An-Najah National University

Faculty of Graduate Studies

DETERMINANTS OF BANK NET INTEREST MARGIN: EVIDENCE FROM MENA COUNTRIES

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This Thesis is Submitted in Partial Fulfillment of the Requirements for the Degree of Master of Finance, Faculty of Graduate Studies, An-Najah National University, Nablus, Palestine.

2023

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Acknowledgment

I express my gratitude to

My mom who is my greatest supporter all the times,

My father, brother, and amazing niece and nephew,

My supervisor, Dr. Islam Abdeljawad for his guidance and support during the thesis,

and whoever encouraged me through the master journey

Declaration

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

DETERMINANTS OF BANK NET INTEREST MARGIN: EVIDENCE FROM 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.

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Abstract

The net interest margin in the dual banking system is not well documented. While previous studies tested the determinants of each bank type (Islamic and conventional banks) separately or using a dummy representing the Islamic bank. The study is concerned with the differences between Islamic and conventional banks.

The study examines the factors driving net interest margins in the Middle East and North Africa using Islamic banksas a moderating variable. Also, uncover the effect of interest rate risk, its interaction with credit risk, and institutional variables that are first to investigate in the region.

This study uses panel of 511 banks in twenty countries for the period (2006 - 2018). Net interest margin is the dependent variable while the size of operation, risk aversion, credit risk, liquidity risk, specialization in lending, inflation, gross domestic product, interest rate risk, the interaction between interest risk and credit risk, control of corruption, rule of law, and regulatory quality are the independent variables while Islamic banks is the moderating variable. For analyzing the data pooled models, fixed effect models, random effect models, and generalized method of moments were used.

This study conclude the negative effect of the size of operation, credit risk, the interaction between interest risk and credit risk, liquidity risk, regulatory quality, and rule of law on the net interest margin while a positive effect of inflation, gross domestic product, interest rate risk, specialization in lending, and Islamic bank. In addition, it is concluded that liquidity risk affect the net interest margin of Islamic bank more than conventional banks.

It is recommended banks that focus on diversifying their operations and encourage Islamic banks to adopt new risk management instruments, in addition to enhancement of the governance frameworks such as contract enforcement.

Keywords: Dual banking; Islamic bank; MENA region; Net interest margin.

Chapter One

Introduction

Banks provide a variety of services to different sectors and customers. That helps finance household consumption needs, firms' investment needs, and government deficits. Banks play a vital role in implementing the monetary policies. Banks constitute significant financial intermediaries that stand between lenders (savers) and borrowers (spenders) helping on transferring funds among them which leads banks to be similar or superior to financial markets in channeling funds (Garcia & Guerreiro, 2016).

The intermediation function is one of the important functions provided by banks. That leads the banking system to play a fundamental role in economic growth (Maudos & De Guevara, 2004). In addition, banks need the function to support their operations (Endri, Marlina, & Hurriyaturrohman, 2021). However, performing the intermediary function comes with a cost in form of interest to the depositors and the borrowers. Since banks pay interest to depositors and at the same time charge interest to borrowers, a spread is created that is called interest margin. The interest margin is positive since banks charge interest to customers higher than pay to depositors (Tarus, Chekol, & Mutwol, 2012).

The net interest margin (NIM) is significant indicator since it is known in the literature as indicator of the efficiency of performing the intermediary function (Almarzoqi & Naceur, 2015; Doliente, 2005; Fungáčová & Poghosyan, 2011; Kumari, 2014). Furthermore, the measure represents the cost of intermediation in the society (Almarzoqi & Naceur, 2015; Poghosyan, 2013).

Maudos and De Guevara (2004) pointed out to the importance of performing the intermediation at a lower cost since lower margins show the social welfare of society. However, higher margin involves a trade-off, since higher margins are associated with lower efficiency and competition in the marketplace and reflect insufficient regulatory and higher information asymmetries problems that require a risk premia (Claeys & Vander Vennet, 2008).

The dealership model is the most referenced model to study the net interest margindeterminants. The model presented by (Ho & Saunders) in their seminal paper in 1981. Following the model, the bank is a dealer in the credit market that provide loans

and ask for deposits. Since the loans and deposits arrive at a stochastic time, the bank will cover the loan demand and deposit supply at the short-term money market holding a short or long positions that presents a cost. So the bank will ask for interest spread or fees for providing it immediacy considering the uncertainty of the transaction (Ho & Saunders, 1981). The margin that results from the uncertainty of the transaction is called the pure spread. The pure spread depends on market structure, degree of risk aversion, average size of transaction, and variance of interest (the dealership model is discussed in more details in chapter 2) (Ho & Saunders, 1981). The model is augmented by later authors to consider variables that not included in the model (Allen, 1988; Angbazo, 1997; Maudos & De Guevara, 2004; McShane & Sharpe, 1985).

