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Research Paper

The Influential Relationship Between Interest Rate Swaps and Earnings: An Analytical Study of Sample Data from Banks in Several Gulf Cooperation Council Countries for the Period 2013-2023

Zubaida Shukri Hussein Al-Mziri¹, Shivan Ahmed
Mohammed Dusky²

^{1,2} Department of Business Administration, College of Administration and
Economics, University of Duhok, Duhok, Iraq.

Corresponding author: Zubaida Shukri Hussein Al-Mziri1.
zubaidamziri1@gmail.com

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Abstract

This research aims to examine the influence of interest rate swaps on banks' earnings within the context of modern capital markets, characterized by dynamism and continuous development, and to explore the role of derivative financial instruments in risk management and earnings generation. The research problem is to determine the extent of the impact of interest rate swaps, as an independent variable, on banking earnings, as a dependent variable. Given the notable variation in the levels of these swaps and asset management strategies between banks, the research population comprises 40 banks listed on the stock exchanges of Saudi Arabia, Kuwait, Qatar, and the United Arab Emirates (Dubai Emirate). A sample of 12 banks, representing 30% of the population, was selected for the period from 2013 to 2023. The research concluded with a fundamental finding that the strong positive relationship and direct significant impact of interest rate swaps on return on assets indicate that these instruments are not merely a means of hedging risks but are effective factors that directly contribute to improving banks' financial performance and increasing their ability to generate earnings from their assets. Based on this, it is proposed that banks that have not sufficiently exploited interest rate swaps should reassess their current strategies and explore how to integrate these instruments more effectively into the asset and liability management framework to improve earnings and reduce interest rate risks.

Keywords

Derivatives, Interest Rate Swaps, Earnings, Banks, Assets

ورقة بحثية

العلاقة التأثيرية بين مبادلات أسعار الفائدة والعوائد: دراسة تحليلية لبيانات عينة من المصارف في عدد من دول مجلس التعاون الخليجي للفترة 2013-2023

زبيدة شكري حسين المزيري¹ ، شفان احمد محمد الدوسكي² 

^{1,2} قسم إدارة الأعمال، كلية الإدارة والاقتصاد، جامعة دهوك، دهوك، العراق

المؤلف المراسل: زبيدة شكري حسين المزيري (zubaidamziri1@gmail.com)

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المخلص

يهدف هذا البحث إلى دراسة العلاقة التأثيرية لمبادلات أسعار الفائدة على العوائد المحققة من قبل المصارف وذلك في سياق أسواق المال الحديثة التي تتسم بالديناميكية والتطور المستمر، ودور الأدوات المالية المشتقة في إدارة المخاطر وتحقيق العوائد، تكمن مشكلة البحث في التساؤل عن مدى تأثير مبادلات أسعار الفائدة كمتغير مستقل على العوائد المصرفية كمتغير تابع، وفي ظل التباين الملحوظ في مستويات هذه المبادلات واستراتيجيات إدارة الموجودات بين المصارف، يضم مجتمع البحث 40 مصرفاً مسجلاً في بورصات السعودية، الكويت، قطر، والإمارات العربية المتحدة (إمارة دبي) وقد تم اختيار عينة مكونة من 12 مصرفاً، تمثل 30% من المجتمع للفترة الزمنية الممتدة من 2013 إلى 2023، وقد خلص البحث إلى استنتاج أساسي مفاده أن العلاقة الطردية القوية والتأثير المباشر والمعنوي لمبادلات أسعار الفائدة على العائد على الموجودات يشيران إلى أن هذه الأدوات ليست مجرد وسيلة للتحوط من المخاطر بل هي عامل فعال يساهم بشكل مباشر في تحسين الأداء المالي للمصارف وزيادة قدرتها على تحقيق العوائد من موجوداتها، وبناءً على ذلك يُقترح كخطوة أساسية أن على المصارف التي لم تستغل مبادلات أسعار الفائدة بشكل كافٍ أن تعيد تقييم استراتيجياتها الحالية، والبحث في كيفية دمج هذه الأدوات بفعالية أكبر ضمن إطار إدارة الموجودات والمطلوبات لتحسين العوائد وتقليل مخاطر أسعار الفائدة.

الكلمات المفتاحية:

المشتقات، مبادلات أسعار الفائدة، العوائد، المصارف، الموجودات.

مجلة

تنمية الرافدين

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دولية، مفتوحة الوصول، محكمة.

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1. Introduction

Modern capital markets are among the most essential pillars of the global economy, characterized by dynamism and continuous development, and they play a crucial role in directing capital flows and stimulating economic growth. Amid this development, interest in derivatives has increased, making them an integral part of financial strategies for institutions, particularly banks. These instruments aim to manage complex financial risks, achieve rewarding earnings, and enhance operational efficiency in a volatile economic environment. Among these instruments, Interest Rate Swap contracts stand out as among the most common and influential financial derivatives. The importance of interest rate swaps lies in their ability to provide several strategic advantages to users. They serve as an effective means of hedging against interest rate volatility, enabling companies expecting future interest rate increases to exchange variable interest payments for fixed payments. For banks, these contracts are essential for matching revenues with obligations, thereby reducing liquidity risks in the event of rising variable interest obligations (McPhail et al., 2021).

In contrast, earnings are considered a fundamental measure of bank performance, reflecting its ability to generate income exceeding its costs. They represent the surplus resulting from the bank's activity after covering all costs and expenses, or the net income achieved after paying taxes. The importance of earnings is not limited to being a mere financial figure; it serves as a vital indicator of the company's health and vitality, its ability to adapt to changing business environments, invest in future growth, and distribute profits to shareholders. In the context of the current research, the relationship between interest rate swaps and earnings gains is of paramount importance, particularly in the banking environments of Gulf Cooperation Council countries, which are witnessing rapid economic and financial developments (Karadayi, 2023).

