An-Najah National University

Faculty of Graduate Studies

DERIVATIVES USE AND BANK PERFORMANCE: EVIDENCE FROM SELECTED MENA COUNTRIES

By

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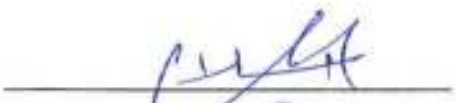
Dr. Islam Abdeljawad	
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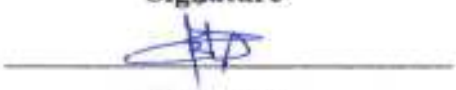
Dr. Diha Tanbour	
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Dedication

إلى النبع الأول للحب، وإلى الدعاء الذي لا يخيب...

إلى أمي التي كان قلبها موطني الأول، وإلى أبي الذي كان ظلي حين اشتدّ الطريق، ونوري حين أظلمت الدروب...

إليكما أهدي هذا الإنجاز، فأنتم الحكاية التي بدأت بها كل نجاحاتي، وأنتم السرّ الذي لا يُكتب في السطور بل يُحسّ في كل إنجاز.

إلى نصف الروح ورفيقة العمر... زوجتي العزيزة،

التي كانت السند حين مالت الأيام، والنور حين ضاقت المسافات،

وإلى أبنائي الغاليين، أنتم الحلم الذي أعيشه، والسبب الذي لأجله أواصل الطريق بثبات...

لكم أهدي هذا العمل، فأنتم أجمل ما أنعم الله به عليّ.

إلى إخوتي وأخواتي...

يا من كنتم لي القوة حين ضعفت، والفرح حين تعبت،

وجودكم في حياتي نعمة لا تُقدّر بثمن، وبه تكتمل معاني السند الحقيقي.

إلى أنسبائي الكرام...

الذين أحاطوني بالمودة الصادقة، وكانوا جزءاً من رحلتي،

لكم مني كل الامتنان والتقدير على دعمكم وطيب قلوبكم.

إلى من علّمني أن للعلم رسالة، وأن للنجاح أصولاً،

إلى أستاذي الفاضل ومشرفي الكريم

الدكتور إسلام عبد الجواد،

الذي كان نبراساً في التوجيه، وصوتاً للحكمة، وعوناً صادقاً في كل مراحل هذا العمل...

لكم مني خالص الشكر وعظيم الامتنان.

إلى كل من سكن القلب ولم تسعه الكلمات...

أهدي هذا الإنجاز، وأسأل الله أن يكون ثمرة خير وفخر لكم جميعاً.

Declaration

I, the undersigned, declare that I submitted the thesis entitled:

DERIVATIVES USE AND BANK PERFORMANCE: EVIDENCE FROM SELECTED MENA COUNTRIES

I declare that the work provided in this thesis, unless otherwise referenced, is the researcher's own work, and has not been submitted elsewhere for any other degree or qualification.

Student's Name: وليد عبد الجليل عياد

Signature: وليد عياد

Date: ٢٠٢٦/٣/٢٦

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Abstract

Financial derivatives constitute a fundamental component of contemporary banking risk management serving as instrument for hedging interest are and foreign exchange rate risks, Nonetheless, they also introduce additional risks when employed for speculative purposes or inadequately managed. Despite their significance, empirical evidence regarding the overall impact of derivatives on banking performance remains inconclusive. This study aims to address this critical gap by investigating the use of derivatives and their effects on banking performance within the Middle East and North Africa (MENA) region. Specifically, the research examines the influence of derivative usage on the net interest margin (NIM), which serves as a proxy for both profitability and the efficiency of financial intermediation, and compares these effects between Islamic and conventional banks operating in the region.

This study utilizes quantitative analysis through panel data modeling, employing on the frequency of banks' disclosure of derivatives as a proxy for of the use of derivatives. The primary findings reveal a negative and statistically significant correlation between the use of financial derivatives and the net interest margin (NIM). This relationship suggests enhanced financial system efficiency, as a lower NIM may serve as an indicator of improved efficiency, leading to greater stability in cash flows and a reduction in future risks for banks.

This result indicates that hedging contributes to maximizing stability and minimizing risk, although it does not translate into immediate profit (NIM). The components of derivative use elucidate the mechanisms through which the negative relationship is established. Specifically, derivatives employed to hedge interest rate risk and foreign exchange risk account responsible for this relationship whereas commodity risk derivatives are insignificant, as expected for banks.

The comparative analysis indicates that there is no significant difference between Islamic and conventional banks concerning the effect of derivative usage on net margin. This study offers empirical evidence specific to the MENA region, thereby equipping policymakers and legislators with essential information to formulate effective regulatory policies for the financial sector.

Keywords: Bank performance; Middle East region; North Africa region; Derivatives.

Chapter One

Introduction and Study Background

1.1 Preface

Banking services play a vital role in economic development, as the traditional function of banks in providing financing for significant investment projects constitutes a fundamental driver of economic growth. In recent years, however, there has been an increasing reliance on off-balance-sheet activities and non-interest income. The expanding use of financial derivatives has allowed banks to diversify their speculative and hedging operations. By employing a broad portfolio of derivatives, banks are able to mitigate various types of risk effectively.

Derivatives have adversely affected bank profitability. The relationship between the use of financial derivatives in the Turkish economy and the stability and profitability of banks in Turkey which experiences substantial foreign direct investment inflows globally is negative. However, derivatives contribute positively to the efficiency of banks in Turkey by reducing net interest margins. Despite the considerable expansion of derivatives trading within the Turkish banking sector, evidence indicate that banks are not effectively employing derivative instruments for risk management purposes. Moreover, the derivatives portfolio seems to exert a detrimental effect on bank profitability (Taşkın & Arıyer, 2020).

The utilization of financial derivatives has markedly increased, serving, not only as instruments for defensive protection against unfavorable fluctuations in financial variables but also as tools for the active protection of financial institutions' investment portfolios, thereby promising fostering stable and predictable cash flows. Beyond their primary role in risk management, financial derivatives can substantially enhance the performance of financial institutions by reducing earnings volatility improving the predictability of future financial returns, income through trading activities.

The inherent complexity and leverage of financial derivatives can significantly threaten pose severe threats to the profitability of financial institutions as overall financial stability if these instruments are mismanaged, particularly when institutions excessively employ them for non-hedging purposes (Li & Yu , 2010).

The discussions in the literature regarding the value of hedging are notably complex and have evolved considerably over time. The traditional theory proposed by (Modigliani & Miller, 1958) posits that in perfectly efficient capital markets characterized by the absence of transaction costs, information asymmetries, and taxes hedging by firms is irrelevant. Under these ideal conditions, individuals can replicate the same risk exposure independently, thereby, rendering corporate hedging unnecessary.

In the context of imperfect capital markets, various costs arise, including corporate taxes, agency costs stemming from conflict of interest between managers and investors, and indirect costs related to financial distress. Under such conditions, hedging emerges as a vital strategy to mitigate these expenses, thereby enhancing corporate value and operational efficiency (Leland, 1998). Empirical studies on the use of derivatives have produced mixed findings, which appear to depend significantly on the specific contextual factors.

Several studies provide conclusive evidence supporting n the positive role of derivative usage, emphasizing its ability to reduce earnings volatility, improve the predictability of earnings flows, and mitigate risks associated with financial distress and liquidity constraints (Carter et al., 2008), other research such as (Nguyen & Faff, 2010) that by Nguyen and Faff (2010), highlights the costs associated with derivative usage, particularly in speculative contexts, which often outweigh potential benefits and consequently lead to reduced bank profitability. Furthermore, the literature examining derivative uses in developing countries' emerging derivatives markets indicates a lack of definitive evidence supporting the benefits of derivatives, underscoring the influence of market sophistication in this regard (Aytürk et al., 2016).

Regardless of the extensive literature highlighting the dual role of derivatives as both effective risk management tools and significant amplifiers of financial risk, leading financial institutions predominantly employ utilization of derivatives primarily as hedging instruments. Historical evidence from the increasing period preceding the subprime mortgage crisis indicates that the adoption of speculative positions in the derivatives market reflects these institutions' growing appetite for elevated financial risk.

Existing evidence, primarily derived from leading financial institutions, supports the conclusion that the effective and, targeted use of derivatives for hedging purposes provides long-term benefits. These benefits include enhanced profitability and a positive impact on banking performance by promoting financial stability over time, while also contributing to economic stimulation (Ghosh, 2017).

Despite the increasing adoption of financial derivatives by banking institutions and their critical role in risk management, empirical evidence regarding the overall impact of financial derivatives on the financial performance of these institutions remain inconclusive. Although financial derivative contributes positively the management of financial flows and the enhancement of financial stability, their use is also associated with certain limitations, particularly in the context of speculative activities.

This area warrants critical examination, particularly within Middle Eastern countries. It poses a significant challenge to policymakers and financial managers in the MENA region, as the existing knowledge gap hinders the development of effective policies concerning an appropriate policy on strategies of risk management strategies and knowledge-intensive regulatory frameworks. Within this context, the present research project seeks to contribute by investigating the relationship between the usage and acceptance of financial derivatives of various and the performance of MENA countries, taking into account their diverse regulatory environments and economic conditions.

1.2 Problem Statement

The contemporary banking system is characterized by technological advancement, complex investor behavior, and economic instability. This environment presents a challenge in comprehensively understanding the impact of derivatives on the performance of the banking sector. Although these instruments play a significant role in banking operation, there remain ongoing debate regarding their effects on banks profitability. Consequently, various assessments may yield divergent results within the markets.

Theoretical framework and initial literature on the subject indicate a positive relationship between the use of derivatives and enhanced bank performance (Titova, 2020).However, given the increasing complexity of operation and the heightened demand for instruments that ensure profit stability and financial security, there, it is

necessary to further investigate this relationship. Notably, there exists a significant gap in the literature concerning comprehensive analyses that differentiate hedging and speculative derivative strategies. In particular, the differential effect of these strategies on key financial performance indicators such as ROE and ROA, and Net Interest Margin (NIM), (Titova, 2020). This gap particularly pronounced in the context of regions like the Middle East and North Africa (MENA) which present unique characteristics warranting focused study.

The issue concerning the role of derivatives in this context involves identifying critical knowledge gaps within the literature related to the use of derivatives, the importance of an optimal regulatory framework governing derivatives, and management strategies that could enhance the value of financial markets within banking institutions. The primary problem centers on the use of financial derivatives and their impact on bank performance, specifically regarding margin.

This research topic is essential for advancing knowledge in the field of literature, particularly in regions where financial innovation and regulatory frameworks are continuously evolving. Accordingly, this study will examine the utilization of financial derivatives and assess their impact on the performance of banks in Palestine, Jodan, and the Gulf countries.

1.3 Research Questions and Objective

1.3.1 Research Question

The accelerated pace of technological advancements and the increasing complexity of investment behaviors, which characterize the contemporary banking system, have engendered a "dilemma" regarding the precise understanding of the impact of financial derivatives on the profitability and efficiency of the banking sector. The dual nature of these instruments serving both as effective risk management tools and as significant sources of risk when mismanaged or employed excessively for non-precautionary purposes (Li & Yu , 2010), necessitates a thorough and for careful analysis.

Given the lack of sufficient reliable empirical evidence derived from a comprehensive analysis that distinguishes the effects of derivatives used for hedging from those used for speculative purposes on key performance indicators such as ROA, RO and NIM

within the unique regulatory and economic context of Middle East and North Africa (MENA) countries, this study aims to resolve this dilemma. It does so by addressing a series of critical questions that examine the direct relationship between derivatives usage and bank performance, while considering diversity the of banking models prevalent in the region. These questions are as follows:

1. How does the usage of financial derivatives affect the net interest margin (NIM) earned by commercial banks in the MENA region?
2. Does the relationship between financial derivative usage and net interest margin (NIM) differ significantly between Islamic and conventional banks operating in the MENA region?

1.3.2 Research Objective

Given, the conflicting empirical finding in the literature regarding the net impact of financial derivatives on banking performance, of this study is of central importance as it addresses a notable knowledge gap related to the unique business and regulatory environments of the Middle East and North Africa (MENA) region. While traditional theory posits that hedging is irrelevant in an ideal capital market (Modigliani & Miller, 1958), subsequent theoretical developments highlighted the crucial role of hedging in enhancing firm value and operational efficiency, particularly in the presence of agency costs and financial distress (Leland, 1998).