The dealership model and its latter extension have been applied in a single country (McShane & Sharpe, 1985; Williams, 2007; Zhou & Wong, 2008), regions (Almarzoqi & Naceur, 2015; Islam & Nishiyama, 2016; Maudos & De Guevara, 2004; Poghosyan, 2010; Saunders & Schumacher, 2000; Schwaiger & Liebeg, 2008), and comparisons between developing and developed countries (Garza-Garcia, 2010). Previous studies have shown varying determinants across countries and regions (Doliente, 2005), which attributed to the contexts, economic and banking characteristics, and management practices (Kumari, 2014). For example, Garza-Garcia (2010) conducted a comparative study between developing and developed countries, Garza-Garcia (2010) confirmed higher margins in developing country samples in addition to differences among the determinants and some inconsistent results in capital adequacy, credit risk, and interaction between interest rate risk and credit risk.

The Islamic finance estimated assets under management researched US$3.178 trillion at the end of December 2021 with annual growth 8.06% (ZAWYA, 2022, November 28). Islamic principles prohibit usury, materiality (financing in real assets), forbids business ethics that consider unethical or problematic, and return based on risk (World Bank, 2015). Islamic and conventional banks are different according to funding, experiences, principles, activity and regulatory structure (Zarrouk, Ben Jedidia, & Moualhi, 2016). Commercial bank's intermediation is debt-based that based in transfer the risk to the customers while Islamic banks are asset-based which are based on sharing of the risk (Hasan & Dridi, 2011). Despite that, both conventional and Islamic banks are following their local regulation and Basel rules, Islamic banks' operations must follow the Shariah

principle (Sun, Mohamad, & Ariff, 2017). When commercial banks price their services they used market lending and deposit rates and play with spread which differs from Islamic banks pricing which is based on the expected profit-sharing yield (Sun et al., 2017). Both banks' models are usually facing the same operational problems, which are the random time of the arrival of financing and supply of deposits, default risk, interest rate volatility, liquidity risk, and others (Hutapea & Kasri, 2010).

The bank margin in Islamicbanks (Net profit margin) is identical to the net interest margin in commercial banks (Hutapea & Kasri, 2010). Islamic bank margin is the difference between what banks generate from investing and financing projects and what banks have distributed to their depositors (Bougatef & Korbi, 2018). Few studies of bank margins were performed in dual-banking countries compared to the literature performed in the conventional banking context (Bougatef & Korbi, 2018; Hutapea & Kasri, 2010; Lee & Isa, 2017; Malim & Masron, 2018; Shawtari, Ariff, & Razak, 2019; Sun et al., 2017).

Lee and Isa (2017) examined the determinants of net interest margin in Malaysia, which operate under a dual banking system. They divided the sample according to the bank type (Islamic or conventional banks) and concluded the similarities with minor differences between Islamic and conventional banks determinants. They claimed that commercial banks are influenced by more variables due to the Islamic bank's small size. While Hutapea and Kasri (2010) confirmed the long-run relation between Islamic banks margins and the variables used (default risk, liquidity risk, solvency ratio, implicit cost, the opportunity cost of holding the reserve, management quality, and interest rate volatility). Hutapea and Kasri (2010) reported contrary findings between interest volatility and the margins of the two bank models (positive for commercial and negative for Islamic banks) and some changing effect of some variables when transferring the operations from conventional to Islamic models. Malim and Masron (2018)studied the net interest margin during and post-financial crisis and confirmed the higher margin in Islamic banks which indicates that Islamic banks are more conservative and dependent on the higher margins as a cushion from unfavorable market conditions. While commercial banks withstand the shocks due to the limited contagion effect in developing counties. Malim, Ibrahim, and Rasid (2017) applied the dealership model in Islamic banks for eighteen countries from the Organization of the Islamic Cooperation

(OIC) and emphasized that institutional variables are not effecting bank margin because they are already included in Islamic laws and religious beliefs. Ibrahim and Law (2019) claimed the existence of Islamic banks reduces the intermediation cost in dual banking systems and higher margins for Islamic banks due to the complexity of the contracts, and the unique risk that face Islamic banks compared to conventional banks such as fiduciary risk, displaced with commercial banks, rate of return.