The research is divided into three main sections: the first addresses the research methodology, including the research problem, its importance, objectives, and hypotheses. The second section focuses on the theoretical framework, covering the theoretical aspects of the variables, including the concepts of interest rate swaps and returns. Finally, the third section addresses the practical framework, the empirical aspect that relies on the analysis of financial and statistical data to test the research hypotheses.

2. First Axis: Research Methodology

2.1 Research Problem

Despite the growing role of interest rate swaps in managing financial risks for banks, there are fundamental questions about their impact on banks' earnings. Given the notable variation in interest rate swap levels across banks and differences in their asset management strategies and earnings performance, the question arises as to the extent to which these swaps, as independent variables, affect banking earnings as the dependent variable.



More specifically, the research problem is represented in the following questions:

- What are the levels of interest rate swaps in the research sample banks, and do these levels differ between them?
- What are the earnings levels (represented by return on assets) in the research sample banks, and do these levels differ between them?
- Is there a significant correlation relationship with statistical significance between interest rate swaps and earnings for the studied banks?
- Is there a direct impact with statistical significance of interest rate swaps on banking earnings?

2.2 Research Significance

The importance of the current research can be demonstrated through the following:

1. The importance of this research lies in addressing a vital, modern topic of paramount importance to stakeholders in the studied banks.
2. According to the researchers' knowledge, the connection between the variables included in the research model has not been previously addressed in any research, adding another dimension to the importance of the current research.
3. What the research will conclude can be considered a valuable reference for all interested parties, academics, and professionals alike, in topics of interest rate swaps and earnings, giving the research cognitive and field importance for these entities.

2.4 Research Objectives

This research aims primarily to build a model that explains the influence of interest rate swaps on bank earnings, based on an intellectual review of available research and studies related to the research variables. The research also aims fundamentally to test the research model empirically using bank data for the sample and the period 2013-2023, then to reach several conclusions and proposals related to the research variables.

2.5 Research Hypotheses

Based on the above and to answer the contents of the research problem, hypotheses were formulated as follows:

B. Financial Analysis Hypotheses:

- First hypothesis states: (There is a significant difference in the mean interest rate swap levels among the sample)
- Second hypothesis states: (There is a significant difference in the mean earnings levels among the sample banks).

T. Statistical Analysis Hypotheses: Statistical hypotheses will be tested at a default significance level (0.05), which are as follows:

A. Correlation Hypotheses:

- Main hypothesis: states that (There is a significant correlation relationship with statistical significance between interest rate swaps and earnings for the studied banks)

B. Impact Hypotheses:

- Main hypothesis: states that (There is a direct impact with statistical significance of interest rate swaps on earnings)

2.5 Research Model

The research depends on several variables, and, in light of these, the research plan and directions for the correlation and influence relationships between them are determined. The research included the following variables:

1. Independent variable, represented by Interest Rate Swaps.
2. Dependent variable, represented by Earnings.

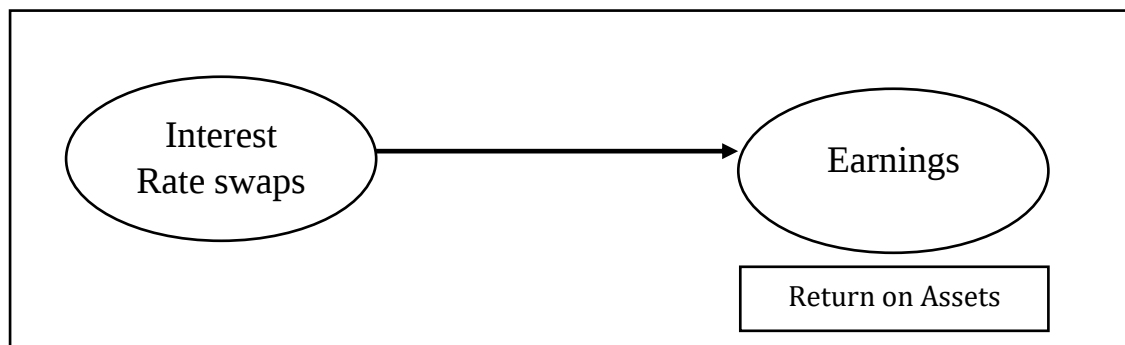


Figure (1) :Research Model

Source: Prepared by the researchers.

2.6 Description of Research Population and Sample

The 40 banks registered on the Saudi, Kuwait, Qatar, and United Arab Emirates (Dubai Emirate) stock exchanges constitute the research population. (12) banks were selected to represent the research sample, forming 30% of the bank population for the time period 2013 to 2023 (132 observations, 11 Years * 12 Banks). The research methodology used in this study is based on Panel Data Analysis, which combines cross-sectional data. This type of data allows researchers to examine the behavior of variables over time and across a sample of individuals simultaneously, providing a deeper understanding of the relationships among the research variables. The selection of this population and sample was for several reasons, the most important of which were:

1. Availability of data on which the field aspect of the research will depend, represented by annual reports issued by the market and balance sheets of those banks
2. The selected banks are considered influential banks in financial and economic aspects locally, regionally, and globally



2.7 Analysis Methods

Analysis methods for the current research varied between financial analysis and statistical analysis, with tools for each as follows:

1. Financial Analysis Methods: A set of financial indicators was used to analyze data of the studied banks to test financial analysis hypotheses according to the following indicators:

A. Interest rate swaps variable, which will be measured using values taken from the financial reports of sample banks in several Gulf Cooperation Council countries

B. Earnings variable, which will be measured through the following equation: Return on Assets Rate = Net Profit / Total Assets

2. Statistical Analysis Methods: Several statistical tests will be applied to obtain results related to testing main statistical analysis hypotheses and their sub-hypotheses according to the following:

A. Using the arithmetic mean to describe and compare financial analysis results between research sample banks, as well as adopting data from these means for statistical analysis. B. Applying multiple and straightforward correlation coefficients to identify correlation relationships between research variables and their dimensions. C. Applying multiple and straightforward regression coefficients to identify the impact of independent variables and their dimensions on the dependent variable.