This research seeks to resolve prior inconclusive results by conducting a comprehensive analysis of derivatives usage, and its effect on the net interest margin (NIM) which serves as an indicator of banking profitability and efficiency. Consequently, the study delineates specific objectives aimed at translating the research problem into focused lines of inquiry, thereby offering valuable applied insights for policymakers and regulators within the region. The objectives of this research are the following:

1. Examine the effect of usage of financial derivatives on the Net Interest Margin (NIM) ratio, an important measure of profitability and efficiency, for banks operating within selected MENA nations.
2. To explore how financial derivatives usage differentially affects Net Interest Margin (NIM) within both Islamic banks and conventional banks operating within the MENA Region, offering insightful information on how each type of banking structure incorporates risk management approaches

1.4 Research Significance

This study holds significant theoretical and practical implications, particularly concerning the increasing use of financial derivatives by the banking sector in Palestine, Jordan, and the Gulf countries. While it is important to acknowledge the global

expansion in the application of derivatives for hedging purposes and other speculative activities especially within the unique and complex financial markets of Palestine, Jordan, and the Guld region.

By investigating the potential application of derivatives and their impact on key performance indicators (KPls) within these district regulatory and market environments, this research aims to address a critical gap in the existing literature. Furthermore, the study seeks to provide novel insights that contributes theoretically and offer practical relevance for policymakers and financial institutions. These insights are intended to guide the optimal use of derivatives through innovative strategies that balance profitability with market sustainability, ultimately fostering growth within the banking sector across the region.

1.5 Theoretical Frameworks

1.5.1 Irrelevance Theory

The fundamental philosophy of the Irrelevance Theory, also known as the Modigliani-Miller theorem, posits that in a perfect capital market, a firm's value is independent of its capital structure, that is, it is unaffected by the proportion of debt versus. equity financing. This theory requires a assumes the absence of taxes, transaction costs, and bankruptcy costs. Additionally, it presupposes that information is freely available and systematically distributed across all market participants. Under these stringent conditions, any degree of finance leverage can be managed at the investor level, rendering the capital structure irrelevant to the firm's overall value. Consequently, within this theoretical framework, the use of derivatives to manage corporate risk is unnecessary, as market participants can independently manage such risks in a frictionless environment devoid of transaction costs (Modigliani & Miller, 1958).

1.5.2 Trade-off Theory

Trade-off Theory is commonly employed to elucidate how corporations experience financial distress due to leverage, challenges in, financial management, and adverse economic conditions. This theory examines the impact of financial distress on firm value, decision-making processes and managerial strategies concerning capital structure and bankruptcy considerations. It explicates how firms balance the benefits derived from tax advantages against the costs associated with potential bankruptcy. Although

higher leverage may confer tax benefits, it can also increase agency costs arise from the pressures faced by organizations, which strain relationship between stakeholders and management.

Consequently, shareholders might engage in opportunistic behavior aimed at recouping losses, while creditors may impose stringent conditions on the firm. Tropically, firms prefer to raise capital internally through retained earnings; however, this preference may be altered when firms are compelled to resort to costly external financing during periods of financial distress. In this context, derivatives can provide protection to firms and banks by enabling investment in highly liquid assets, thereby assisting firms in managing challenges associated with bankruptcy (Walela et al., 2022).

1.5.3 Agency Theory

Agency Theory pertains to the examination of agency relationships between principals and their agents, who are authorized to act on the principals' behalf. This theory primarily addresses issues such as conflicts of interest, individual risk preferences, and the potential separation of ownership within organizations. The implications of our findings align with the framework of agency theory and related research comparing corporate governance mechanisms. Agency theory is particularly relevant in this context, as our results illustrate how agency conflicts may emerge due to the speculative use of derivatives by banks. Notably, derivatives serve a dual function: they can either mitigate risk or be employed for speculative purposes. The agency problem arises when principals make decisions driven by sell-interest, including engaging in speculative activities involving derivatives, which may ultimately result in poor bank performance, as evidenced by losses incurred (Buchanan et al., 2014).

1.5.4 The Hedging and External Cost Reduction Theory

This theory, initially developed by Smith, (1985) in the 1980s, represents a significant advancement in the understanding of the role of financial derivatives within corporations and financial institutions. It is recognized as one of the most influential contributions in the field, as evidenced by its prominence in major scientific databases. The central premise of the theory is that hedging serves not to maximize profit or earnings measured by indicators such as NM or ROA, but to optimize the stability of cash flows, thereby protecting the value of banks from sudden adverse fluctuation from

this perspective, derivatives are conceptualized not merely as financial instruments, but specifically as "insurance tools with interest rates, currencies, or commodities.

By implementing hedging strategies, banks can stabilize their cash flow, thereby decreasing the probability of insolvency or the need for costly reorganization. Empirical evidence indicates that the costs associated with financial distress are substantial. In the banking sector, such risk mitigation confers a district competitive advantage. Stakeholders, including bondholding and depositors, perceive bank that engage in effective risk management and hedging as less risky. As a result, these banks can secure external financing, such as debt, at a low-risk premium, commonly referred to as the cost of Debt. This reduction in the cost of external financing represents the primary benefit derived from the use of derivatives.

The observed negative correlation between derivatives usage and NIM is interpreted as an indicator of enhanced financial stability, which subsequently leads to reduction future financing costs. A marginal decline in NIM is considered the cost of hedging, analogous to an insurance premium paid to mitigate potential losses (Smith & Stulz, 1985).

1.5.5 Financial Intermediation Theory and Efficiency Cost

One prominent theory of financial intermediation, developed by scholars such as (Diamond, 1984), informed the institutional framework underpinning the role of banks in financial processes. The fundamental premise this theory is that a bank's primary function is to serve as an intermediary by illiquid assets (loans) into highly liquid liabilities (deposits), thereby managing the inherent mismatch between these instruments. Banks operate as information specialists or authorized controllers, thereby reducing transaction costs for depositors. when financial derivatives are integrated into this framework, they are not merely regarded as speculative instruments, but rather as sophisticated tools that enhances banks' efficiency in fulfilling their intermediation role. Specifically, derivatives facilitate risk segmentation, allowing banks to transfer undesirable risks such as interest rate or exchange rate risks to other parties willing to assume them.

The explanation for inverse relationship between derivatives and the NIM lies in the operational dynamics of derivative-based risk segmentation combined with enhanced

brokerage efficiency in banks. This process incurs substantially higher operating costs, which include commissions and bonuses associated with executing derivative transactions. Operational costs encompass expenditures related to sophisticated risk management systems and highly qualified personnel specializing in derivatives (Géczy et al., 1997).

The low Net Interest Margin (NIM) observed, is interpreted as the efficiency cost associated with conducting advanced brokerage activities.' By hedging derivatives, the bank achieves greater stability in its cash flows and mitigates the risk of maturity mismatches, thereby enhancing the efficiency of in its brokerage operations. However, this strategy slightly reduces profitability, as reflected in the NIM. From these observations, it can be inferred that effective derivatives management serves as a mechanism through which banks can pursue strategic objectives aimed at enhancing profitability.

1.6 Literature Review

The relationship between the use of financial derivatives and the performance of financial institutions, particularly banks, has garnered considerable scholarly attention yielding a diverse array of findings, some of which appear contradictory. This review systematically examines the existing literature by categorizing studies based on the evidence they provide regarding the association between derivatives usage and financial performance. A substantial body of research has demonstrated the positive effect of prudent financial derivatives utilization on the performance of banking institutions, primarily attributed to enhanced efficiency in risk management practices.

For instance, the study by (Lenee & Oki, 2017), conclusively found that employing forward contacts and well as other financial derivatives to manage interest rate risk exposure significantly contributes to near-optimal corporate performance, as measured by the return on assets ratio, across both financial and non-financial firms. Furthermore, this research highlighted the particularly beneficial role of interest rate swaps in mitigating interest rate risk, exhibiting greater efficiency relative to another derivative.

These findings are consistent with those of (Shen & Hartarska, 2013), who demonstrated that financial derivatives function as effective risk management instrument for agricultural banking firms by mitigating the adverse effects of credit and

interest rate risks.Their study further indicated that the positive impact of using financial derivatives on profitability was evident, as banking firms that did not employ financial derivatives in 2010 exhibited profitability approximately one-third lower that of firms that did.

The inherent characteristic of derivatives in enabling firms to maintain stable operating strategies despite encountering shocks was emphatically demonstrated by (Froot et al., 1993). Their study revealed that firms utilizing derivatives exhibit fewer adjustments in maturity mismatches within their balance sheet structures and tend to avoid reducing the volume of loans extended to clients during periods of monetary policy tightening implemented by the central bank.

This acts as evidence that the firms using derivatives make less frequent changes in the strategies related to loans, borrowings, as well as investing, as opposed to non-users, adding another piece of evidence in support of the positive role played by financial derivatives in enabling firms to make optimal investment strategies in the future. Contradicting the positive view, Adedamola & Shittu (2020) demonstrated that financial derivatives positively influence the profitability of deposit money banks in Nigeria, suggesting an increased need for loans as well as optimal use of financial derivative assets.

Despite the evidence, other research studies such as Modigliani & Miller highlight a more conservative approach, even opposite views, in relation to the role of derivatives in influencing the performance of banks. The theory of Irrelevance by (Modigliani & Miller, 1958), for example, argues that in ideal capital markets, hedging practices in organizations do not favor the efficiency of an organization since the owners/members can develop strategies like corporate hedging without incurring costs, as explored by (Aytürk et al., 2016). This method assumes that there is essentially no value addition with respect to the management of corporate risks and the deployment of derivatives.

On the other hand, the potential negative impacts of hedging engagements have similarly been discovered through empirical research. (Adam et al., 2017)opined that the negative effects of hedging on the performance of organizations could result if the costs incurred during the execution of the hedging strategies were higher than the benefits expected. The effects could accelerate if the engagement with derivatives

encompassed speculations and not hedging strategies; further, if the hedging decisions could emanate from individual benefits and not the maximization of shareholders' values.

The results of the study revealed that the negative relationship between the selective hedging engagements and the sizes of the organizations indicated the potential of speculation pervading the smaller institutions. Further, the selective hedging engagements were found to be significantly related to the financial distress of the organizations.

Furthermore, the positive relationship between the levels of the selective hedging engagements, the financial distress of the organizations, and the volatility of returns on stocks indicated that the engagements with the selective hedging strategies were underpinned by the wealth transfer theories and not the optimal strategies of risk management (Chu et al., 2025)indicated that if the organizations harnessed the potential of the commodity futures strategies, they may end up with diminished operating cash flows at increased capital expenditures that could potentially diminish their profitability.

Additionally, Ullah et al., (2023) identified the adverse aggregate impact on firms when hedge strategies were integrated with greater capital expenses, particularly in large firms involved in international trade. On the other hand, (Deng & Yang, 2023)showed that the aggregately well-respected firms might experience reduced performance because of over hedge strategies, specifically when engaging in interest-rate hedging, which they attributed to over in decision behavior.

To examined the complex relationship between the use of financial derivatives, bank risk, and profitability the study of (Ahmed, 2021)finding in general a negative relationship between the level of usage of financial derivatives by banks and the level of inherent risks, hinting that indeed, financial derivatives can be used as a risk management tool by the banking sector. Nonetheless, in the examination of the direct relationship between the variables, there were times when significant values were not attained.

The research also revealed that as the size of the bank escalated, there was also a simultaneous escalation in risk as well as profitability. Ahmed also explored the

relationship between the use of financial derivatives in bank management, suggesting that the adoption of financial derivatives, along with other variables, can influence the level of profitability. The variables identified include bank size, bank management, risk, capital adequacy, liquidity, return on assets, return on equity.

Financial derivatives, as a risk management tool, could potentially result in declining profit margins for banks because effective risk management could result in the bank taking a reduced profit margin, which has a natural influence on profitability. Exchanging financial derivatives for purposes of speculation could also negatively influence bank performance. However, the study of Nguyen (2010) provides a more refined view, pointing out that the use of derivatives and their impact on corporate performance tend to produce inconclusive results in most conditions (Nguyen & Faff, 2010) that there exists no statistically significant relationship between hedging activities and corporate performance in Australia.

Despite this, there are conditional performance benefits within developing economies that point to the conclusion that the ineffectiveness of derivatives has always existed under certain conditions and not in all circumstances. Alam & Gupta, (2018) concluded that firms operating within the Indian context that followed the hedging approach could ensure higher levels of financial performance stability during the financial turbulence period. Similarly, it was clarified by (Luo & Wang, 2018)that firms operating within the People's Republic of China that portrayed superior financial foundations through higher financial profitability and enhanced growth could realize superior benefits within the context of financial derivatives usage.