Few studies conducted on the MENA regions country as single countries (Asmar, 2018; Ben Khediri & Ben-Khedhiri, 2011; Shawtari et al., 2019)or group of countries (Al-Muharrami & Murthy, 2017; Bougatef & Korbi, 2018). The current thesis examines a period during and post financial crisis and extended the numbers of countries to twenty country more than Bougatef and Korbi (2018) who used 14 countries.

1.1 Research Problem

The intermediation function is the most important function provided by banks that generate a large portion of the bank's revenue. The higher margin considers a constraint for the deepening of the financial intermediation since lower deposit rates produce reluctant in saving flows to bank deposits and higher lending rates cause a reduction in the investment opportunities (Fungáčová & Poghosyan, 2011). The higher NIM can be seen in developing countries with different studies seeking to identify their determinants (Ahokpossi, 2013; Almarzoqi & Naceur, 2015; Kumari, 2014; Maudos & Solís, 2009) and comparative studies also confirmed the higher margins in developing countries compared to developed countries (Garza-Garcia, 2010). The higher NIM in developing countries considers a problem since banks are the main sources of funds for firms and individuals due to capital market deficiencies. Higher NIM leads to cause depression in investments and savings growth, increases the cost of financing through banks, and prohibits certain customers from using the bank's services (Ben Khediri & Ben-Khedhiri, 2011). Furthermore, higher margins reflect banks' environmental condition of inadequate regulatory and information asymmetry problems that are associated to lower of both efficiency and market competition (Claeys & Vander Vennet, 2008). As a region, most countries in the Middle East and North Africa (MENA) are dependent on the banking system to support their economic development (Bougatef & Korbi, 2018) which rise the significanceof the efficiency of the intermediation function.

1.2 Research Objective

Since higher margins are a problem in the banking systems, the thesis investigates the determinants of net interest margin on the Middle East and North Africa using variables that mentioned on the literature to have an effect on the net interest margin. Furthermore, the thesis adds the Islamic banks to moderate the relationship between the dependent and explanatory variables. So the objective of the research:

1. Investigate the determinants of net interest margin on the Middle East and North Africa.
2. Discover the role of the Islamic bankson moderating the relationship between net interest margin and banks specific variables (size of operation, risk aversion, credit risk, liquidity risk, specialization in lending).

1.3 Research Questions

On order to fulfill the research objective, we need to answer the following main questions:

1. What are the determinants of a bank's net interest margin in the MENA region?
2. What is the differences between Islamic and conventional banks net interest margin determinants?

1.4 Significance of the Study

Theoretical significance: The study contributes to the literature by investigating the role of institutional variables, interest rate risk, the interaction between interest rate risk and credit risk on the net interest margins that are not being previously investigated in the Middle East and North Africa context. In addition, the research seeks to discover the moderating variable of the Islamic banksin effecting the relation between net interest margin and bank-specific variables (size of operation, risk aversion, credit risk, liquidity risk, specialization in lending). Despite that, Shawtari et al. (2019) applied the moderating variable, they study was in solo country.

Practical significance: the study investigates the factors that affect the net interest margin at the bank level, macroeconomic level, and institutional level. Therefore, the study benefits bank management who care about the profitability of the bank (as NIM is an indicator of profitability). Furthermore, it benefits regulators who are concerned

about the efficiency and the proper conditions for the performance of the intermediationfunction.

1.5 Research Structure

The thesis is structured as followed: chapter 2 demonstrates the theoretical background and hypothesis development. Chapter 3 presents the methodology. Chapter 4 shows the results and discussions of the findings, and chapter five, the conclusion.

Chapter Two

Theoretical Background and Hypotheses Development

This chapter presents a review of the banking system in the MENA region. Then the chapter demonstrates the dealership model and summaries the main extensions added. Then it follows by the development of the hypotheses in light of the empirical evidence. The chapter concludes by presenting the conceptual model.

2.1 Background of the Banking Sector in the MENA Region

The countries in the MENA region are not homogenous that vary from wealthy oil-producing countries to politically unstable countries that import oil. Countries share similarities and differences. For example, North African countries are dominated by state-owned banks with the banking sector as senior source of financing. The banking sector differs across the region in the MENA, with more developed and less risk in the Gulf Cooperation Council countries (GCC), the Middle East banking system is more efficient and profitable, While North Africa is low profitably and higher non-performing loans ratios (Abdelaziz, Rim, & Helmi, 2022).