3. Second Axis: Theoretical Framework of the Research

3.1 Swap Contracts

A swap is an agreement to exchange future cash flows. "Swaps are private agreements between two companies to exchange cash flows in the future according to a predetermined formula," and swaps are usually arranged by financial institutions (Marthinsen, 2018). There are two common types of swaps: interest rate swaps and currency swaps. Interest rate swaps convert fixed-rate loans to variable-rate loans and vice versa, and currency swaps convert a loan from one currency to another (Martin et al., 2021). For example, a US dollar loan obtained by a company can be converted to a Japanese yen loan through a currency swap agreement with a third party. The two parties in a currency swap agree to exchange future cash flows in different currencies. In the above example, the borrowing company agrees to pay yen interest to the third party in exchange for receiving US dollar interest from the third party. The borrowing company can use the US dollar interest received from the third party to meet its obligation to pay interest to the original lender in US dollars. Borrowers of foreign currency loans are exposed to exchange rate risk due to currency fluctuations, and currency swaps can be used to reduce the exchange rate risk associated with foreign currency borrowings, as well as to reduce the interest cost of these loans (Kevin, 2024).



3.1.1 Types of Swaps

Types of swap contracts are divided into the following (Chance & Brooks, 2021, p. 410):

- **Currency Swap:** Both parties make fixed or variable interest payments to each other in different currencies, and there may or may not be a principal payment
- **Interest Rate Swap:** Both parties make a series of interest payments to each other, with both payments in the same currency, where one payment is variable, and the other payment can be variable or fixed, and the underlying asset on which payments are based is not exchanged
- **Equity Swap:** At least one party makes payments determined by a stock price or equity portfolio value or equity index level, and the other party's payment can be determined by another stock, portfolio, index, or by an interest rate, or can be fixed
- **Commodity Swap:** At least one set of payments is determined based on a commodity price, such as oil or gold, and usually, the other payment is fixed, but there is no reason preventing its determination by another variable

3.1.2 Concept of Interest Rate Swaps

Linguistically: A noun derived from the verb "traded," meaning "taking something and giving something." It means, in general, the exchange between two or more things. **Terminologically,** a Financial swap is an agreement between two parties to exchange the value of two financial assets on a specified future date. Interest rate swaps are derivative contracts through which fixed and variable interest rate payments are exchanged between two parties. Such swaps were first used in the early 1980s and are now among the most popular derivative contracts. Most large companies usually indicate that they use interest rate swaps and that swaps are their preferred derivative contracts for managing interest rate risks (Jermann, 2018).

An interest rate swap is an agreement between two parties in which each party makes periodic interest payments to the other based on a specified principal amount, with one party paying at a variable rate and the other at a fixed rate (Beckley, 2017, pp. 3-5). The two parties to the agreement are also known as counterparties, and the specified principal amount is called the notional principal amount, or simply the notional amount. The word "notional" means in name only, i.e., the notional principal amount is not paid under an interest rate swap by either counterparty and is therefore principal in name only. However, the notional amount serves as the basis for payment exchange: one counterparty will owe a payment equal to the notional amount multiplied by the swap rate, and the other will owe a payment equal to the notional amount multiplied by the variable interest rate (Smith, 2013, p. 50).

3.1.3 Advantages of Interest Rate Swap Contracts

The most important advantages achieved by interest rate swap contracts can be summarized as follows (Corporate Finance Institute, 2023: 5):

1. Hedging against interest rate volatility risks for companies: Interest rate swaps allow companies to replace variable payments with fixed ones when expecting rate increases. This protects them from increased debt burdens and financial exposure.



2. Risk management for banks: Banks use swaps to match revenues with obligations when paying variable interest on deposits but receiving fixed interest on loans. This prevents liquidity crises by ensuring revenues exceed expenses.

3. Risk management for hedge funds: Hedge funds use interest rate swaps to reduce risks while maintaining profit potential through speculation. Experienced funds can achieve large profits with minimal upfront payments on high-value contracts.

4. Achieving comparative advantages: Companies with better borrowing rates in one type (fixed/variable) can use swaps to obtain their preferred financing structure. This allows optimal financing regardless of the initial loan terms available to each company.

3.2 Earnings

Earnings are the surplus resulting from a company's operations after covering all costs and expenses; i.e., the difference between revenues and total costs. Earnings are the net income that the company achieves after paying taxes (Asele & Awol, 2009). Earnings are a fundamental measure of company performance, reflecting its ability to generate income exceeding its costs. They matter to investors, managers, and lenders when making investment and financing decisions. Earnings are the increase in a company's wealth from its main activities, affected by revenues and expenses, and serve as an indicator of management efficiency and the company's financial strength. Earnings are not just a number; they are an indicator of a company's health and vitality. They reflect the company's ability to adapt to changes in the business environment, invest in future growth, and distribute earnings to shareholders (Choirina & Ahmar, 2013).

The concept of earnings quality is defined in the literature from two perspectives: the contracting perspective and the investment perspective. From the contracting perspective, low earnings quality may lead to unintended wealth transfer. For example, companies that reward managers based on earnings may over-reward managers if earnings are overstated. From the investment perspective, poor earnings quality is problematic because it can mislead investors, leading to resource misallocation (Aguguom & Salawu, 2018).

Earnings are considered an important factor for reducing information asymmetry and enhancing financial market development. Earnings quality can be defined as a company's potential profitability or the likelihood of achieving expected future earnings growth. Therefore, a company's stock value depends not only on earnings per share but also on future performance expectations and the reliability of earnings. Earnings quality is a reliable representation of expected and announced earnings, and issued earnings will help users make sound economic decisions. Earnings quality is the ability to predict the company's future income (Dang et al., 2020).

Earnings reflect the value of earnings reported close to their actual value, without manipulation, and investors expect good earnings in the form of dividend distributions when the company achieves sufficient earnings. Good managerial performance of companies is reflected in their high profitability and financial

performance indicators; thus, the company's performance, as represented by earnings quality, becomes an indicator studied by investors (Tarmidi et al., 2021).