In the Colombian setting, Gómez-González et al., (2012) showed that banks that follow active risk management practices can achieve more favorable financial results. Thus, the empirical evidence remains quite diverse, highlighting the fact that the effectiveness of hedging depends on a set of key contextual factors. These include the state of development of financial markets, company-wide features, the quality of regulatory systems, and existing structures of corporate governance.

Using financial derivatives is one of the most significant modern trends in banking, with financial institutions aiming to improve their capacity to handle risks, increase their efficiency, and gain improved performance. Within this context, it is indicated in

scientific literature that there are intrinsic differences between banks operating with financial derivatives and those not utilizing financial derivatives, about financial behavior, level of exposure to risks, as well as capital allocation efficiency.

That there is a tendency for large banks to employ derivatives, unlike small banks. This is due to the presence of fixed costs in the initial learning process, which small banks may not bear in addition to the fact that small banks depend on revenue on loans and the main activities they provide, while large banks have enough customers to spread these fixed costs more widely (Brewer III et al., 2024).

It is also perceived in the literature that big banks have enough capacity to afford fixed costs entailed by derivative use, resulting in their feasibility, in addition to lowering overall derivative costs vis-à-vis small banks. The previous study proved that financial derivatives hedging interest rate risks in banks have played a crucial role in improving banks' capacity to manage such risks more effectively than banks that do not employ such derivatives. It was also identified from the data that banks which employ derivatives have a higher capacity to sustain stability in their operational policies, and such banks do not require major changes in their maturity composition in response to economic changes.

According to Purnanandam (2007), the use of derivatives enhances the stability of fund flows by mitigating the impact of external shocks on both operational and investment banking activities. This reflects efforts to validate hedging instruments that assist banks in maintaining optimal investment strategies over the long term. Consistent with theoretical perspectives, the application of derivative-based hedging tools supports banks in sustaining optimal strategies, thereby reducing their sensitivity to fluctuations in the money market. Such practices underscore the critical role of financial derivatives in enabling banks to manage risk effectively and uphold strategic stability in accordance with banking theory (Purnanandam, 2007).

The study Shaukat 2020 indicates the impact of financial derivatives on Islamic banks and traditional banks operating in Pakistan. The data were obtained from samples consisting of 12 conventional banks, as well as 5 Islamic banks, with derivatives of which four main types were considered, namely: futures (forward) agreements, options (options), swaps (swaps), forward agreements (futures). In addition, to assess the

performance of banks, sentence ratios were also used, which cover such bank indicators as managerial acumen, asset quality, capital, liquidity, as well as management's dedication to risk management.

Derivatives have been shown to have different effects on conventional banks and Islamic banks. In traditional banks, futures and swaps increase the stability of banks, while options and futures have negative effects on performance. On the other hand, for Islamic banks, swaps, options, futures and forward contracts have shown negative effects on the stability of banks. These results indicate that banking performance can be significantly improved by giving the utmost importance to the type of derivatives used, and these derivatives have different effects on different banking systems, such as Islamic banking or traditional banking (Shaukat et al., 2020).

Additionally, the study Purnanandam 2007 involves conducting an analysis of interest rate risk hedging in commercial banks, where one of the main elements that significantly affects the banking sector is interest rate risk, because it provides an ideal platform for testing hypotheses about risk management. Using a comprehensive hedging indicator, in which on-and off-balance hedging options for risk management are considered, it was noted that banks have adopted hedging in line with the theory formulated with the costs of financial distress, as well as high external financing costs.

On the one hand, there is evidence to suggest that one of the risks in using bank derivatives could be maintaining their operational policies in an unaffected manner in response to external shocks. Banks that use derivatives, being different from those that do not, make fewer, or most likely no adjustments, to the maturity gaps of the balance sheet, as well as not significantly reducing lending volumes as soon as the Fed reduces bank liquidity. Accordingly, banks that use derivatives adjust their lending, borrowing and investment policies to a much smaller volume compared to banks that do not use derivatives, providing an additional channel that contributes to greater stability in the bank's cash flow.

On the other hand, derivatives affect the facilitation of cash flow considering operational policies, as well as their function in banks during adverse economic conditions to provide bank liquidity. It is also noted from these results that there are many repercussions of the macroeconomic policy of risk management in the banking

sector, given its conclusion about the volumes of lending to banks with derivatives, which are not affected by any changes in the federal interest rate, which shows that derivatives have affected the sensitivity of macro-lending in the economy to changes in the federal interest rate (Purnanandam, 2007).

The analysis on which this research Abdeljawad, 2022 is based arises out of a review involving bank-specific factors within Palestinian banks, especially within the context posed by challenging governance structures and political stability. The results show that net interest rate margins are positively correlated with risk tolerance levels, operating costs, and the loan to deposit ratio and that they are negatively correlated with credit risk levels. Bank size is found to have a significant though not dramatic effect. The regulators must thus work towards limiting the net interest margin to a minimum to minimize brokerage fees and promote economic prosperity. However, management is willing to seek a reduced margin within a competitive framework.

On the other hand, a higher margin is supplemented with higher profits and is thus regarded as preferable owing to higher profits resulting from higher revenues. It is thus safe to conclude that banks must take into consideration several factors with respect to pricing loans and deposits and their correspondence with interest rates. These results imply that banks and decision-makers can take advantage of opportunities to increase efficiency by addressing these factors.

Operating costs play a significant role and can be minimized through improved banking operations and the application of management approaches that work to minimize personnel costs. Some ways to implement this would be to promote online banking services through fintech-based applications and increase online banking operations with the ability for customers to carry out banking services at the convenience of their homes, including transferring funds and availing current accounts and investment services as well as repaying loans (Abdeljawad & Bahlaq, 2022).

This research Titova, 2020 proposes an analysis on the relationships between those bank characteristics, in particular their share value, performance, return volatility, and dependence on derivative contracts, on one hand, and their risk levels, on the other. It was based on data from 109 banks from Europe, chosen from those banks included in the bank scope database according to their accounting statistics, with additional

information gathered manually from those notes accompanying their financial reports, for banks included in lists from 2005 to 2010.

It was concluded, after taking into consideration each bank's characteristics, each point in time, and each country's differences, that those banks with hedging derivatives do indeed have lower levels of risk, in addition to having higher valuations. But these correlations have become less, or in some instances, opposite to what they used to be, especially after the financial crisis, concerning derivative use in their trading, hedging, or any other purpose.

On the other hand, the findings showed that systemically significant banks, which heavily rely on derivatives, have high volatility levels in their stock returns, together with low valuations in the market. But interestingly, the researcher proposes that banks are less affected by derivatives in comparison to their sensitivity to risk, including their overall performance. These findings emphasize the need to distinguish between banks based on their use of derivatives for their respective purposes, which has not been clarified for investors since the financial crisis, thereby creating confusion about banks' real risks in these tools (Titova, 2020).

This study Obeid, 2024 examined the potential factors affecting the net interest rate margin of the group's banks in the context of the Arab region, where many banking variables and economic variables were examined at the level of operational efficiency of 18 banks in six countries in the Arabian Peninsula during 2015-2020. It was found to have significantly positive correlations of bank size with the cost / sales ratios of banks of higher volumes with lower operational efficiency with significantly higher net interest rate margins, while there are significant ethical correlations of negative trends of inflation rates, rates in relations to changes in monetary policy, coronavirus, with significant ethical correlations of negative trends of Corona impact on banks, in general with the absence of ethical correlations, while ethical correlations in banking judgments on ethical trends of no changes in GDP growth rate (Obeid, 2024).

The research of Mohammed, 2024 has asserted the effectiveness of financial derivatives in improving the capacity of companies, in addition to financial institutions, to provide sufficiency in growth-related liquidity, in their role in facilitating the process of finance raising in the form of share and security issuing. The relevance of derivative finance

instruments (DFIs) has become clear in modern finance, meeting financial needs, given their built-in market value, in contrast to their prices, based on commodities such as bonds, stocks, foreign currencies, gold, and other commodities.

The findings showed that credit risks, generated from these financial derivatives, are more common in unregulated markets, in comparison to markets with strict regulation, requiring their growth in importance, estimating their customers' credit status. On the other hand, performance measurement remains an inevitable need to guarantee alignment between actual performance, in respect to pre-established objectives, in their context, to meet preset criteria, exercising measurement in its process, in the context of financial profitability ratios, indicating its aptness in generating profits from sales, or from its available resources, in their capacity, having the opportunity to improve with derivative finance instruments. Accordingly, this research concluded that there is an impact, in its full significance, from credit risks, generated from derivative finance instruments, on banks' performance in being insufficient, in its full context, in Iraqi banks (Mohammed, 2024).

Findings from the research Nguyen, 2010 reveal that there is a significant effect on the value of companies based on the type of derivatives employed, whereby it was revealed that swap contract adoption (Swaps) significantly contributed to a reduction in market value for companies compared to other types of derivatives. Findings from the research also reveal that market value significantly decreased with increase in adoption levels for swap contracts, while no such effect was noticed with futures or futures contract adoption, although these derivatives produce similar outcomes about return on investments in companies.

Jointly, these findings provide support to conclusions on decreases in value based on derivative types, whereby swap contracts have more influence on market capitalization reductions, while no significant difference is noticed among other derivative types, whereby swap contracts occupy first place in most risk, due to lack of control mechanisms during market operation, like futures and options in normalized markets (Nguyen & Faff, 2010). It, therefore, follows from these findings supported by research assumptions, conclusions, and objectives, that market players perceive risks associated with swap contracts to be significantly higher, resulting in market capitalization decreases for companies undergoing hedging with such types of derivatives.

Li (2014) found that there is no increase in the market capitalization of companies in New Zealand that use financial derivatives. Various tests have also proven that there is no correlation between currency derivatives and value, both for companies that sell in foreign currencies and those that do not sell in foreign currencies, because it is not a statistical function. The exclusion of outliers of the Tobin Q value or its modified version did not affect any difference in the result at all. When testing multivariate regression, he once again confirmed that there is no causal or any relationship between currency derivatives and value, considering any factors affecting their value.

Other tests of durability, such as QL / QS, again produced the same result, with no evidence supporting the effect on value in any positive way. Accordingly, the results of this research support previous studies in the field of Finance, which determined that the economic benefits from currency derivatives are minimal or intangible, while hedging in FD is not an effective way to create value in financial markets, as is the case in New Zealand (Li et al., 2014).

1.7 Hypotheses

On arriving at the conclusions from other studies concerning the effect of financial derivative utilization on bank performance, about banks' Net Interest Margin, it was concluded to support the hypotheses developed in this research:

"A firm's most crucial goal in derivative transactions is not to profit from these transactions, either for hedging or for other investments, but to diminish its vulnerability to extreme market risks, especially to changes in exchange rates, with which all other risks, including those described in the preceding definition, are generally identified: 'The stability imparted to management's operational outlook by hedging means, in essence, that management, freed from concern about volatile short-term changes, such as those caused by hedging, in market prices, is able to plan for the distant future in its investment choices.'

If hedging transactions are viewed in this perspective, these transactions, in fact, represent an 'insurance premium' for its basic profit, which exerts a favorable effect on its efficient use in managing its assets, liabilities, and in optimizing its NIM Index value (Froot et al., 1993).

Many studies have proved the correctness of such a positive relationship. In one such pioneering work, (Géczy et al., 1997) it proved that companies employing derivatives try to diminish the volatility of their cash flows, thereby indirectly lessening their vulnerability to "costs of financial Distress" (Costs of Financial Distress). Such lessening in default risk, in turn, or rather, such enhanced resilience vis-à-vis default risk, due to its explanation, leads to such an overall lessening in banking costs, which improves its capacity to yield an increase in its "net interest margin" (NIM).

By presenting such evidence in support, yet another theory, (Shen & Hartarska, 2013), suggests that bank-based derivatives lead to such enhanced growth in their "commercial loaning," thereby pointing to such an improved capacity on its part to yield growth in its income-generating functions, while being impervious to risks, thereby being in support of such an increase in NIM for such banks.

Based on the above, the following hypothesis was formulated:

H1: The utilization of financial derivatives exerts a statistically significant negative impact on the Net Interest Margin (NIM) of commercial banks operating in Palestine, Jordan, and the GCC region.

The hypothesis was developed based on the hedging theory and the cost reduction theory, where the basic principle of this theory is that hedging helps to improve the stability of cash flow instead of profit and also acts as an insurance tool against price fluctuations in the market.