2.2 Theoretical Framework

Dealership Model

The model developed by Ho and Saunders (1981) extends the hedging hypotheses and expected utility approach and the model relies on the literature of bid-ask price for security market dealer. In this model, the bank is risk averse dealer in the credit market, supplying and demanding homogenous loans and deposits (essentially banks ask for one type of deposit and provide one type of loan). The risk aversion assumption is essential for two reasons. First, uncertainty of the liquidity needs. Borrowers and lenders prefer indirect financing/ lending to direct financing for transaction cost. If the bank is not risk-averse, the bank will bear transaction costs to eliminate the margin. Second, the size of the bank and the existence of riskless instruments in the money market. The size of bank will stop the banks from engage in ad infintum to eliminate the margin (Angbazo, 1997). In addition, Angbazo (1997) mentioned traditional reasons for risk aversion: inability of management to diversity human capital, inadequate ownership diversity, governmental regulations (deposit insurance failure of resolution, etc.), that

create incentive problems as moral hazed and adverse selection, and the bankruptcy cost that result from default risk.Following the model, the bank determines the price of loan and deposit at the beginning of the decision period, which remain constant during the decision period. The bank seeks to maximize the expected utility of the terminal wealth (Ho & Saunders, 1981).

The wealth of bank have three components: the base wealth that are allocated on devised portfolio, the net credit inventory (which is the difference of the market value of loans and deposits) that have the same maturity and mature after the decision period, and short term money market position (the differences between loan and borrowing) (Ho & Saunders, 1981).

Banks set the price of loans and deposit passively while the quantity is exogenously determined, the price as followed

$$Pl = p + b \quad \text{.....(1)}$$

$$Pd = p - a \quad \text{.....(2)}$$

Where: p is the bank's opinion of the true price of loan and deposit, a and b are fees for providing loans and accepting deposits. Therefore, p, P_l and P_d are prices that are inversely related to deposit and loan rates. According to Ho and Saunders (1981), the probability of loan demand and deposit supply depends on the size of the fees. The bank can affect the loan demand and deposit supply by manipulating the fees of a and b. if bank rises b, the price is falls, and the loan rate rises leading to discouraging the loan demand. On the other hand, if a bank has an excess deposit so the bank reduces the deposit rate by raising the price of the deposit and leading to discouraging the deposit supply.

The dealership model assumes that loans and deposit have long maturity that extend to after the decision period. This exposes the bank for two types of risk if the bank has unmatched loans and deposit portfolio at the end of decision period and interest rate changes. The risks are reinvestment risk and refinancing risk. First: reinvestment risk: the risk appears if the bank receives deposit at long-term rate and there is no instant loan demand. In this case, the bank will invest the deposit temporary in the short-term money market at risk-free rate. At the end of the decision period, the bank is expose to

reinvestment risk, if short-term interest falls. Second: refinancing risk, the risk appears when the bank receives loan demand without contemporaneous deposit. The bank will restore their shortage from the short-term money market. In the end of decision period, the bank is facing the refinancing risk if the interest rate rises (Ho & Saunders, 1981).

Therefore, the bank seeks to determine the optimal spread that maximize the expected utility with considering the transaction uncertainty and interest rate risk. The spread equation:

$$S = a + b = \frac{\alpha}{\beta} + \frac{1}{2} R\sigma^2 iQ \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots(3)$$

The $\frac{\alpha}{\beta}$ represents the symmetric of loan and deposit arrival function. Which represent the bank being risk neutral if the risk averse (R) was zero. If α is greater than β will result in a higher $\frac{\alpha}{\beta}$ ratio and spread. The higher the ratio means the bank has monopoly power and can order greater spread if thebank operates in market characterized by inelastic demand and supply function. Second term is first order risk-adjustment term with (R) the risk aversion, σ^2 variance of loan and deposit, and Q the size of bank operation. According to the model, the second term is positively related to the margin that is higher risk aversion, variance of interest, average size of operation the higher the margin.

To test the validity of the theoretical model, Ho and Saunders (1981) applied a two-stage approach. In the first stage, the pure margin is estimated by regressing the net interest margin against bank imperfections that are not included in the theoretical model (default risk, opportunity cost of holding the reserve, and implicit interest). The first regression equation as follows:

$$Mi = \delta 0 + \delta 1\, IR + \delta 2\, OC + \delta 3\, DP + Ui \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots(4)$$

Where, Mi is the net interest margin for the bank i, δ0 is the estimated pure spread, IR is implicit interest, OC opportunity cost of required reserve, DP default premium. Ui is the error term.

In the second stage, the intercept of the previous regression is regressed against the volatility of the interest rate. The constant of the second regression shows the market

structure and the coefficient shows the effect of interest volatility on the pure spread. The second regression equation:

$$\delta t = \gamma 0 + \Upsilon 1 \sigma^2 t + \in t \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (5)$$

Testing the model, Ho and Saunders found a significant effect of the pure margin and implicit interest in the first stage. The second stage found pure spread is positively effect by the variances of one-year bond rate.

