value was 0.289, and the significance value of the test index was  $\text{sig} = 0.000$ , which is smaller than the standard score of 0.05. The study sample indicates the significance of the p-value index, including the rejection of the hypothesis and the acceptance of

the alternative hypothesis that there is no effective relationship between capital risk and the degree of banking security in banks. The large correlation coefficient indicated the existence of a strong correlation between the interest rate risks and the degree of bank lending security in the banks for the sample of the study.

The Linear regression equation, which is shown in the methodology section, can be re-written depending on the results of Table 4 as the following:

$$\text{Bank Lending} = 0.081 - 0.069 \text{ CAR} + 0.099 \text{ CR} + 0.289 \text{ IR}$$

The most significant finding of this section is the statistically significant relationship between the interest rate risks in Jordanian banks (independent variable) and bank lending (dependent variable). The following figure shows the linear regression model between the study variables.

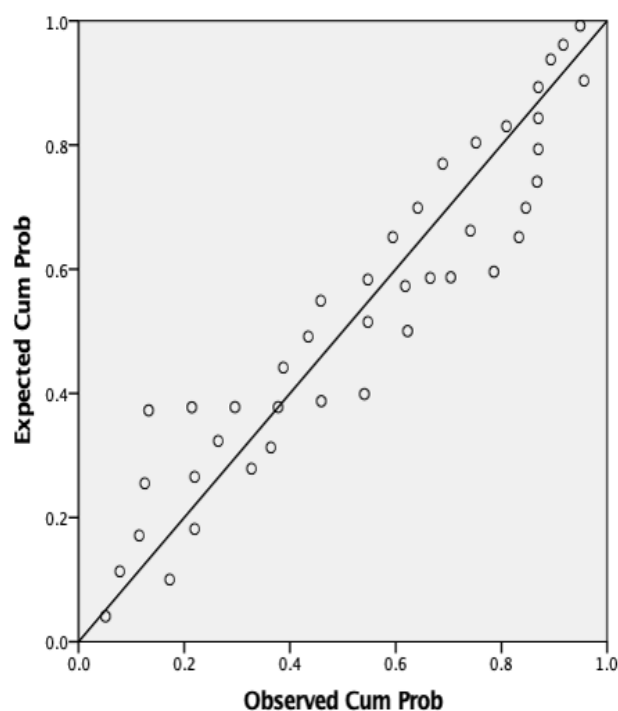


Figure 2. Linear regression curve for the variables under study

## V. CONCLUSION

This study indicates that the non-performing loan ratio is used to assess the effectiveness and appropriateness of credit management in banks and that capital adequacy is good evidence of the bank's financial performance, and it serves as a barrier against losing depositors' money.

The results of this study showed a negative relationship between credit risk measured by the percentage of non-performing loans on the one hand and return on assets and return on ownership on the other hand. Ownership and these banks with high-quality automatic assets are more profitable than other banks. Similar results also appeared in studies. It was

found that there is a negative relationship between non-performing loans on the one hand and return on assets and return on ownership. The most significant finding of the current work is the existence of a significant relationship between interest rate risks and the degree of bank lending security.

## A. Recommendations

Based on the results of the current study and with the intention of road mapping the future research direction for future researchers to bridge the knowledge gaps, the following recommendations have been proposed:

- Interest rate risk and credit risk are the most important risks affecting the financial performance of banks. Jordanian banks should set controls and precautionary policies towards these risks to ensure that they do not affect the financial performance of the bank. The following are the most important proposed policies to address credit and interest risks.
- Study the elements of granting credit (credit conditions, credit limits, credit analysis, payment method, credit insurance, debt collection, and risk control).
- Inquire about the reputation of the client.
- The necessity to conduct a study and analysis of the sensitivity of assets and liabilities to interest rates and to know the risks of fluctuations in interest rates.
- Use of futures and futures contracts to hedge interest rate risk.

## Declarations of Interest

None.

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