"The impact of derivative utilization on the Net Interest Margin (NIM) exhibits a profound divergence between Islamic and conventional banks within the MENA region, reflecting the distinct risk-sharing frameworks and contractual constraints inherent in Sharia-compliant financial intermediation".

A. Theoretical foundation: structural and Regulatory Constraint Hypothesis (structural and Regulatory Constraint Hypothesis) Justification for such a deep disparity lies in banking model differences in their operational frameworks and constraints on banking tools. Conventional banks' operational frameworks are based on fixed/variable rates for interests, whereas their major concern is with typical Interest Rate Risk, successfully counteracted through typical derivative tools like Interest Rate Swaps.

Conversely, Islamic banks operate on sharing profit/loss principles, are not allowed to practice RIBA, thereby facing "rate of Return Risk. Structural differences in types of risk to which banks face due to differences in banking operational frameworks lead to differences in suitability, efficiency, or compatibility levels in hedging tools, requiring Islamic banks to opt for "legitimately compatible tools," which could be less efficient or costlier.

B. Experimental attribution and documentation (Empirical Support) This theoretical gap is accentuated by experimental evidence pointing out that operational constraints in Islamic banks have influenced the derivative-NIM relationship:

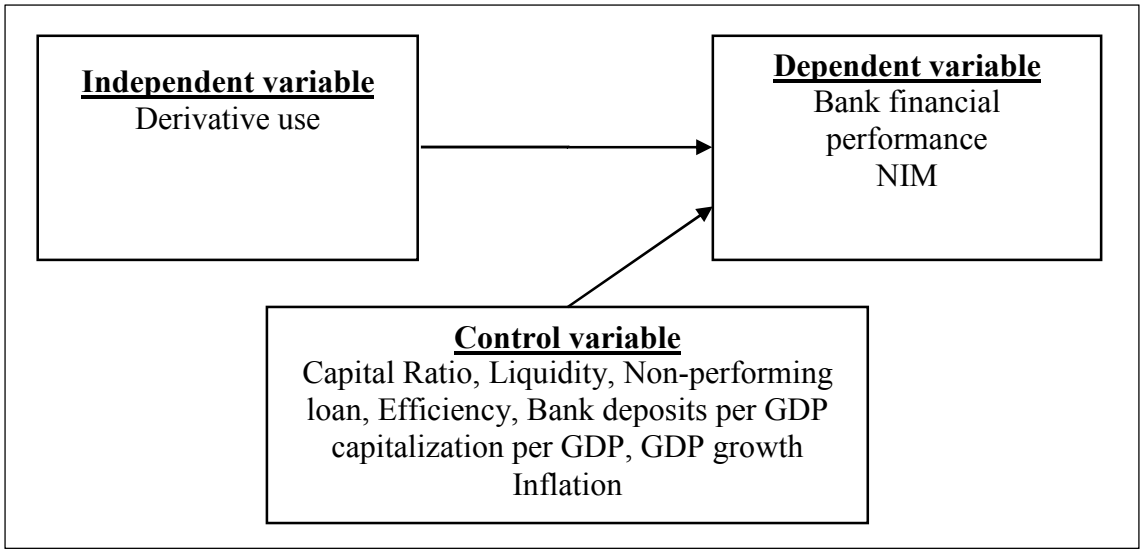
- It was confirmed in this study that sharia laws restrict Islamic banks from accessing conventional derivatives, such that these banks must rely on customized derivatives. These derivatives could have low marketability, associated with complicated frameworks, thereby increasing operational costs due to pressure on Net Interest Margin (NIM).
- The most significant empirical proof has been validated through the study (Shaukat,2020), which has asserted the presence of a differentiated and inverse relationship between the derivative use of some types, influencing Islamic banks relative to conventional ones. These outcomes have validated the idea that derivatives are not homogeneous regarding their effect on performance for Islamic banks and conventional banks in common markets like in the MENA region, thereby requiring hypothesis (H:2) to reveal the interaction relationship between derivatives, in addition to business models, to influence the NIM index. On grounds of some previous studies, the theory was defined below:

H2: The effect of usage of financial derivatives on Net Interest Margin (NIM) is significantly different between Islamic banks and Conventional banks operating within the MENA region

The following Figure shows the study variables in terms of the independent variable and how it affects the dependent variable in addition to the control variables, and it helps to understand how the variables affect each other.

Figure (1)

Conceptual model of study



Chapter Two

Research Methodology

2.1 Data

To achieve the research objectives of this study and to assess the impact of the study factors, a quantitative methodology based on a wide range of commercial banks operating in the MENA region was included in the data collection, with a special focus on Palestine, Jordan and the Gulf states. The time frame 2014-2021 of the analysis, which runs from 2014 to 2021, to capture the main economic cycles and regulatory shifts that have affected banking performance in the region. Such sources include data bulletins published by the central banks and Financial Supervisory Authorities of the target sample countries, as well as annual reports of the banks included in the study.

This comprehensive database is needed to improve the interpretative capacity of the regression model and provide insightful comparisons between countries with different banking systems The study is based on a sample of 147 banking institutions operating in eight financial markets in the Arab region. Banking institutions were selected by a comprehensive inventory method, in which institutions were identified based on their compliance with the standards of comprehensive financial disclosure. To ensure the accuracy and reliability (reliability and correctness) of the statistical output, the relevant financial and economic data were collected from reliable and superior secondary sources.

To eliminate possible biases arising from missing data and ensure statistical accuracy, banking institutions that do not have cumulative and continuous financial data throughout the data collection period were eliminated, thereby ensuring the accuracy of the results. The study is characterized by a balanced structure, in which 100 (68%) banking institutions were identified as commercial and 47 (32%) Islamic, which allows comparisons and regression analyzes to be carried out with a high level of efficiency. The study has a balanced regional distribution, with many banking institutions from Bahrain and the UAE (29 institutions from both countries), followed by Saudi Arabia, Jordan and Qatar, providing a representative regional focus and Palestine region. The table below shows the countries and the number of their commercial and Islamic banking institutions.

Table (1)

Composition and Geographical Distribution of the Sample Banks

State	Commercial banks	Islamic banks	Total
Bahrain	12	17	29
Jordan	14	3	17
Kuwait	6	5	11
Oman	15	1	16
Qatar	11	5	16
Saudi Arabia	15	5	20
United Arab Emirates	20	9	29
West Bank and Gaza	7	2	9
	100	47	147

2.2 Measurement of Veriabels

a. Dependent Variable: Net interest margins

Net Interest Margin (NIM) is one of the main financial measures used by banks in the measurement of the banks' profitability in their loan operations (Abdeljawad & Bahlaq, 2022). This ratio is calculated by subtracting the interest paid on the bank's loan proceeds along with other assets that earn interest income in the calculation from the interest paid to the bank's customers. Divide the answer by the earning assets (Abdeljawad & Bahlaq, 2022). When the rate at which the bank earns in its loan operations is higher compared to the industry rate, it indicates that the bank is more successful in its operations compared to other bank institutions (Desiderio et al., 2019).

As a performance metric, NIM effectively captures the sensitivity of a bank's financial condition to varying economic cycles, providing critical insights into future stability and interest-earning efficiency. That is, at the economic boom level, the loan requirement of the customers is expected to increase to the extent that the bank will increase the interest rates to charge on the increase in the customers' loan demands hence increasing the bank's net interest margins. However, during the recession periods, the customers' demand for credit reduction also reduces the bank's net interest margins because the

customers also require low interest rates for obtaining the needed credits because of the 'demand and supply' principle (Alzeghoul & Alsharari, 2024).

According to the research by (Alzeghoul & Alsharari, 2024), the bank's cost of funds measures the bank's obligation incurred by taking the clients' deposit together with the borrowed cash. By minimizing the cost of funds incurred by the bank, the bank contributes to the enhancement of the net interest margins because the bank's earnings from loan operations surpass the costs. Saksonova (2014) proposed that the bank's successful cost of funds mgmt. lies in the selection of the bank's loan sources to minimize the expenses of bank interest while also maintaining the bank's constant needed liquidity levels.

According to Gyau et al., (2024) banks require effective observation of the developments within the international interest rates to understand the impact of their profitability on the monetary policies of the government and adjust their interest rate policies accordingly. By understanding the impact of the monetary policy on their NIM, the bank must also be able to determine its financial direction. Later, the bank's profitability measured by the NIM is also used in the determination of the efficiency of the bank's operations because it captures the funding rate in the risk context (Abdeljawad & Bahlaq, 2022).

Net interest Margin - NIM is a pivotal measurement tool in the banking finance literature to assess the efficiency of financial intermediation. Unlike traditional profitability indicators (such as return on assets), NIM offers a deeper insight into the bank's cost structure and its competitiveness in pricing risks and funds. Based on the bank dealer model, NIM represents the swap rate charged by the bank for providing brokerage services, liquidity and interest rate risk tolerance.

In this context, an increase in NIM indicates an increase in the cost of financial Intermediation or a decrease in operational efficiency, because of either weak competition or high operating costs. That NIM effectively reflects the influence of regulatory and macro factors on the ability of banks to balance income and expenses. Therefore, NIM is an appropriate variable for studying the impact of risk management tools, such as financial derivatives, as it reveals the relationship between reducing risks and improving pricing efficiency.

b. Independent Variable: Derivatives Use

For ease of interpretation, the hedging variables, Commodity Price Risk (CPR), Foreign Currency Risk (FCR), and Interest Rate Risk (IRR), were scaled to the [0,1] interval using min–max normalization, defined as:

Hedge variable normalized = (Hedge var − min (Hedge var)) / (max (Hedge var) – min (Hedge var)).

To create a sound and objective composite measure of the overall hedging activity of the banks using the financial derivatives, the two-step statistical method is employed in this study, which involves calibrating the data first and assigning weights afterwards. Firstly, in order to reduce the effects of extreme observations for the bank-specific characteristics, the major accounting factors of the banks, which are the size of the bank, liquidity, capital ratio, asset quality, loan quality, the NPL ratio, net interest margin (NIM), and the loan/asset ratio, are minorized at the top and bottom tails of the distribution.

This enhances the reliability of the regression analysis. Then, the three hedging factors, which are the CPR (commodity price risk), the FCR (foreign currency risk), and the IRR (interest rate risk), are transformed into the range of [0, 1] using the Min-Max Scaling method, which standardizes the variables into a comparable scale and enables the elimination of the unit of measurement differences among the variables. Then, the PCA is conducted for standardized variables, which aims at achieving the goal of reducing the dimensionality and obtaining the objective weights based upon the natural variation of the data, rather than assigning weights equally.

The first principal component is retained as the 'Hedge Score,' which summarizes the overall hedging activity of the banks. According to the Centre (2008) study, the proposed method provides a precise measure of the overall hedging activity of the banks, which is the most crucial piece of information regarding the degree of the usage of the financial derivatives. Derivatives Using the frequency method which measures text features via the frequency of words related to derivative instruments as shown in the following table1:

Table (2)

Keyword that have been searched for in financial reports

Commodities (CM)	Foreign Exchange (FX)	Interest Rate (IR)
CMFU – Commodity Futures.	FXFU – FX Futures.	IRFU – Interest Rate Futures.
CMFO – Commodity Forwards.	FXFO – FX Forwards.	IRFO – Interest Rate Forwards.
CMSW – Commodity Swaps.	FXSW – FX Swaps.	IRSW – Interest Rate Swaps.
CMOP – Commodity Options.	FXOP – FX Options.	IROP – Interest Rate Options.

The previous table shows the keywords that were searched in the financial reports of banks in the target sample. By Using frequency method whereby text features are determined by frequency of words for derivative financial products for example derivatives, foreign exchange forward, forward contract, futures swap, commodity, options, among other derivative financial products. It is also observed from previous studies carried out on disclosure in derivative uses in banking institutions, it is apparent that various studies have employed various disclosure measurement techniques. The textual Content Analysis methodology, which is mainly based on word count(This scale was used based on previous studies, where there was a problem in financial reports not to disclose the use of financial derivatives at face value and the text analysis scale was relied on to measure financial derivatives), is one of the well-established and accepted methodological techniques in accounting finance studies, especially when studying variables that are difficult to quantify directly through traditional financial statements.

The importance of this methodology stems from its ability to transform unstructured qualitative data (e.g. texts, annual reports, disclosures) into structured quantitative data amenable to advanced statistical processing. In the context of financial derivatives, the nominal value of contracts, or the specific purpose of their use (hedging versus speculation), is often not available in detail in emerging markets such as the MENA region, which imposes a restriction on researchers. To bypass this limitation, text analysis offers an effective solution, since it assumes that the intensity of verbal

disclosure of a company or bank about a particular activity reflects the actual intensity of this activity.