Earnings are defined as "the ability of reported earnings to reflect the company's true earnings, as well as the usefulness of reported earnings in predicting future earnings." Therefore, for effective decision-making, decision-makers require more sensitive, high-quality information (Saleh et al., 2020).

Earnings are also considered a vital indicator of the company's health and the reliability of its financial information. Earnings directly affect the decisions of a variety of stakeholders, which can be referred to through Figure 2 (Cug & Cugova, 2021):

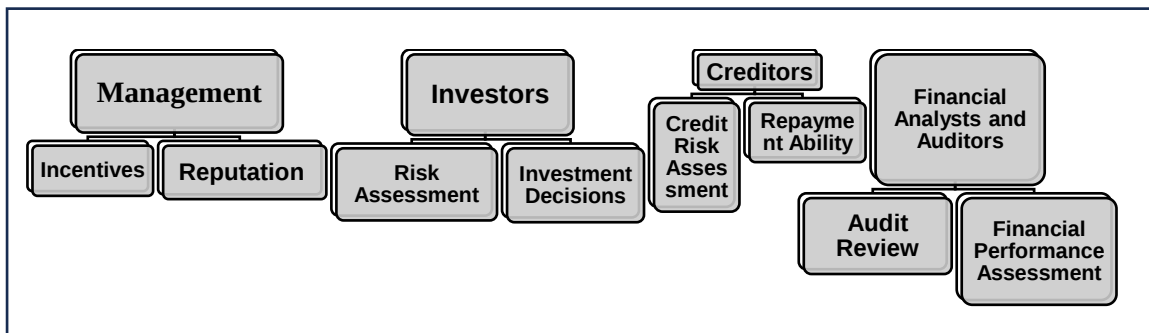


Figure (2). Stakeholders Concerned with Earnings

Source: Prepared by the researchers based on the preceding sources.

3.3 The Relationship between Interest Rate Swaps and Earnings:

The intellectual relationship between the variables lies in the fact that interest rate swaps are a crucial tool in banks' financial risk management. They enable financial institutions to hedge against unexpected interest rate fluctuations, thereby helping protect and stabilize their net interest income. By using these swaps to convert debt obligations from floating to fixed rates, or vice versa, banks can achieve greater stability in their profits, which, in turn, positively affects their banking returns. This stability allows banks to plan their financial operations more efficiently, reduce uncertainty in future cash flows, and thus enhance overall financial performance and increase the return on assets (Chen, 2011).

4. Third Axis: The Empirical Framework of the Research

This axis analyzes the financial aspects of the research variables and their dimensions to comprehend and delineate the trajectories of the adopted financial indicators. The analysis is based on research data spanning 2013 to 2023. These data were meticulously compiled from the financial statements and reports of the banks and companies comprising the research sample. The results will be presented as follows:

4.1 Financial Analysis of Interest Rate Swaps:

Interest rate swaps are financial contracts under which cash flows based on different interest rates (fixed and floating) are exchanged. Banks use interest rate

swaps for interest rate risk management, to reduce borrowing costs, and to augment investment returns.

Table 1 reveals substantial variance in interest rate swap values across banks, suggesting divergent strategies for managing interest rate risk. Some banks exhibit relatively high interest rate swap values, indicating their extensive utilization of these contracts in their financial operations. Conversely, other banks display comparatively low interest rate swap values, suggesting their reliance on alternative financial instruments for interest rate risk management. Furthermore, there is considerable fluctuation in swap values over the years, indicative of changes in global interest rates.

Emirates Bank recorded the highest average interest rate swap value, reaching (97,158,943), a figure significantly exceeding the averages of other banks and the overall mean. This unequivocally suggests that Emirates Bank extensively employs interest rate swaps. QNB and BSF reported average values of (33, 132, 315) and (61, 332, 626), respectively, both of which surpass the overall mean, indicating substantial engagement with these contracts. In contrast, ABK, Burgan, Mashreq, CBD, CBQ, ANB, and Aljazeera banks exhibited average interest rate swap values significantly below the overall mean, implying a more limited utilization of these contracts.

Based on the results of the financial analysis of interest rate swaps for the banks in the sample, the validity of the first financial analysis hypothesis is confirmed: "Different levels of interest rate swaps exist in the research sample banks."

Table (1). Interest Rate Swaps / for the years 2013 - 2023 (in thousands of USD)

Years Banks	2013	2013	2015	2016	2017	2018	2019	2020	2021	2022	2023	Mean for Banks
NBK	4418740	6284626.9	3105409.5	4529906	6319278.7	7566507.9	9778906.6	10950347	123925150.5	14200244.4	18328347	19037042.2
ABK	445662.2	533745.6	545259	272331.9	231424.3	232611.6	160080.9	21151.3	21098.6	612665.4	615331.4	335578.4
Burgan	45486.3	102544.9	64855.1	176563.6	198006.3	457560	179645	288386.8	303958.1	150601.1	202907.4	197319.5
Mashreq	1616417.5	2053052.2	2326821.0	1910580.3	1847549.5	1597290.2	1514427.3	2543154.6	2533891.5	2097046.2	2395286.9	2039592.5
CBD	462646.2	1146806.3	1770025.7	1444391.5	995500.8	2525887.7	3980707.7	5258159.8	7171327.0	8467553.8	7662553.8	3716869.1
Emirats	32757884.4	28428466.4	43800652.5	60883286.9	68430307.9	66173706.6	108293796.4	138687298.9	148650350.5	182465573.8	190177049.2	97158943.0
CBQ	188356.3	188356.3	99772.8	215262.6	158319.5	375006.3	4341877.2	4609985.2	837380.8	1173457.4	898069.8	1189622.2
QNB	10861151.4	13243928.0	13969854.7	29723633.0	32425931.9	36403945.1	39606818.7	32825871.2	30613623.9	26655865.9	98124843.1	33132315.2
ANB	2780908.3	6363076.3	549770.7	4608670.9	8787057.6	9971369.1	12122077.9	11216628.3	12240401.3	10180683.5	12025793.9	8708579.8
BSF	50118640.0	54584816.3	61226372.3	63314402.7	68000739.5	57314834.1	60310288.5	61829814.4	62287821.6	63368336.0	72302824.5	61332626.4
Aljazeera	1810485.1	2433600.0	2412296.3	3084317.6	2374243.5	1653252.8	1425660.8	1281434.1	1481881.1	3246491.5	3228368.3	2221093.7
SABB	14908845.6	14908845.6	12797065.9	11524654.1	13111234.9	13409602.1	19089608.5	12984848.3	13775864.8	19164677.9	27080943.7	15705108.3
Mean for Years	10034601.9	10855988.7	12301341.3	15140666.8	16906632.9	16473464.5	21733658.0	23541423.3	33653562.5	27648599.7	36086859.9	-
Total Mean												20397890.9