The model is extended by subsequence authors, McShane and Sharpe (1985) modified the model by attaching interest rate uncertainty instantaneous short-term money market interest rather than the rate of loan and deposit, which makes more sense since variable loan and deposit rates are predominant in the Australian context. Allen (1988) extended the model by considering the heterogeneity of loans. Taking into account the cross elasticity of demands between banks' products can reduce the pure spread.

The model was modified to take default risk and its interaction with interest rate risk by Angbazo (1997). While Maudos and De Guevara (2004) explicitly add the operating cost. The authors claimed that even in the absence of banks' risk and market power, higher margins are justified by the high cost the bank incurred. Another contribution by the authors is the Lerner index used as a direct measure of market competition.

Valverde and Fernández (2007)extended the model to take into account the non-traditional activities. The authors extended Allen (1988)'s model to assume the bank has two alternatives to set the price of loans relative to the deposit rate and non-traditional relative to the deposit rate. In their paper, Entrop, Memmel, Ruprecht, and Wilkens (2015) extended the model to account for interest rate risk and expected return from maturity transformation. Banks price interest risk on loan and deposit intermediation fees separately for their individual exposure but increase those charges for deposits or reduce it for loans if there is a positive excess holding period return on long-term exposure. Islam and Nishiyama (2016) extended the Ho and Saunders (1981) model by adding the relative size variable. Furthermore, Cruz-García and Fernández de Guevara (2020) extended the model to take into consideration the deposit insurance premium and capital requirement explicitly in the model.

2.3 Hypothesis Development

The following section is reviewing the variable definition, the findings of empirical evidence, and the hypotheses to be investigated.

2.3.1 Net Interest Margin

The net interest margin measures the gap between the interest the bank pays for the providers of the funds and the interest the bank received from the users of funds (Naceur & Omran, 2011). The net interest margin is a significant indicator that shows the mix and volume of the bank's assets and liabilities that are set to cover the intermediation cost and it's an important element of a bank's profitability (Angbazo, 1997). Net interest margin represents the profit from the core business since it shows the interest generated by the bank (Garcia & Guerreiro, 2016). The net interest margin is a summary of the return on the interest rate (Angbazo, 1997). Despite that lower margin indicates the existence of market competition, lower intermediation costs, and regulatory taxes. Higher margins create a degree of stability in the banking system with growing profitability and capital, which protect banks during bad economic conditions (Saunders & Schumacher, 2000).

The empirical evidence references bank-specific factors, regulation and institutional environments, market structure, and macroeconomic variables to affect net interest margins (Almarzoqi & Naceur, 2015; Malim & Masron, 2018). Especially, the size of the operation, risk aversion, credit risk, liquidity risk, specialization in lending, inflation, gross domestic product (GDP growth), interest rate risk, the interaction between interest rate risk and credit risk, control of corruption, rule of law, and regulatory quality.

2.3.2 Size of Operation

According to the theoretical model, banks with greater operation is exposed to more probability of losses at the same level of credit and market risk, so banks operate at higher margins (Maudos & De Guevara, 2004). Poghosyan (2010)found that higher margins are compensation for the possibility of loss per operation due to the large stake. Other studies confirmed the postive relation between size of operation and net interest margins: Maudos and Solís (2009) in Mexico in some models, Almarzoqi and Naceur

(2015) in the Caucasus and Central Asia countries, and Ibrahim and Law (2019) in Malaysia.

Other empirical evidence claimed that banks with large operations benefit from the economics of scale (Fungáčová & Poghosyan, 2011; Maudos & De Guevara, 2004). In addition, large banks provide a variety of loans than small banks, which reduces the risk (Khan & Jalil, 2020). Moreover, large banks have better resources and sophisticated technology that led to efficiency and reduce the cost of unit of operation, which leads to lower net interest margins (Lee & Isa, 2017). In China, Zhou and Wong (2008) claimed that operaiton size is linked to net interest margins negatively since some large banks aggressively increase their credit portfolio with lower margins to reduce impaired loan ratios or the reward are based on expanding the credit sales, not on risk-adjusting performance. In emerging and low income countries, Poghosyan (2013)concluded that large banks exhibit a lower margin because of the scale effect. However, other literature finds no effect (Angori, Aristei, & Gallo, 2019; Cruz-García & Fernández de Guevara, 2020; Islam & Nishiyama, 2016; Kumari, 2014; Liebeg & Schwaiger, 2006; Rahman, Rahman, Masud, & Kaium, 2023; Schwaiger & Liebeg, 2008; Williams, 2007). Based on the discussion above, the thesis argues that size of operation effects the net interest margin negatively, the hypothesis can be written as follows:

H1: there is a negative association between the size of operation and net interest margin.