This is done by creating an accurate Dictionary of key words and terms (Lexicon) and then calculating the frequency of appearance of these words in the annual disclosure texts. For example, hedging intentions (using words such as: Risk Mitigation, Hedging, Exposure Reduction) and speculative intention (using words such as: Trading Purposes, Fair Value through P&L) can be separated, resulting in separate and objective proxy variables.

These keywords can work as proxies to measure how much each bank uses derivative-based risk management (Lau, 2016). This variable is categorized into sub-dimensions based on the type of risk:

- foreign currency derivatives
- Interest rate derivatives
- Commodity derivatives
- other risks

c. Control Variables

Controlling variables plays a vital role in scientific studies. These variables are those that are identified and controlled during a scientific investigation. The main objective of controlling variables is to make sure that any effect that is noticed on the dependent variables is solely due to independent variables. This helps to increase the internal validity level of research results to isolate the impact of derivatives on NIM, this theoretical model uses several control variables generally associated with banks' performance:

1. Bank Size: Bank size, usually indicated by total assets or total deposits, is an important control variable because it could affect other aspects of bank performance and risk behavior. Larger banks tend to have more economies of scale, which helps banks to make more profits. They may also have more heterogeneous assets, which can diversify specific risks and make banks more stable. The complexity of banks can be introduced to uniqueness. Bank size can affect other variables' effects on independent variables because it could affect other aspects, which can result in unique effects on independent variables. Natural logarithm of total assets, which indicates scale effects (Abdeljawad et al., 2024).

2. Capital Ratio: The Capital Ratio, also known as Capital Adequacy Ratio (CAR), is one of the most critical variables expressing the capability to measure a bank's resilience vis-à-vis unexpected losses. This is one of the most crucial variables to keep track of while overseeing differences in banks' capabilities to withstand risks. The higher Capital Ratio is generally representative of better resilience and fewer probabilities of distress. Failure to supervise this variable might result in inaccurate estimates because differences may exist among banks with higher capital buffers vis-vis risk-seeking behavior, regardless of changes to values within independent variables. To make more accurate estimates about other variables' effects, controlling this ratio is vital. Equity to total assets, denoting Financial Strength (Abdeljawad et al., 2024)
3. Non-Performing Loans (NPL): The Non-Performing Loans (NPL) ratio is an important proxy that shows the quality and credit risk on the assets held by a bank. These loans segregate those accounts on which borrowers have defaulted on their repayment due to a particular time, signifying a possible loss to the bank. A higher ratio can impact profitability, liquidity, and sustainability within a bank because these accounts largely tend to increase loan loss provision expenses and reduce interest income. Further, it is important to manage NPL because these accounts can directly impact, mask, or enhance other variables showing efficiency within a bank. The NPL ratio is calculated on the ratio of Non-Performing Loans to Total Loans, which shows credit risk (Abdeljawad et al., 2024).
4. Efficiency: The calculation of efficiency is generally performed on operating expenses to total assets, according to Asmar (2018). The ratio is a very powerful tool to measure a bank's ability to control costs and optimize the utilization of assets to make profits. A bank is said to possess higher efficiency if it can optimize its output (profits) on reduced input costs successfully. A bank with low operating expenses to total assets ratio is said to have better operating efficiency because it indicates how successfully a bank is handling its costs to optimize its assets to achieve its financial objectives. Operating expenses to total assets, which show the ability of management to keep costs low (Asmar, 2018).
5. Bank Deposits per GDP: This is a proxy indicator which shows the strength and maturity level of banks, which can attract and make use of domestic savings. Therefore, when discussing risk management, a higher ratio indicates that funding

is more stable, and this makes banks less dependent on market funding, which is volatile (Hassan et al., 2025).

6. Capitalization per GDP helps measure the overall strength and development level of the economy's capital markets in relation to its GDP. This ratio affects the management of risk because it helps measure varied funding sources available to corporations and banks. A strong capitalization ratio can minimize overall risk to the economy because it helps to diversify risk into a wider market (Hassan et al., 2025).
7. GDP growth rate: The Gross Domestic Product (GDP) is generally viewed as the most important measure of a nation's total economic output, including the value of each type of product and service produced. GDP has been an important tool to measure economic activity and is typically viewed as an indicator to show how well an economy is doing. A growing GDP is termed to indicate increased economic activity and is generally linked to periods during which economic growth is taking place. Commercial banks are very important finance intermediaries that make this growth happen.

   They play a very crucial role by acting as mediators to transfer funds from a saver to a borrower, which is very vital to facilitate investments and consumption. This is generally very vital to aid and support economic activity and hence aid economic development. The role that a nation's economy performs, indicated by GDP growth rate, is very much dependent on how well its banking system is performing (Gautham & Gautam, 2021).
8. Inflation: An increase in the general level of prices on goods and services within an economy is called inflation. This ultimately results in a decrease in purchasing power. An inflation rate is a very important macroeconomic element, which is greatly associated with the profitability of commercial banks. This is because there is considerable emphasis on research work being done on this element. Usually, a high rate of inflation results in a higher interest rate being set by central banks to keep prices steady. This forces commercial banks to increase their loan interest rates accordingly. A rise this results in a rise in income for commercial banks, making them more profitable is a topic of considerable debate. (Gautham & Gautam, 2021)

9. Liquidity: Liquidity is one of the most crucial factors influencing the solvency and overall functioning of a commercial bank Effectively, liquidity is a measure reflecting how well a bank can finance its short-term financial obligations, such as those owed to its depositors, without necessarily resulting in considerable losses to the bank. An optimal liquidity level is required on the part of every bank to win the trust of depositors, as well as to enhance market stability.

This is more particularly true because liquidity is typically shown to work inversely to a bank's profitability, which results in higher returns on a bank's non-liquid assets such as loans, rather than on more liquid assets. A measure of liquidity risk in a bank uses crucial ratios simultaneously employed by analysts and regulators to assess funding uncertainty and assets & liability management. These ratios include customer deposits to total assets ratio, showing funding sustainability, and total loans to customer deposits ratio, which shows loan funding sustainability.

Yet owing to experience gathered after the global financial crisis, regulators have ensured more stringent prudential guidelines on liquidity management, including guidelines such as Basel III incorporating regulations on Liquidity Coverage Ratio (LCR) & Net Stable Funding Ratio (NSFR) into effect, which forces banks to make liquidity management strategic rather than tactical (Abdeljawad et al., 2025).

These variables provide a comprehensive picture of bank operations, allowing for a more accurate assessment of how derivative usage interacts with institutional characteristics.

Table (3)

Measurement of variable

Type of variable	Variables	Measurement
Dependent variable	Net Interest Margin (NIM)	(Interest income-interest expense)/total assets
Independent variable	Hedge score	Principal component of the three types of risks hedged by derivatives
	FCR	foreign currency derivatives are frequency of FXFU – FX Futures, FXFO – FX Forwards, FXSW – FX Swaps, FXOP – FX Options normalized using the min-max
	IRR	Interest rate derivatives are frequency of IRFU – Interest Rate Futures, IRFO – Interest Rate Forwards, IRSW – Interest Rate Swaps, IROP – Interest Rate Options normalized using the min-max
	CPR	Commodity derivatives are frequency of CMFU – Commodity Futures, CMFO – Commodity Forwards, CMSW – Commodity Swaps, CMOP – Commodity Options normalized using the min-max
Control variable	Bank Size	ln (Total bank assets)
	Capital Ratio	Equity/Total assets
	Liquidity	Deposits-to-total
	Non-performing loan	Non-performing loan/total loan
	Efficiency	other operating expense/total assets
	Bank deposits per GDP	Deposit in banks as a percentage of GDP
	capitalization per GDP	Total market capitalization as a percentage of GDP
	GDP growth	Real GDP growth rate
	Inflation	The annual inflation using GDP deflator

Models and estimation methods

The theoretical model argues that hedging has a two-fold effect on the profitability of a bank: a direct effect in the form of expenses linked to the utilization of derivatives, and an indirect effect in the form of the mitigation of risks resulting in stable cash flows. The model is thus presented in the following:

Y i, t =β0 + β1 Derivative Use i,t + β2 Bank Size i,t + β3 Capital Ratio i,t +β4 Liquidity i,t + β5 Nonperforming loan i, t + β6 Efficiency i,t + β7 Bank Deposit per GDP i,t + β8 Capitalization per GDP i,t + β9 GDP Growth I,t + β10 Inflation I,t +B11 Islamic + □i,t (1).

While Y I, t is Banke performance which measure by NIM. The second model investigated the interaction term between derivative use and Islamic banks to see if Islamic banks differ from conventional.

Y i, t =β0 + β1 Derivative Use i,t + β2 Bank Size i,t + β3 Capital Ratio i,t + β4 Liquidity i,t + β5 Nonperforming loan i, t + β6 Efficiency i,t + β7 Bank Deposit per GDP i,t + β8 Capitalization per GDP i,t + β9 GDP Growth I,t + β10 Inflation I,t + β11 Derivative Use i,t * islamic +□i,t (2).

The paper employs a panel data approach to investigate the performance of banks in the MENA region that utilize derivatives in the years 2015 through 2024. All models controlled for year variations by including a time dummy variable.

All continued variables were wisorized at the top and bottom 1 percent to reduce the effects of the possible presence of external observations as the context of financial statements subject to high anomalous values. By substituting the value of the nearest maximum for outliers at maximum percentages, this process effectively limits their overwhelming influence on averages and differences without jeopardizing the statistical integrity of the data. The goal is to increase the accuracy and effectiveness of hypothesis testing and obtain estimates with less biased regression coefficients (less biased estimates).

The current research employs panel data models to analyze the relationship between the employment of financial derivatives and the performance of banks in several selected MENA countries. The panel data method allows the researcher to control unobserved

heterogeneity over years through the inclusion of year fixed effects to remove the potential issue of unobserved variables that might influence the performance of the banks. Robust standard errors are also used to provide robust results in the presence of possible issues such as heteroskedasticity.

Chapter Three

Results and Discussion

3.1 Descriptive analysis

Descriptive statistical analysis assists in determining the nature of the data and the characteristics that the data may possess at the beginning of the analysis. the level of bank performance, asset quality, the size of banks, and the use of hedging tools.

Table (4)

Descriptive analysis

Variable	Obs	Mean	Std. Dev.	Min	Max
NIM	734	2.735	1.393	.129	8.438
Hedge score	760	0	1.241	-1.643	4.5
FCR	760	.186	.172	0	1
IRR	760	.108	.175	0	1
CPR	760	.269	.14	0	1
Bank size	760	20.949	3.287	13.126	25.618
Liquidity	741	.739	1.533	.088	11.297
Capital ratio	760	.18	.133	.062	.783
Loan to assets	760	.605	.179	.055	1.035
NPL	760	.061	.077	.001	.5
Islamic	760	.32	.467	0	1
GDP growth	760	.025	.025	-.113	.089
Inflation	760	.011	.101	-.26	.255
Regulatory quality	760	.412	.389	-.195	1.097

Dependent variable: Net Interest Margin (NIM) The average net interest margin of the sample is approximately 2.74%. This signifies that the banks possess the ability to give a positive net interest margin result, which serves as the most authentic metric of their

performance and profitability. However, the high dispersion indicated by a standard deviation of 1.393 that is almost half of the average value signifies that there is a clear gap that exists among banks.

Even though banks manage to register higher margins of up to 8.44%, others end up getting very low levels of just 0.13%. High dispersion indicates that there exist clear differences in the efficiency of banks' operations and may even point toward the need to address potential issues of outlier points of banks while developing models. The range 8.438 - 0.129 indicates an anomaly in maximum values, for which the results may not be correct without robust regression analysis or processing of outliers.

The average ratio of non-performing loans is 6.1%, a universally accepted level, but it signals the creation of appropriate provisions for the coverage of credit risks. The non-performing loan variant is more dispersed than the average, its coefficient of dispersion being over 126%, which indicates a right-skewed distribution. Most banks have low levels of non-performing loans, while some banks face great difficulties whereby the ratio reaches 50%. This dispersion shows that studying the impact of a variable on performance requires using appropriate transformations to meet the assumptions of normality underlying the regression models, such as logarithmic transformation.