Source: From the data of the sample banks for the years 2013 – 2023

Figure 3 shows significant fluctuations in interest rate swap values among banks. Banks such as BSF and EME have much higher interest rate swap values than other banks. The BSF bank shows very sharp fluctuations, which may indicate radical changes in strategy or large irregular deals. NBK bank has moderate fluctuations, which may indicate periodic strategic adjustments or changes in transaction volume. The remaining banks show relative stability, which may indicate a conservative strategy or limited impact of interest rate changes.

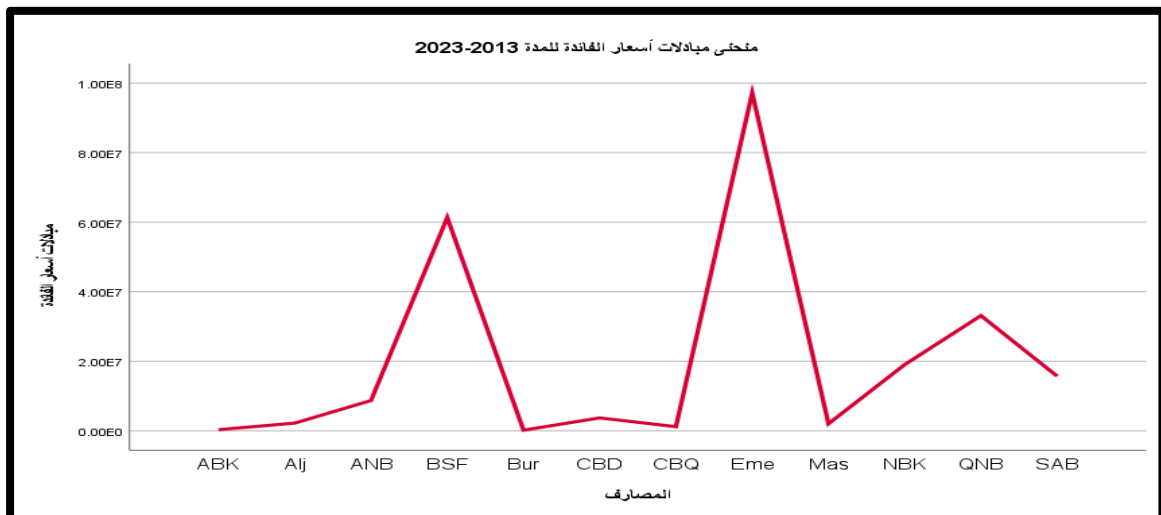


Figure (3). Interest Rate Swaps Curve

4.2. Financial Analysis of Earnings, including:

Table 2 shows variation in return-on-assets indicators across banks, indicating differences in their strategies for asset management and return generation. Some banks have relatively high return on assets indicators, indicating they achieve good returns on their assets. In contrast, others have relatively low return on assets indicators, indicating they may face challenges achieving returns on their assets.

The banks with averages higher than the general average of (0.014) are: Mashreq Bank with an average of (0.018), CBD Bank with an average of (0.017), Emirates Bank with an average of (0.017), QNB Bank with an average of (0.016), ANB Bank with an average of (0.016), BSF Bank with an average of (0.016), and SABB Bank with an average of (0.019). This indicates that these banks achieve substantial returns on their assets, demonstrating efficient asset utilization.

The banks with averages lower than the general average are: NBK Bank with an average of (0.013), ABK Bank with an average of (0.008), Burgan Bank with an average of (0.008), CBQ Bank with an average of (0.012), and Aljazeera Bank with an average of (0.011). This indicates that these banks need to improve their asset utilization efficiency to achieve returns.

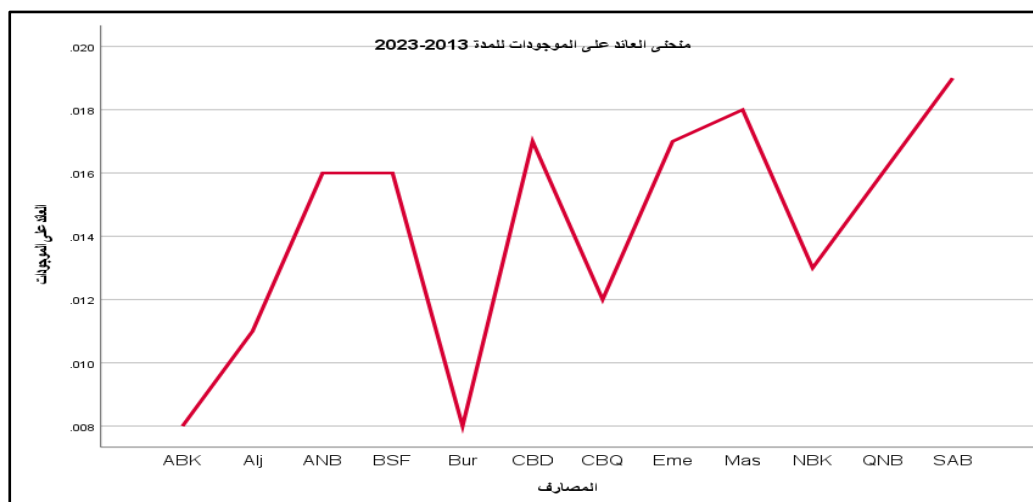
Based on the results of the financial analysis of bank returns in the sample, the validity of the second financial analysis hypothesis is confirmed: "Different levels of returns exist in the research sample banks."