2.3.3 Risk Aversion

Risk aversion refers to the bank not accepting to hold more risk and receiving the same return amount (Khanh & Tra, 2015). The risk aversion behavior of banks can be seen by holding capital more than the mandatory capital requirement (Lee & Isa, 2017). According to the theoretical model, Banks that are more risk averse are requesting higher margins since equity financing is costly compared to debt financing (Maudos & De Guevara, 2004). Thus, higher equity holding reduce the profitability, banks have to work at higher spread (Lee & Isa, 2017). The risk averse managers ask for higher net interest margins as compensation for bearing more risk (Asmar, 2018; Fungáčová & Poghosyan, 2011; Hawtrey & Liang, 2008; Rahman et al., 2023). The risk aversion behavior is more prominent during uncertain times such as the global financial crisis as found by Angori et al. (2019). Furthermore, higher margin can be seen as a way to

generate more returns to fulfill the return expectation of shareholders (Aboagye, Akoena, Antwi-Asare, & Gockel, 2008)and generate an adequate return for the increasing equity (Kumari, 2014). Khan and Jalil (2020)argued that the positive relation due to the solvency regulations that pressure lending activities so banks exhibit a net interest premium. WhileIslam and Nishiyama (2016)believed that solvent banks operate with a higher margin. In the Gulf Cooperation Council Countries, Al-Muharrami and Murthy (2017) concluded that well-capitalized banks provide a lower deposit rate since demands are financed by equity funds. Furthermore, well-capitalized banks stand on their balance sheet strength to carry more credit risk to generate more revenue. Islamic banks show risk aversion behavior since it manifests in the capital ratio, however, the positive connection means that Islamic banks pricing is based on Murabaha financing not on the profit-loss-arrangements (Malim et al., 2017). Other scholars supported the positive effect (Entrop et al., 2015; Ibrahim & Law, 2019; Khanh & Tra, 2015; Liebeg & Schwaiger, 2006; Maudos & De Guevara, 2004; Poghosyan, 2010; Schwaiger & Liebeg, 2008; Trinugroho, Agusman, & Tarazi, 2014; Williams, 2007). On contrary, Poghosyan (2013)believed that risk averse banks might not accept financing a profitable project if granting credit means greater risks. Poghosyan (2013) confirmed the findings for the two groups (low-income countries and emerging countries with a greater magnitude for emerging countries). Other empirical evidence confirmed the negative relationship (Suu, Luu, Pho, & McAleer, 2020; Zhou & Wong, 2008). While other literature found no relation (Almarzoqi & Naceur, 2015; Cruz-García & Fernández de Guevara, 2020; Endri et al., 2021). The thesis argues that risk averse banks work with higher margins as compensation for holding more risk. So the hypothesis can be written as followed:

H2: There is a positive association between risk aversion and net interest margin.

2.3.4 Credit Risk

Credit risk refers to the risk of the debtor will not repay the financial obligation which takes the form of losing a whole or partial of the money granted (Khanh & Tra, 2015). Angbazo (1997) added default risk variable to the dealership model and confirmed his hypothesis that banks with more risky loans are holding more risk of default, so banks impose higher margins to compensate for the risk. Kasman, Tunc, Vardar, and Okan (2010)claimed that the existence of positive relation between interest margin and credit