The mean quality of the bank is 0.412, with negative values up to -0.195 and positive values up to 1.097. This indicates that the variable is likely a composite indicator, maybe through key component analysis or a modified Z-Score Scale and measures the operational and managerial efficiency of banks. The standard deviation of 0.389 shows a large deviation in efficiency between banks, making it a very important indicator while studying quality's impact on financial performances.

The average size of the bank in the sample is 16.29, with a standard deviation of 1.388, which indicates that the data are taken by the natural logarithm of total assets. This use of the logarithm reduces the problem of heteroscedasticity, and it allows one to analyze precisely the relationship of the size of the bank to its performance. The value range going from 13.91 to 18.15 indicates that a great variation in the size of banks characterizes this sample, which is particularly significant for studying the size-performance relationship and hedging capacity.

The average hedge in the sample is 0.402-that is, banks use hedging instruments at approximately 40% of their portfolio or financial activities. Maximum values can go up to 1, indicating that there are banks that make full use of hedging in some periods, which is important for studying the relationship between hedging, improving performance, and reducing risk.

The average CPR is 26.9%, with values falling within the range between 0% and 100%. If the variable stands for the capital adequacy ratio, then this level indicates that the banks of the sample are strongly capitalized, able to bear financial shocks and operational risks. By the end of the call, the data indicates that in performance, quality of loans, size of banks, and hedging, there exists a clear discrepancy among banks. This discrepancy presents a very good avenue to immensely study the influence of different variables on bank performance. The large deviation and outliers do require cautious handling in regression models for reliable results. Overall, the data are realistic and flexible regarding the representation of the banking sector, where the main differences are the level of efficiency and the ability to manage risks.

3.2 Correlations

The findings generated by the correlation coefficient provide an accurate picture of the variables and factors associated with the Net Interest Margin (NIM), as well as their linkage and interaction with financial, operation, and economic variables in the studied banks. The Net Interest Margin (NIM) is the key indicator used to calculate the bank's capability of generating profit from its core activities, hence any linkage, whether positive or negative, is reflective of an important element of the bank's financial activities and the type of risks it is handling.

Table (5)

Correlation Matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
(1) NIM	1.000												
(2) hedge score	-0.193*	1.000											
(3) FCR	-0.200*	0.874*	1.000										
(4) IRR	-0.135*	0.873*	0.536*	1.000									
(5) CPR	0.041	-0.118*	-0.041	-0.032	1.000								
(6) Bank size	-0.151*	0.037	0.018	0.037	-0.068	1.000							
(7) Liquidity	0.388*	-0.057	-0.041	-0.066	-0.054	-0.203*	1.000						
(8) capital ratio	0.221*	-0.032	0.047	-0.112*	-0.065	-0.154*	0.406*	1.000					
(9) loan to assets	0.435*	-0.052	-0.069	-0.016	0.051	-0.016	0.363*	-0.314*	1.000				
(10) NPL	0.020	-0.061	-0.013	-0.108*	-0.090*	-0.202*	0.051	0.451*	-0.470*	1.000			
(11) GDP growth	-0.011	-0.049	-0.043	-0.049	-0.045	0.196*	-0.090*	0.021	-0.091*	0.039	1.000		
(12) Inflation	-0.040	0.065	0.083*	0.040	0.064	-0.275*	-0.065	-0.070	-0.015	0.033	-0.238*	1.000	
(13) Regulatory quality	-0.125*	0.052	0.066	0.026	-0.001	0.016	-0.016	0.011	-0.017	0.195*	0.259*	-0.052	1.000

* $p<0.05$

The findings show positive correlations between some variables and NIM, namely loan-to-asset ratio (Loan to Assets), liquidity (Liquidity), and capital adequacy ratio (capital Ratio). The positive correlations imply that banks engaged in lending, with high liquidity, and those with high capital are often likely to be able to gain a high interest margin easily. This is because lending is known to be the most profitable business in any bank, and high liquidity provides the bank with substantial flexibility to price its assets and financial commitments without relying on costly sources of funding, and high capital indicates the bank's strength in facing risks and absorbing any potential loss.

Contrariwise, another variable set is negatively correlated with NIM, namely the level of hedge (Hedge Score), the level of currency risk exposure (FCR), the level of interest rate risk exposure (IRR), and the size of the Bank (Bank Size), the level of the quality of the regulatory framework (quality of regulation). What this implies is that those banks with higher financial risk exposure, those which hedge highly through derivatives, those operating under a strict level of the regulatory framework, or those banks which grow, will usually have low interest margins. This is reflective of reality.

Based on the theory of hedging and the theory of cost reduction, where the principle in this theory is that hedging helps to improve monetary stability instead of profit and acts as an insurance tool against price fluctuations in the market, the use of financial derivatives reduces transaction costs as the company becomes more able to access external markets at a lower cost and protect margins from price fluctuations, as large banks have to reduce margin to gain a larger market share (Smith, 1985).

As hedge activities, as important as they are in managing risk, carry certain costs, both direct and indirect, leading to diminished overall returns, exposure to currency and interest rate risks without proper management leading to diminished overall returns, and larger banks often being more subject to intense competition and thereby being compelled to shave their margins, and strict regulatory environments being very costly for banks to comply with, thereby leading to diminished profitability margins.

The Hedge Score is one of the most significant variables, which negatively correlates with NIM; those banks that actively employ hedge tools appear to be less likely to attain a high level of interest margin. The reason is, by functioning as instruments to secure against various risks, derivatives have certain expenses, commissions, and margins, as

well as potential forgone revenues, meaning that hedge tools can be very useful in managing volatility but inefficient in improving profitability.

The high correlation level between Hedge Score and both FCR and WIRR indicates that all three variables capture different sides of the same issue, which is financial risk exposure, and draw attention to the issue of potential multi-linearity if those variables are entered into the regression equation.

Regarding currency risk exposure (FCR), it is also negatively correlated with NIM. This implies that those banks which have high exposure to foreign currencies are more sensitive to exchange rates, and as such, they will either suffer losses or incur high costs because of exchange rate exposure, and this will influence the margin. The FCR is also correlated with the IRR variable, and this implies that banks which are sensitive to exchange rates are also sensitive to interest rates.

Interest rate risk (IRR) is negatively correlated with NIM, although less so than other variables. It indicates that if interest rates are volatile, then the margin may decline because of asset and liability term mismatch. At the same time, the high correlation between IRR and Hedge Score indicates that banks with high-interest rate risk are more likely than other banks to hedge this risk through derivatives.

On the other hand, commodity risk (CPR) does not appear to play an important role as the interest margin's determinant, as there is no significant correlation, as evidenced by the result, between commodity risk and NIM. The reason for this is probably because commodity business is less important to banks, or commodity-related risks did not have significant fluctuations within a certain period considered.

Bank Size: The size of the bank indicates an inverse correlation between NIM and bank size, as larger banks show lower NIM. This is probably because large banks face greater competition, or they may depend on other earning streams, which are less profitable, like their financing facilities and limited-yield investments in government securities.

The significance of Liquidity is clear in improving the interest margin, as it is positively correlated, meaning that the presence of liquidity ensures flexibility for the bank in handling funding and allocating it to more profitable sources. The outcome of the

correlation indicates that banks with high liquidity usually have high capital ratio, which signifies sound financial management.

Capital ratio is positively correlated with NIM, because it implies that banks with robust capital ratios are less vulnerable to disturbances and, therefore, have stability to improve the interest margin. In addition, capital ratio is correlated with non-performing loan levels, as it implies that some banks are trying to improve their capital to address credit risk.

Regarding the loan-to-assets ratio, it showed the strongest positive correlation with NIM, which is rational as banks' core business is lending, and this is their most profitable business as well. The negative correlation between Loan to Assets and NPL indicates banks with high loan activity are likely to be more experienced in handling the quality of their loan portfolios.

Moving on to non-performing loans (NPL), the correlation between NPL and NIM was shown to be both weak and non-moral, and this can imply either that the resultant effect of defaults is not reflected within the linear relationship, or that banks took regulatory and/or regulatory actions which lessened the resultant effect of such risks.

On the other hand, macroeconomic factors like GDP growth rates and inflation rates were not significant and did not show any correlation with NIM, possibly suggesting that the effect of overall macroeconomic factors is indirectly represented on the interest margin.

On the other hand, the quality of the regulatory framework (Regulatory Quality) is negatively correlated with NIM, as more stringent laws lead to increased operating expenses and Compliance, causing the margin to narrow. However, this legislation is possibly required to improve the overall banking sector, regardless of the adverse effect on current profitability.

3.3 Estimation Result for the direct relationship

The outcome is clear, and it shows that the Hedge Score, which is the measure of the bank’s engagement in the use of derivatives as hedge activities, is linked to the decline in the net interest margin. In simpler words, as the level of hedging increases, the value of the margin will decline. Here, this Pattern Makes Sense, since besides being useful in

the process of managing and lowering volatility, hedging is normally accompanied by certain costs, either directly or indirectly, which may affect the value of the outcome negatively. Additionally, volatility and low profitability within those banks may push them to engage in higher hedge activities, thereby making hedge activities an indicator of low margin along with other factors.

Table (6)

Determinant of NIM

VARIABLES	(1) NIM	(2) NIM	(3) NIM	(4) NIM
Hedge score	-0.0887***			
	(0.0318)			
FCR		-0.627**		
		(0.248)		
IRR			-0.396**	
			(0.195)	
CPR				0.450
				(0.359)
Bank size	-0.240***	-0.238***	-0.250***	-0.247***
	(0.0297)	(0.0308)	(0.0290)	(0.0292)
Liquidity	0.0799**	0.0800**	0.0804**	0.0867**
	(0.0405)	(0.0407)	(0.0406)	(0.0410)
Capital ratio	0.685	0.795	0.630	0.722
	(0.644)	(0.640)	(0.633)	(0.634)
Loan to assets	3.766***	3.771***	3.792***	3.800***
	(0.437)	(0.442)	(0.431)	(0.435)
NPL	0.288	0.356	0.286	0.561
	(0.928)	(0.926)	(0.928)	(0.942)
Islamic	-0.228**	-0.200**	-0.206**	-0.148*
	(0.0901)	(0.0887)	(0.0920)	(0.0888)
GDP growth	6.243***	6.264***	6.412***	6.776***
	(1.943)	(1.950)	(1.934)	(1.930)
Inflation	1.649**	1.673***	1.672***	1.729***
	(0.641)	(0.640)	(0.644)	(0.640)
Regulatory quality	-0.334***	-0.336***	-0.345***	-0.369***
	(0.110)	(0.111)	(0.110)	(0.111)
Constant	5.666***	5.689***	5.923***	5.659***
	(0.657)	(0.663)	(0.654)	(0.661)
Year dummy	Yes	Yes	Yes	Yes
Observations	724	724	724	724
R-squared	0.393	0.393	0.390	0.390

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

The previous table shows the results of a robust benchmarking analysis aimed at identifying net interest margin determinants (NIM) across four coherent plate regression models. The model shows a relatively high explanatory power, the value of the determination coefficient (R^2) in its best form was 0.393 and 0.390, which means that the listed explanatory variables, including financial derivatives, control and macroeconomic variables, manage to explain about 39% of the total variance in NIM.

The core result of the research revolves around the negative and statistically significant correlation between the use of financial derivatives by banks (represented by Hedge score and FCR) and the net interest margin, which is academically explained by the fact that hedging is a strategic cost of risk management at the expense of direct profit margin. Methodologically, the model is characterized by high robustness, since most control variables maintain their statistical significance and coefficient indication across all four parameters of the model.

For example, bank size (Bank size) and Regulatory quality (regulatory quality) show a negative, constant and highly significant effect across all models. In contrast, the Loan to Assets variable (loans to assets) as well as macroeconomic indicators such as GDP growth and Inflation regularly demonstrate a very strong positive impact on NIM. This consistency in the results, supported by the strong value of R^2 in the tablet data environment, gives the Model great confidence in drawing conclusions regarding the impact of derivatives on profitability. A detailed explanation of the results follows.

Hedge Score (degree of hedging): The hedge score variable was seen to have a negative regression coefficient of -0.0887, which was statistically significant at $p < 0.01$. This suggests that for every unit to increase the level of hedging employed by the bank, the net interest margin will decrease. This can be seen to partially refute the classic prescription that hedging always adds value but is consistent with the view that hedging must satisfy a cost/benefit trade-off. This argument suggests that the implementation of complex hedging, and perhaps the return of risk to mitigate cash flow variability, is factored into the reduced return, which puts pressure on the net interest margin.