Table (2). Return on Assets / for the years 2013 - 2023 (Ratio Index)

Years Banks	2013	2013	2015	2016	2017	2018	2019	2020	2021	2022	2023	Mean for Banks
NBK	0.014	0.013	0.013	0.013	0.013	0.014	0.015	0.009	0.011	0.015	0.016	0.013
ABK	0.011	0.011	0.007	0.008	0.008	0.009	0.006	0.014	0.005	0.007	0.007	0.008
Burgan	0.004	0.009	0.013	0.009	0.009	0.011	0.012	0.005	0.007	0.008	0.006	0.008
Mashreq	0.021	0.023	0.021	0.016	0.017	0.015	0.013	0.008	0.006	0.019	0.036	0.018
CBD	0.023	0.026	0.018	0.016	0.014	0.016	0.016	0.012	0.013	0.016	0.021	0.017
Emerits	0.010	0.014	0.018	0.016	0.018	0.020	0.021	0.010	0.014	0.022	0.025	0.017
CBQ	0.014	0.017	0.012	0.004	0.004	0.012	0.014	0.008	0.014	0.017	0.018	0.012
QNB	0.022	0.022	0.021	0.017	0.016	0.016	0.015	0.012	0.012	0.012	0.013	0.016
ANB	0.018	0.017	0.017	0.017	0.018	0.019	0.016	0.011	0.011	0.014	0.018	0.016
BSF	0.014	0.019	0.022	0.017	0.018	0.017	0.017	0.008	0.016	0.015	0.017	0.016
Aljazeera	0.011	0.009	0.020	0.013	0.013	0.014	0.011	0.000	0.010	0.010	0.008	0.011
SABB	0.023	0.023	0.023	0.021	0.021	0.028	0.010	0.015	0.012	0.015	0.020	0.019
Mean for Years	0.015	0.017	0.017	0.014	0.014	0.016	0.014	0.009	0.011	0.014	0.017	-
Total Mean												0.014

Source: From the data of the sample banks for the years 2013 – 2023

Figure 4 shows variation in Return on Assets among banks, where banks such as Aljazeera and Burgan show significant fluctuations in Return on Assets, while the remaining banks show relatively minor fluctuations.

**Figure (4).** Return on Assets Curve

5. Econometric Analysis /



5.1. Stationarity Test (Unit Root Test): This methodology focuses on determining what is known as the unit root or stationarity. It is considered one of the most important econometric analysis methods for assessing the stability of research data before testing the econometric model. Data are considered stationary (i.e., they do not contain a unit root) when their levels change over time while their mean remains constant during the specified time period. Conversely, data are non-stationary if their mean changes over time, which may lead to spurious, inflated, and inaccurate estimates in impact tests, negatively affecting the results of statistical hypothesis tests. It is worth noting that data stationarity can be achieved at the Level, or in first or second Differences. Additionally, stationarity can be achieved with only an Intercept, or with a Trend & Intercept, or with None (no trend and no intercept). Moreover, knowing data stationarity helps correct short-term imbalances in the data, which aids in interpreting non-linear cointegration relationships that may not be obvious in traditional linear tests. This current research adopted the implementation of unit root tests in the E-views v.12 program by applying the Augmented Dickey-Fuller (ADF) criterion for the research variables, as follows:

- **Interest Rate Swaps Data Series for Banks:** It is concluded from the results of the unit root test for this series (interest rate swaps data series) in Table 3 that it showed stationarity at the Level with only an intercept included, meaning it is stationary and does not contain a unit root at integration order $I(0)$. Accordingly, there is no need to apply differencing to make the series stationary. This conclusion was based on the estimated value of the Augmented Dickey-Fuller (ADF) test statistic, which was (-3.779962), and its estimated value was greater than the critical values specified at significance levels of (1%), (5%), and (10%), which were (-3.480818), (-2.883579), and (-2.578601) respectively. Furthermore, the accompanying p-value for the test at this level was (0.0030), which is less than the assumed significance level of the research (0.05). In addition, the stationarity of the series can be inferred by comparing the estimated ADF statistic with the estimated critical values to facilitate the comparison and conclusion. As a result of these findings, it is confirmed that the interest rate swaps series is short-term stationary, as indicated by the absence of a unit root. Consequently, the null hypothesis (H_0) of the unit root test is rejected, and the alternative hypothesis (H_1) is accepted, indicating that the interest rate swaps data series is stationary at the Level with an intercept and is free from a unit root.

Table (3).Unit Root of Interest Rate Swaps using the Augmented Dickey-Fuller Method

Variable	Estimated t-value for ADF criterion	Critical t-values at the significance level			The series is stationary at	Prob. value
		%1	%5	%10		
Interest Rate Swaps Series	-3.871150	-3.480818	-2.883579	-2.578601	Level and constant	0.003

Source: From the E-Views V.12 program results.

- **Return on Assets Series:** It is concluded from the unit root test results for this series (Return on Assets data series) in Table 4 that it showed stationarity at the Level with only an intercept included, meaning it is stationary and does not contain a unit root at integration order $I(0)$. Accordingly, there is no need to apply differencing to make the series stationary. This conclusion was based on the estimated value of the Augmented Dickey-Fuller (ADF) test statistic, which was (-6.149710), and its estimated value was significantly greater than the critical values specified at significance levels of (1%), (5%), and (10%), which were (-3.480818), (-2.883579), and (-2.578601) respectively. Furthermore, the accompanying p-value for the test at this level was (0.0000), which is significantly less than the assumed significance level of the research (0.05). As a result of these findings, it is confirmed that the Return on Assets series is short-term stationary, as it lacks a unit root. Consequently, the null hypothesis (H_0) for the unit root test is rejected, and the alternative hypothesis (H_1) is accepted, indicating that the Return on Assets data series is stationary at the Level with an intercept and is free from a unit root.