risk for all subsamples (consolidation, post-consolidation, for new and candidate members of the Europe Union (EU), and old EU members). Banks demand compensation for both expected and unexpected risks, which leads to higher net interest margins. Also, Asmar (2018) believed that banks exhibit a high net interest margin because it faces more expected and unexpected credit risk. Kumari (2014)emphasized that banks raise the net interest margin as compensation for the higher credit risk and the possibility of a loss of interest income. Schwaiger and Liebeg (2008) believed that banks acquire a positive risk premium from adjusting the price of loans and deposits in respect of the credit risk. In their paper, Claeys and Vander Vennet (2008) concluded that loan ratios positively affect the net interest margin in West Europe and a sample of EU countries. Lending wide the margins since loans are higher risk and cost-intensive assets class that demand banks to emerge those risks in the loan pricing. Those considerations are not taken into account in non-accession countries. During and post-financial crisis, Malim and Masron (2018) claimed that conventional banks do not consider diversification in their loans portfolio and charge higher margins as compensation for higher credit risk. While the crisis represents a risky environment that results in more default risks, banks impose credit policies to increase the margins through rising loan rates or reducing deposit rates. Rahman et al. (2023) claimed that higher non-performing loan ratio represents a cost that a bank passes to borrowers. Poghosyan (2013) confirmed the positiverelation for both low-income and emerging countries, banks ask for compensation for the higher risk and the effect is more pronounced in low-income countries. Other empirical studies confirmed the positive effect (Agoraki & Kouretas, 2019; Ahokpossi, 2013; Angori et al., 2019; Drakos, 2002; Hawtrey & Liang, 2008; Lee & Isa, 2017; Maudos & De Guevara, 2004; Poghosyan, 2010; Suu et al., 2020; Tarus et al., 2012; Valverde & Fernández, 2007). On contrary, Fungáčová and Poghosyan (2011) found a negative effect of credit risk on NIM. The authors justified the finding with the market discipline argument. Customers cost risky banks (having higher non-performing loans) a higher premium for depositing their savings. When the deposit rate only increases and everything else holds constant will result a low net interest margin. This confirmed by the finding of Trinugroho et al. (2014) in Indonesia after the 1997-1998 financial crisis.

Other studies confirmed the negative effect of credit risk on the net interest margin. Williams (2007) asserted that banks increase their market share by writing off low asset

quality, which leads to higher provision of doubtful debts that are not fully priced to risk. In addition, Khan and Jalil (2020) believed that banks might follow practices to increase their market share on the loans and advance without full monitoring which leads to reduced bank margins. However, Endri et al. (2021) argued that banks prefer a lower net interest margin during the financial situation of the lender is worsened.

Brock and Suarez (2000) found a negative effect for all countries in the sample except Colombia (the effect was positive), while the significant effect was for Argentina and Peru. Higher non-performing loans lead to lowers income, which in turn lowers the spread, especially when there is no adequate loan loss reserve. Furthermore, banks may grow through practicing risky strategies such as increasing deposit rates and reducing loan rates that reduce their interest spread in liberalized countries, the negative effect confirmed by Doliente (2005)for Indonesia and Thailand and positive effect in the Philippines. Other literature found no effect (Aboagye et al., 2008; Almarzoqi & Naceur, 2015; Ben Khediri & Ben-Khedhiri, 2011; Cruz-García & Fernández de Guevara, 2020; Ibrahim & Law, 2019; Islam & Nishiyama, 2016; Khanh & Tra, 2015; Liebeg & Schwaiger, 2006; Zhou & Wong, 2008). The thesis argues that banks with higher credit risk operate at the higher margin to compensate for the higher risk holding:

H3: there is a positive association between credit risk and net interest margin.

2.3.5 Liquidity Risk

Liquidity risk refers to the risk that the bank is not having sufficient cash to meet deposit withdrawals or customer demands leaving the bank to borrow at a higher cost (Angbazo, 1997). In his paper, Angbazo (1997) claimed that having more liquid assets (lower liquidity risk) would deprive the banks of the risk premium. Trinugroho et al. (2014) and Shawtari et al. (2019) believed that an opportunity cost is created by holding higher liquid assets. Other literature supports that the higher the liquid assets held by banks the lower the margin (Drakos, 2002; Fungáčová & Poghosyan, 2011). Moreover, banks with higher liquidity risk borrow emergency funds at higher costs (Ahokpossi, 2013). Valverde and Fernández (2007) found the higher the liquid assets, the higher the deposit loan spread. According to Malim and Normalini (2018), Islamic banks ask for higher margins as compensation of liquidity risk since using instruments that correspond to Shariah make liquidity management difficult. While Lee and Isa

(2017)found no relation in the baseline regression and for commercial and Islamic banks. The higher the liquidity risk, the higher the risk premium asked, which leads to rising the net interest margin. So, the hypothesis:

H4: there is a positive association between liquidity risk and net interest margin.

2.3.6 Specialization in Lending

Specializing in a product can reduce banks margins due to economies of scale (Maudos & Solís, 2009). Maudos and Solís (2009) confirmed the negative relationship between the specialization in lending and the net interest margin. They believed that specialized banks benefit from economies of scale to reduce the intermediation margins and the bank offer lower interest rate because of the competition in loan market with the existence of deposit cross-substitute banks which reduce the intermediation cost (Maudos & Solís, 2009). Furthermore, specialized banks are having information advantage which leads to lower margins (Valverde & Fernández, 2007). In addition, specialized banks are better at evaluating the credit positions of customers leading to reduce intermediation costs (Bougatef & Korbi, 2018). However, in the GCCs, Al-Muharrami and Murthy (2017)claimed that holding a higher percentage of loans in the bank assets (higher risky loans) generates higher interest revenue which contributes to higher net interest margin considering that return from other securities (money market and governmental securities) is little in the region. Specialized banks are experienced in evaluating the creditworthiness of customers and have better access to information that incorporates in the acceptance of loan demands, the hypothesis:

H5: there is a negative association between specialization in lending and net interest margin.