This appears to counter the suggestion that the ultimate objective of hedging is the achievement of the highest possible profit margin. This is reinforced by (Adam, 2017), who found that when the hedging costs surpassed the expected benefits, or when

employments were speculative rather than hedging, negative results could emerge. This is consistent with findings that successful derivative hedging translates lower margins for banks (Ahmed, 2021).

FCR: Futures use variable (FCR) had a negative regression coefficient of -0.627, which was significant at $p < 0.05$. This indicated a strong inverse relationship between the use of futures contracts and profitability measured by the margin. This negative aspect can be attributed to the role of the futures markets, which provide a safeguard against losses, but also make it impossible for the bank to reap the benefits of super-profits, hence failing to increase the net interest margin. This is because the contracts result in higher funds costs. This is consistent, (Chu et al., 2025)who found that commodity futures strategies can reduce operating cash flows, hence lowering the Net Interest Margin.

IRR (Interest Rate Swaps, Swaps): The variable for interest rate swaps had a negative slope coefficient of -0.396, which was significant at $p <0.05$. Interest rate swaps are one of the more complex types of Over-the Counter (OTC) derivatives. It is important to note that the fact the relationship between the variables is negative suggests that the dangers of the instrument could potentially surpass the benefits. This is because of a lack of control. This is consistent with the findings of (Nguyen & Faff, 2010), where they determined that swaps were significantly responsible for the reduction of stock value compared to other derivative contracts because of the lax regulation of markets like futures and options.

CPR (options): positive but not statistically significant. While the sign of the coefficient is positive, the fact that it is not statistically significant suggests the absence of a reliable link between the existence of options and the level of NIM. This suggests that the use of options has not been reliable in maximizing the level of NIM. In literature, it is often proposed that non-significant results are influenced by factors, among them the immaturity of the derivatives market in the given economy, and the less-than-significant use of options for secondary risk management.

This fits the picture of the literature stating that the hedge effects are non-significant, with results published by (Nguyen & Faff, 2010)suggesting the absence of a statistically significant relationship between hedge activity and the level of institutional performance for the Australian market.

Loan to Assets (Loan-to-Asset Ratio: Positive and highly significant ($p < 0.01$). The regression coefficient for the variable was 3.766, which signifies the strongest contribution to the equation. The findings, thus, validate that the lending activity continues to be the major force underlying the profitability of banks and the Net Interest Margin within the conventional financial intermediation model. The higher the percentage of assets invested in loans (income-bearing assets) compared with the lower return assets, the greater the margin. This substantial coefficient also suggests that a marginal shift in the lending strategy impacts the Net Interest Margin well.

Liquidity: Positive and statistically significant ($p < 0.05$). The positive relationship suggests that higher liquidity ratios are associated with higher NIM. This is because higher liquidity helps mitigate the risk of funding and provides flexibility to take advantage of better opportunities for lending with higher yields. Having higher liquidity also decreases the chances of relying on money market borrowing sources to meet current demands, thus lowering the total fund costs and increasing the margin. This result is supplemented by the existence of opposing results; whereby other studies have found that excessive liquidity reduces margins.

Islamic (Islamic Bank): negative and statistically significant ($p < 0.05$). The negative sign of the coefficient reveals that the Islamic banks have lower NIM compared to the conventional banks. This difference can also be explained based on the operating philosophy of the Islamic banks, where the profit-and-loss sharing and assets-based approach of the former limits their income, which is interest-based. Some literature also reveals that the costs of the Islamic banks are higher, and their efficiency is lower. Many studies have verified this result.

GDP Growth (GDP growth): Positive and highly significant ($p < 0.01$). A strong positive relationship reveals that the presence of a favorable macro-economic condition positively impacts the profitability of banks. The growth of the GDP, showing the expansion of the economy, improves the quality of borrowers, reduces the incidence of default (NPL), and boosts the demand for credit. This is consistent with the literature on banking.

Inflation: Positive and statistically significant ($p < 0.05$). The positive sign of the relationship suggests that inflation stimulates the growth of NIMs, wherein banks can

increase the rates of their assets (loans) faster than the rates of their deposits, hence increasing their net interest income, otherwise called the “deposit stickiness effect.” They suggest that inflation is generally supportive of higher margins for banks.

Regulatory Quality (quality of organization): negative and highly significant ($p < 0.01$). The negative correlation means that enhancements in the regulatory environment, indicating better regulation and transparency, result in reductions in the NIM. This is because tighter regulation deters fee-based and margin-improving mechanisms, entails compliance costs, and promotes competitiveness, apart from suppressing excessive risk-taking. Literature verifies the indispensable role of the regulatory environment regarding hedge strategy formulation and achievement. For instance, (Mefteh-Wali & Hussain, 2024)observes that corporate governance policies could limit the capture of value, hence affecting the bottom line.

Capital Ratio and NPL (non-performing loans): The Statistical/Theoretical Note: Both variables have non-statistically significant correlations with NIM. This is an indication that, for these variables, within the range, banks are effectively managing them. While theory generally predicts a negative correlation between NPL and profitability, the fact that it is not significant suggests that the impairment and treatment of problematic loans do not affect the NIM.

Capital adequacy ratios also seem to be properly managed, within the regulatory requirements, since it does not affect the margins. It is recognized that the relationship between NPLs and profitability is not always negative or significant. with negative, non-significant impacts for below a certain level (roughly around 4.42%), consistent with the findings regarding the non-significance for lower levels of NPLs.

In summary, the major empirical result of this study, the negative and significant relationship between the use of financial derivatives by banks and the NIM, appears as a recurring theme throughout the literature on banking. This relationship, interpreted through the prism of financial intermediation theory, signifies that the bank, acting not only as a normal profit-maximizer, also serves the role of a risk-management institution that oversees the potentially volatile transfers of maturities and volumes between the depositors and the borrowers.

For this reason, the recorded reduction of the NIM must accordingly be seen not only as a strategy for guaranteeing a stable flow of returns, but also for confronting the capital base against market-related shocks, following the logic of risk-return duality. This fact is also validated by the existing literature, suggesting that the negative consequences of hedging, when the expenses surpass the advantages, must not be underestimated (Adam et al., 2017).

On the other hand, the neutralization of margins through efficient hedging practices, using financial derivatives, is validated by the findings pointing out that the margins are decreased through the successful use of the said instruments (Adam et al., 2017). Lastly, the specific negative effects of instruments like FCR validate that the use of future instruments can reduce operating cash flows.

3.4 Estimation results for the Moderation effect of Islamic Banks

The table below shows the results of estimating multiple linear regression models for Panel Data, which aims to examine the impact of financial hedging indicators on the net profit margin (NIM) for a sample of 147 banks. These four models are distributed to systematically test the impact of the general hedging Index (Hedge Score) and its qualitative components represented by currency risk, interest rates, and commodities, with the inclusion of interactive variables (Interaction Terms) to measure the behavioral variance between Islamic and commercial banks.

The combined results across 724 observations show a remarkable stability in the explanatory power of the models, providing a solid basis for statistical comparison and determining the significance of the differences between the two sectors. This general description of the table reflects the comprehensiveness of the accounting and macroeconomic variables used as control variables to ensure the accuracy of scientific inference about the efficiency of hedging in the Arab Banking System.

Table (7)

Determinant result the effect of Islamic bank

VARIABLES	(1) NIM	(2) NIM	(3) NIM	(4) NIM
Hedge score	-0.0792**			
	(0.0319)			
Islamic*hedge score	-0.147			
	(0.159)			
FCR		-0.601**		
		(0.251)		
Islamic*FCR		-0.216		
		(0.843)		
IRR			-0.359*	
			(0.201)	
Islamic*IRR			-1.101	
			(0.892)	
CPR				0.240
				(0.327)
Islamic*CPR				0.563
				(0.814)
Islamic	-0.304***	-0.169	-0.178*	-0.300
	(0.114)	(0.148)	(0.102)	(0.220)
Bank size	-0.235***	-0.236***	-0.248***	-0.246***
	(0.0304)	(0.0317)	(0.0289)	(0.0293)
Liquidity	0.0822**	0.0806**	0.0808**	0.0863**
	(0.0408)	(0.0408)	(0.0407)	(0.0412)
Capital ratio	0.709	0.800	0.633	0.727
	(0.646)	(0.641)	(0.633)	(0.637)
Loan to assets	3.763***	3.770***	3.801***	3.789***
	(0.439)	(0.443)	(0.433)	(0.435)
NPL	0.383	0.378	0.328	0.540
	(0.937)	(0.934)	(0.929)	(0.937)
GDP growth	6.203***	6.265***	6.332***	6.786***
	(1.940)	(1.950)	(1.938)	(1.925)
Inflation	1.686***	1.685***	1.682***	1.713***
	(0.640)	(0.644)	(0.643)	(0.639)
Regulatory quality	-0.339***	-0.337***	-0.350***	-0.371***
	(0.112)	(0.111)	(0.111)	(0.112)
Constant	5.539***	5.654***	5.885***	5.718***
	(0.671)	(0.687)	(0.650)	(0.658)
Year dummy	Yes	Yes	Yes	Yes
Observations	724	724	724	724
R-squared	0.394	0.393	0.391	0.391

The statistical results obtained from the analysis of 724 observations covering 147 banks in eight Arab countries show that there is a fundamental and interesting convergence in the financial behavior of both Islamic and commercial banks regarding the impact of hedging derivatives on the net profit margin (NIM). When examining the first model that tests the impact of the gross hedge Score indicator, we note that the coefficient of this variable came out negative and significantly at the level of 5%, which indicates that the use of derivatives in general is associated with a cost that leads to a reduction in the net profit margin, but the most important result in this context is shown by the interaction variable (Islamic hedge score), which recorded no significant statistical significance, as its value was (-0.147) with a standard error of (0.159).

The absence of statistical significance of this interactive variable is a conclusive proof that there is no fundamental difference between Islamic and commercial banks in how their profitability is affected by gross hedging operations, which means that the nature of the bank, whether it is sharia-compliant or traditional, does not constitute a variable difference in this statistical financial impact.

This behavioral similarity extends to specific types of risks, as detailed models have shown that hedging of foreign currency risk (FCR) and interest rate risk (IRR) negatively affects financial performance in general, however, the interaction variables of these risks with the nature of the Islamic Bank did not achieve any significant statistical levels. In the case of currency risks, the reaction value was (-0.216), which is completely insignificant, as in the case of interest rate risks, where the reaction value was (-1.101), which also lacks any statistical significance.

These results clearly confirm that Islamic banks, despite the different names of their financing contracts, in essence follow risk management mechanisms and market responses exactly the same as commercial banks, which makes their impact on the profit margin identical from a purely statistical point of view, and this supports the hypothesis of "functional convergence" imposed by the competition environment and the unified regulatory requirements in the Arab markets under study.

Moving on to the commodity price risk analysis (CPR), we find that the results continued to strengthen this trend, as the underlying or interactive transactions did not show any statistically significant effect, which indicates that the net profit margins were

not affected by this type of hedging for both sectors. In parallel, the Islamic Bank variable as an independent (Islamic) variant did not show any fundamental differences in most models when combined with interaction variables, which reinforces the conclusion that the difference in the "corporate identity" of the bank does not translate into a difference in the "financial performance" associated with hedging.

This convergence proves that the determinants of profitability are purely technical and structural factors that go beyond operational models, as the data indicate that all banks, regardless of their type, are subject to the same financial pressures that make the use of hedging tools a factor with a similar impact on the results of business.

The credibility of these results is enhanced when looking at the statistical adjustment variables that showed great consistency across all four models, where the bank size variable recorded a negative and highly significant impact at the level of 1% in all cases, indicating that the pressures resulting from the size affect the efficiency of the profit margin of both Islamic and commercial banks at the same pace. The liquidity variables and the loan-to-assets ratio also showed very strong positive and moral effects, which confirms that the main drivers of profitability in these markets are traditional banking engines that apply to all institutions without discrimination.

Since the determination coefficient (R-squared) has stabilized at levels of approximately 39.4%, the model has a high explanatory power that supports the researcher's confidence that the absence of differences between Islamic and commercial banks is a well-established statistical fact resulting from actual data and not just an accidental conclusion.

In conclusion, this microscopic analysis of the results table confirms beyond any doubt that the study hypothesis about the similarity of performance and hedging between the two sectors has been fully statistically realized. The high probabilistic value (high p-values) of all interaction variables across all standard models is the strongest scientific evidence that the field differences between Islamic and commercial banks in the study area are only formal differences, while in the statistical and financial essence, the two types act as one homogeneous block towards hedging risk management and its impact on net profit margins. Based on this, it can be said that the financial and prudential policies pursued in these countries have led to a state of institutional maturity in which traditional disparities have disappeared.