Table (4). Unit Root of Return on Assets using the Augmented Dickey-Fuller Method

Dimensions	Estimated t-value for ADF criterion	Critical t-values at the significance level			The series is stationary at	Prob. value
		%1	%5	%10		
Return on Assets Series	-6.149710	-3.480818	-2.883579	-2.578601	Level and constant	0.0000

Source: From the E-Views V.12 program results

2.5. Normality Test: The normality test aims to determine the distribution shape of the research data, which is one of the essential conditions for regression analysis according to the econometric model, as the data must follow a normal distribution. Multiple tests used for this purpose include the Skewness test, the Kurtosis test, the Jarque-Bera test (which combines the previous two), and others. This test was applied to the research variables' data, and the results of the normality analysis for the time series of the independent and dependent variables are as follows:

- **Interest Rate Swaps Data Series:** It is evident from the results of the normal distribution parameters in Figure 5 and its accompanying table that the estimated significance level (Probability) for the Jarque-Bera test for this series' data reached 0.112456. By comparing it with the default significance level (0.05), we find that it is greater, indicating that the data for this series follow a normal distribution. To strengthen this conclusion, we can look at the estimated Jarque-Bera value, which was (3.370390), and it is less than the critical value of the Chi-squared distribution with one degree of freedom at a 95% confidence level, which is (3.841). To further

support these results, we note that the estimated value for the Skewness coefficient was (-0.331225), which is close to zero and falls within the generally accepted range for normal distribution (± 1). Similarly, the estimated value for the Kurtosis coefficient was (2.403530), which is less than the critical value (± 3). Therefore, the interest rate swap data series meets the conditions for normality.

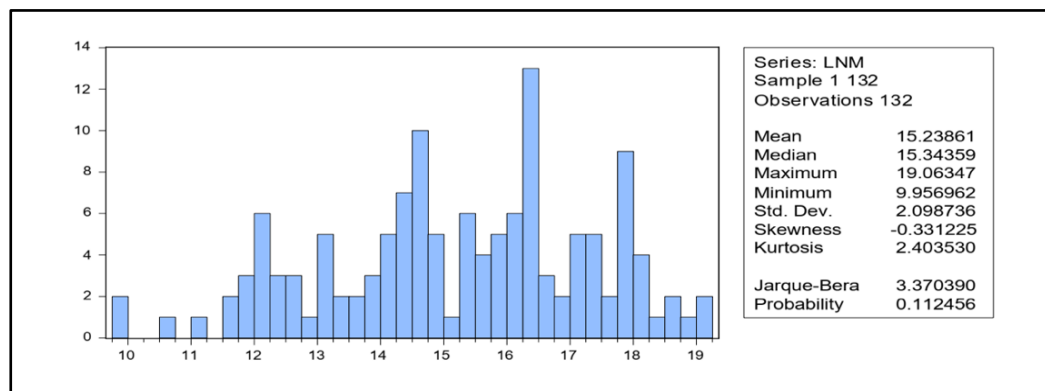


Figure (5). Normal Distribution of Interest Rate Swaps Data

- Return on Assets Data Series:** It is clear from the results of the normal distribution parameters in Figure 6 and its accompanying table that the estimated probability (P-value) for the Jarque-Bera test for this data series reached 0.327353. Compared with the default significance level (0.05), the p-value is greater, indicating that the data for this series follow a normal distribution. To reinforce this conclusion, we can examine the estimated Jarque-Bera statistic (2.233431), which is less than the critical value of the Chi-squared distribution with one degree of freedom at the 95% confidence level (3.841). To further support these results, we note that the estimated value for the Skewness coefficient was (0.306948), which is close to zero and falls within the generally accepted range for normal distribution (± 1). Similarly, the estimated value for the Kurtosis coefficient was (2.829089), which is less than the critical value (± 3). Therefore, the Return on Assets data series meets the conditions for normality.

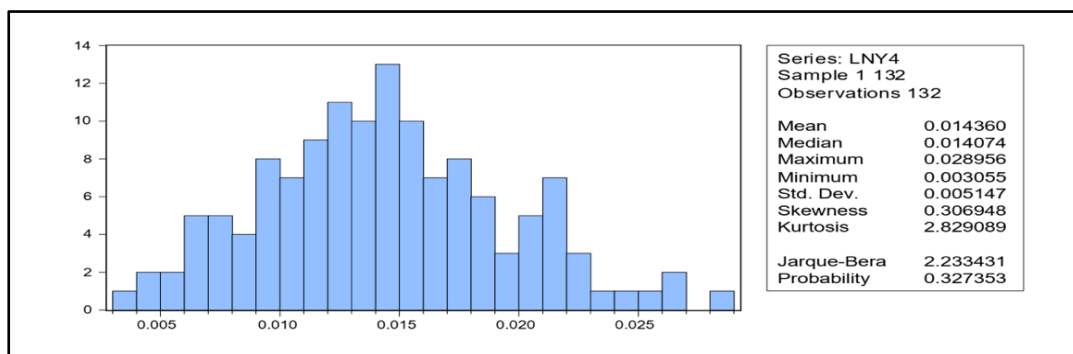


Figure (6). Normal Distribution of Return on Assets Data

6. Statistical Analysis

6.1. Correlation Analysis: The central correlation hypothesis states that there is a significant and statistically significant correlation between interest rate swaps and returns for the surveyed banks. Observing the correlation results between interest rate swaps and returns, as shown in Table 5, we find the following:

- **The Relationship between Interest Rate Swaps and Return on Assets:** The correlation results between the interest rate swaps variable and the return on assets variable indicated a significant and positive correlation between them, based on a correlation coefficient value of 0.800. This is statistically significant at the (1%) level, denoted by (**). Thus, we conclude that there is a strong, direct, and statistically significant association between the use of interest rate swaps and banks' return on assets. As banks' use of interest rate swaps increases, their return on assets tends to rise, and vice versa. Therefore, the correlation hypothesis, which posits a significant correlation between interest rate swaps and return on assets for the banks in the sample, is accepted.

Table (5): Correlation Results between Interest Rate Swaps and Dimensions of Earnings

Earnings	Return on Assets
Interest Rate Swaps	0.800 **
** Significant at (1%) level, * Significant at (5%) level	

Source: From SPSS V.27 program results.

6.2 Impact Analysis Direct Impact of Interest Rate Swaps on Banking Returns: The central impact hypothesis states that there is a direct, statistically significant impact of interest rate swaps on banking returns. The results in Table 6, which concern the direct impact of interest rate swaps on banking returns, indicate the following:

- **Impact on Return on Assets:** The estimated t-value, which was (6.966), indicates a direct statistically significant impact of interest rate swaps on Return on Assets, as this value was greater than its critical value of (1.657) with 130 degrees of freedom. The significance of the impact is confirmed by the P-value of (0.000), which is less than the default research level (0.05). Furthermore, the explanatory value of the coefficient of determination (R^2) of 0.640 indicates that the interest rate swaps variable explains 64.0% of the variation in Return on Assets. Based on these results, the impact hypothesis—that interest rate swaps have a significant impact on Return on Assets—is accepted.

Table (6): Direct Impact of Interest Rate Swaps on Dimensions of Returns

Model	Interest Rate Swaps (Independent)					
	B ₀	B ₁	R ²	Estimated t-value	Critical t-value	Estimated Significance (P)
Return on Assets	0.151	0.800	0.640	6.966	1.657	0.000
Critical T-value with 130 degrees of freedom			P ≤ 0.05		N = 132	

Source: From SPSS V.27 program results.

7. Conclusions and Recommendations

Conclusions

1. There are significant differences in the interest rate swap (IRS) values among various banks within the research sample. This indicates a divergence in their strategies for managing interest rate risk. Some banks extensively use these contracts (e.g., Emirates, QNB, and BSF), while others use them to a lesser extent (e.g., ABK, Burgan, Mashreq, CBD, CBQ, ANB, and Aljazeera).
2. The values of interest rate swaps fluctuated considerably over the years covered by the research (2013-2023), demonstrating their susceptibility to changes in global interest rates.
3. There is a disparity in Return on Assets (ROA) indicators across different banks, reflecting varying strategies in asset management and revenue generation. Some banks achieve good returns from their assets (e.g., Mashreq, CBD, Emirates, QNB, ANB, BSF, and SABB). In contrast, others face challenges generating returns from their assets and need to improve their asset utilization efficiency (e.g., NBK, ABK, Burgan, CBQ, and Aljazeera).
4. Certain banks (e.g., Aljazeera and Burgan) exhibit significant volatility in their Return on Assets, whereas other banks show relatively minor fluctuations.
5. The strong positive correlation and direct, significant impact of interest rate swaps on Return on Assets suggest that these instruments are not merely a means of hedging risks; they are also an effective factor directly contributing to improving banks' financial performance and increasing their ability to generate returns from their assets. Banks that efficiently use these swaps can enhance their profitability.
6. The noticeable variation in the levels of interest rate swap usage and returns among different banks reflects a disparity in the quality of financial management and risk management strategies. Banks that achieve higher returns on assets may have more sophisticated and effective strategies for integrating interest rate swaps into their portfolios.
7. The high percentage (64%) of change in Return on Assets explained by interest rate swaps indicates that these swaps are not just a secondary tool; they are a fundamental component that adds significant economic value to banks. Therefore,



they should be given high priority in financial planning and asset-liability management.

8. The fluctuation in interest rate swap values over the years suggests that a changing interest rate environment significantly affects the effectiveness of these instruments. This requires banks to possess high flexibility in adjusting their swap strategies to cope with market volatility and leverage it to maximize returns and minimize risks.

Recommendations

1. Banks that have not adequately utilized interest rate swaps should re-evaluate their current strategies. They should explore how to more effectively integrate these instruments within their asset-liability management framework to improve returns and mitigate interest rate risks.
2. It is recommended that regulatory bodies and supervisors review the regulatory frameworks related to interest rate swaps to ensure their flexibility and encourage banks to use them effectively, while emphasizing the application of best practices in managing associated risks.
3. Given the strong and direct relationship, banks should invest in training and developing specialized human capital in analyzing, evaluating, and trading interest rate swaps. This includes a deep understanding of their mechanisms, pricing models, associated risk management, and how to link them to return objectives.
4. Since the research showed a positive impact on returns, banks should not view interest rate swaps solely as a hedging tool, but rather as part of a comprehensive strategy to maximize returns. This involves capitalizing on opportunities presented by interest rate fluctuations within an acceptable risk tolerance.
5. It is suggested that banks with lower levels of Return on Assets or interest rate swap usage conduct benchmarking studies against banks that have performed better in this regard. The aim is to identify best practices and adopt suitable strategies.
6. Banks and researchers can utilize the strong explanatory relationship (64% of the change in Return on Assets) demonstrated by the research to build more accurate predictive models for bank returns. This will aid in strategic planning and investment decision-making.
7. Researchers propose conducting future studies that go beyond the direct relationship to explore mediating or moderating variables that might influence the relationship between interest rate swaps and returns. Examples include bank size, capital structure, credit risk level, or macroeconomic conditions, to provide a more comprehensive understanding of this relationship.

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Authors Biography

Mrs. Zubaida Shukri Hussein is an Assistant Lecturer in the Department of Business Administration at the Duhok Technical Institute and a PhD researcher in financial management at the University of Duhok. Her research interests focus on interest rate risk, financial resilience, banking asset management, earnings persistence, market value, and accounts receivable.

Dr. Shivan Ahmed Mohammad is an assistant professor at College of Administration and Economics - University of Duhok. He is the editor-in-chief of the Zanin journal for humanities studies. His research interests include corporate governance, ESG, Investment portfolio, earnings management, financial literacy and education, and

financial innovations. He published more than 25 articles with multiple publications in international journals. He also published his first book named (1001 Business Expressions, Idioms and Phrases) in 2024.