Chapter Four

Conclusion

4.1 summary of the main results

Financial derivatives play an integral role among modern risk management practices within the banking sector and act as tools against interest rate and foreign exchange risk. However, there have been mixed views on the overall impact of financial derivatives on banking performance within the empirical literature, taking into consideration the specific regulatory and economic conditions common within the MENA region. This research aims at contributing to current knowledge gaps and focuses on examining the impact of financial derivatives on the NIM, which represents a main profitability and efficiency measure within the banking sector, and compared it among conventional and Islamic banks within the region. The study employs quantitative panel data modeling technique.

The sample includes a set of chosen commercial banks operating in Palestine, Jordan, and Gulf nations from 2014 to 2021. The frequency at which banks disclose information about the use of derivatives constitutes a measure for the extent of usage. The base model includes a set of control variables at a bank level, such as size and capital adequacy ratios, and variables at an overall level, including GDP growth rate and inflation rate.

Findings from the empirical analysis show that there is a negative and statistically significant relationship between overall derivatives usage and NIMs among banks within the MENA region. The negative relationship can be seen not only as indicating a performance/profitability gap but more specifically as a signal regarding financial system efficiency and stability. Specifically, it aligns with financial theories, and more notably with Hedging and External Cost Reduction Theory. Hedging activities, under this theoretical understanding, are seen as efforts primarily targeted at securing cash flow stability and indemnity against the dangers of being exposed to expensive financial-distressed conditions and not as activities solely focusing on maximizing NIMs.

That is, as an efficiency cost, a nominal de- NIM might be seen as an ‘insurance premium’, because it would allow, for instance, more cost-effective access to external funds/credit as Cost of Debt. Derivatives help reduce risk and improve stability without these changes being eventually reflected within NIMS. As for the components of derivatives, it appears that two types, which safeguard against risk associated with interest rates and foreign currency, result in a negative relationship due to the categories related to commodity risk being insignificant as expected.

From a structural perspective, there are no significant differences between conventional and Islamic banks with regards to the effect of usage on NIM. The relevance and applicability of this research are reinforced with region-specific empirical evidence offered within the MENA region and imply implications for policymakers on developing appropriate regulatory policies.

4.2 Recommendation

This research is part of efforts to understand the complex link between financial derivatives and bank performances within emerging markets such as the Middle East and North Africa region. It was clarified that making derivatives for purposes of hedging linkages is to make cash flow stable and its performances, but to achieve higher increases in the net interest margin, and on seeing that slightly on the negative side on the margin cost means financial intermediation is observed since it acts as a means between individuals and individuals, whether they are human or juridical persons or companies.

The bank, therefore, act as intermediaries between individuals and individuals, regardless of whether they are juridical or human, for compensation or for its function as intermediary between individuals, therefore they act to gain reduction on borrows as well as gain more on modifiers or gain paid compensation for protection against risks on markets. Moreover, it's deeply stressed that factors on gross domestic products have stronger and more significant impact on profit than making or decisions on making derivatives on banks. It therefore encompasses methodological guidelines to pave roadmap on recommendations for improvement on financial management to act as efficient means for research on this very important field.

First: recommendations for decision makers and regulators

1. Improving macroeconomic stability: It is important for both governments and central banks to give emphasis to policies relating to economic and financial stability and control of inflation, in view of the very strong and direct positive impact created by macro variables including growth in GDP on NIM and efficiency in the banking industry.
2. Review of regulatory framework for derivatives: It is important that regulatory authorities evaluate and harmonize guidance on derivative usage disclosure to avoid making it too onerous on banks, which can discourage them from using derivatives, primarily for risk reduction. This is mainly because derivative usage is considered part of "efficiency costs" that are incurred to secure cash flow stability.

Second: recommendations for banks and financial management

1. Integration of Hedging as a Stabilization Strategy: The senior management in banks ought to incorporate financial derivatives as their principal approach to ensure long-run stability in their performance as well as mitigate risks that relate to interest and exchange rates, albeit with a minor adverse effect on NIM in the short term, which can be viewed as an "insurance premium" for ensuring cash flow continuance.
2. Enhancing efficiency in smaller banks' operations: It is recommended that smaller banks focus on making themselves more operationally efficient and improving their assets and liability management, rather than relying on improving their pricing margins to overcome risks.
3. Focus on efficiency regardless of type It is expected that banks, whether conventional or Islamic, can focus on the efficiency of using risk management tools (conventional derivatives or other Sharia-compliant products), since the result indicates that market risk hedging affects equally how both types operate in terms of interest margin.
4. Financial derivatives must be referred to in financial statements within a separate form or separate part so that future research can refer to the outcomes or uses within studies for the aim of improving the banking environment and guide it to perform correctly to enhance bank functions in the future

Third: recommendations for future researchers

1. The emergence of stability assessment: It is hoped that in future research, attention can also focus on exploring how derivatives usage affects NIM Stability or on examining how derivatives usage and NIM Stability are related to each other. This, rather than examining how derivatives affect NIM only, would give a clearer picture.
2. Analysis of Disclosures in Detail: It is suggested that future studies focus on using more precise quantification of derivatives with respect to either their fair or nominal value, if possible, instead of analyzing only the content disclosed verbally, to gain more concrete evidence about actual usage and its link to performance.

4.3 Limitation

Despite such methodological depth contained in results provided, scientific honesty should call attention to factors that influenced the implementation of this research, which may serve as points of departure for future sober studies on this issue:

1. The issue of reverse causality/internal homogeneity: the issue arises because it was found that those banks with low national execution can have higher hedging activities. The question of reverse causality arises because hedging can be a consequence and not a consequence of a decrease in the national interest rate. While some problems associated with unobservable variables can be addressed using panel regression, this problem still requires more complex approaches such as the use of automatic variables.
2. Determinants related to the measurement methodology (measurement and methodological limitations) measuring the use of derivatives (disclosure-based proxy): the study was based on measuring the amount of verbal disclosure (word count analysis) about the use of derivatives in financial reporting to represent the independent variable. This measure reflects only the intensity of disclosure of activity and not the actual financial value or the volume of contracts used (nominal value). Thus, there may be a difference between the level of disclosure and the level of real use of derivatives in risk management.
3. Data and scope constraints (data and scope constraints) temporal and spatial constraints: the sample was limited to a selection of banks operating in specific MENA countries during a specific period (2014-2021). This design makes absolute

generalization of the results to all emerging markets or to banks in the entire MENA region difficult, due to different regulatory environments, the development of financial markets, and the scale of economic crises between these countries. Availability of quantitative data for derivatives: low transparency and insufficient disclosure of detailed quantitative data on the use of derivatives (such as the purposes of use, the nature of contracts and nominal amounts) in the reports of MENA banks represent methodological limitations, forcing the study to rely on available oral disclosure data.

4. The study among the types of derivatives in its analysis did not differentiate between use for hedging purposes (hedging) and use for speculative purposes (speculation) in an accurate quantitative way but relied on the premise that disclosure indicates the intention to hedge, which may affect the accuracy of interpreting the effect of mixed use on performance.

4.4 Future research

1. Systematic transition from "disclosure intensity" to "explicit monetary measures" (transition to theoretical value measures). The current study relied on the" content analysis methodology " (content analysis) to measure the use of derivatives, which is an effective descriptive (proxy) measurement tool in emerging detection environments. However, the logical development of this research lies in directing future researchers towards extracting the nominal amounts and fair values of derivatives from the detailed explanations recorded from the balance sheet.

   This shift from "frequency of disclosure" to "actual monetary volume" will allow us to test the hypothesis of a "nonlinear relationship"; that is, to determine the quantitative point at which the hedge turns from a tool for enhancing stability into a tool that squeezes the net interest margin (NIM). The adoption of purely quantitative measures would enhance the ability of standard models to more accurately explain the variation in financial performance.

3. Structuring the sample according to" financial depth " and institutional environments (contextual stratification and market depth). Despite the regional comprehensiveness that characterized this study, the variability of the results suggests a hidden effect of "market efficiency" in the MENA region. Therefore,

future research is proposed to restructure the sample by stratification based on indicators of indicators of financial depth and quality of regulatory frameworks.

A prospective study should separate banks operating in mature derivatives markets (such as the GCC) from those operating in liquidity-constrained markets. This approach will answer a fundamental question: is the negative impact of derivatives on the performance of a financial instrument inevitable, or is it caused by the "costs of market inefficiency" and lack of liquidity that raise the cost of hedging only in some countries

4. Analysis of "cost efficiency" and dismantling the dilemma of convergence between Islamic and traditional banks (cost efficiency analysis). The current results revealed an unexpected "functional convergence" in the effect of derivatives between Islamic and traditional banks, which opens a horizon for in-depth research using random boundary analysis models. The recommendation here is to study the impact of hedging instruments on" cost efficiency " separately from profitability.

The goal is to check whether Sharia-compliant hedging contracts (such as Murabaha commodities) suffer from a "compliance premium" (compliance premium) or additional structural costs resulting from the complexity of Islamic financial engineering. This research path will reveal whether Islamic banks sacrifice part of their profit margin to cover the additional costs of "Sharia", statistically equating their results with traditional banks in this study.

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جامعة النَّجاح الوطنيَّة
كليَّة الدّراسات العليا

استخدام المشتقات وأداء المصرف:
أدلة من دول مختارة في منطقة المينا

إِعداد
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قدمت هذه الرسالة استكمالا لمتطلبات الحصول على درجة الماجستير في التمويل،
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الملخص

تعتبر المشتقات المالية حجر الزاوية في إدارة المخاطر المصرفية الحديثة، لأنها تعمل كأداة للتحوط من مخاطر الفائدة وسعر الصرف، بينما تكون في نفس الوقت مصدرا للمخاطر إذا تم استخدامها للمضاربة أو سوء إدارتها. على الرغم من ذلك، لا يزال تأثيرها الكلي على الأداء المصرفي غامضا في الدراسات التجريبية. تتناول هذه الدراسة الفجوة المعرفية الحرجة من خلال التركيز على استخدام المشتقات والأداء في البيئة المصرفية في منطقة الشرق الأوسط وشمال أفريقيا. كان الهدف الرئيسي هو دراسة تأثير استخدام المشتقات على هامش الفائدة الصافي، كمؤشر على ربحية وكفاءة الوساطة المالية، ومقارنة هذا التأثير بين البنوك الإسلامية والتقليدية في المنطقة.

استخدمت الدراسة التحليل الكمي لنمذجة بيانات المقطعية (بانل داتا)، بالاعتماد على تكرار إفصاح البنوك عن المشتقات كمقياس لاستخدام متغير المشتقات. وأظهرت النتائج الرئيسية وجود علاقة سلبية وهامة بين استخدام المشتقات المالية وصافي هامش الفائدة (نيم). هذه العلاقة السلبية، على الرغم من أنها تشير إلى ضعف في الأداء، يمكن أن تكون أيضا مؤشرا على كفاءة النظام المالي حيث إن انخفاض صافي هامش الفائدة قد يؤدي إلى كفاءة أفضل تؤدي إلى مزيد من الاستقرار في التدفقات النقدية وتقليل المخاطر المستقبلية للبنوك. تشير هذه النتيجة إلى أن التحوط يساهم في تعظيم الاستقرار وتقليل المخاطر، على الرغم من أنه لا يترجم إلى ربح فوري (صافي هامش الفائدة). تكشف مكونات الاستخدام المشتق عن القناة التي يتم من خلالها إثبات العلاقة السلبية. كانت المشتقات التي تهدف إلى

التحوط من مخاطر أسعار الفائدة ومخاطر الصرف الأجنبي مسؤولة عن هذه العلاقة، في حين أن مشتقات مخاطر السلع كانت ضئيلة، وهو أمر متوقع للبنوك. في مقارنة المؤسسات، أكد التحليل أنه لا يوجد فرق بين البنوك الإسلامية والتقليدية فيما يتعلق بتأثير استخدام المشتقات على الهامش الصافي.

تقدم هذه الدراسة أدلة تجريبية محددة في سياق منطقة الشرق الأوسط وشمال إفريقيا، لتزويد صانعي السياسات والمشرعين بالمعلومات اللازمة لتطوير سياسات تنظيمية فعالة للقطاع المالي.

الكلمات المفتاحية: أداء البنوك؛ منطقة الشرق الأوسط؛ منطقة شمال أفريقيا؛ المشتقات.