2.3.7 Inflation

Inflation refers to the rate of the increase in the price level of the same general basket of goods and services over time (Khanh & Tra, 2015). Inflation comprises a risk for loan and deposit rates. If the bank has mismatched loans and deposits, the interest rate adjustment for inflationary pressure on loans and deposits will change at different times and to different extents affecting interest margins (Al-Muharrami & Murthy, 2017). Entrop et al. (2015)asserted that passing inflation to net interest margin is important

economically since net interest margin contains interest income and expenses that generate from assets and liabilities with more than a year of maturity, which the contract terms are negotiated in the past.Poghosyan (2010)emphasized increasing inflation leads to higher interest margins since it considers an additional risk, which is price uncertainty. Malim et al. (2017) calimed that inflation rises the default risk so islamic banks impose higher margins. Drakos (2002) claimed that banks increase their profit in inflationary environments. Kasman et al. (2010) found that the new and candidate members of EU and in the consolidation period income increases more than cost with inflation leading to higher net interest margins while having no effect on the old members since the countries converge on a single market.The positive effect is supported by Demirgüç-Kunt and Huizinga (1999). In the Central and Eastern Europe, Agoraki and Kouretas (2019) believed that the positive effect of inflation on the net interest margin shows a failure of monetary policy, poor economic performance, and financial instability. The positive effect is supported by Poghosyan (2013) in emerging countries only, Ahokpossi (2013)in sub-Saharan Africa, Khanh and Tra (2015)in Vietnam, and Tarus et al. (2012)in Ghana. In contrast Claeys and Vander Vennet (2008)found that the expectation of reduction and the reduction of inflation have a noticeable downward effect on long-term interest rates leading to reduce NIM. In post-crisis, Malim and Masron (2018) concluded that Islamic banks try to attract customers with more favorable financing rates despite the highly volatile economic environment. Despite that inflation bring higher cost and income, Abreu and Mendes (2001)claimed that cost is more affected by inflation than revenue which led to lower net interest margins. Other empirical evidence supported the negative effect of inflation on the net interest margin (Angori et al., 2019; Khan & Jalil, 2020). Mixed results are obtained on the regional studies, Brock and Suarez (2000)found higher inflation rises the spreads in the countries sample (Chile, Peru, Bolivia, and Colombia) except for Argentina the inflation has a negative effect. However, other empirical evidence found no effect(Al-Muharrami & Murthy, 2017; Almarzoqi & Naceur, 2015; Endri et al., 2021; Ibrahim & Law, 2019; Islam & Nishiyama, 2016; Kumari, 2014; Malim & Normalini, 2018; Maudos & Solís, 2009; Rahman et al., 2023; Shawtari et al., 2019). Based on the previous discussion, the thesis expects a positive effect, since inflation represents a risk of price uncertainty, which lead to compensation for the risk:

H6: there is a positive association between the inflation and net interest margin.

2.3.8 Gross Domestic Product (GDP) Growth

Gross domestic product growth refers to the capacity of the economy to produce more goods and services over a period. It indicates an improvement in business activity, living standards, and favorable market conditions (Khanh & Tra, 2015). The growth of GDP is an important variable that affects the NIM since it affects the demand and supply of loans and deposits directly (Islam & Nishiyama, 2016). Several empirical studies confirmed the negative association. According to Entrop et al. (2015), during the expansion of the economy, banks are competing in the loan market by reducing the loan rate and credit acceptance standards. Islam and Nishiyama (2016)claimed that when the economy is in the prosperity stage and economic expansion becomes visible, banks could grow by charging less interest to customers, which lowers the margins. Valverde and Fernández (2007) claimed that GDP growth affect the spread negatively. Banks reduce interest margins after market rates rise as the economy recovers. Poghosyan (2013) supported the negative relation for the emerging countries only. Other literature confirmed the negative effect of GDP growth on the net interest margin (Agoraki & Kouretas, 2019; Angori et al., 2019; Malim et al., 2017; Shawtari et al., 2019; Suu et al., 2020; Tarus et al., 2012).

Kasman et al. (2010) concluded that the effect of the gross domestic product on the net interest margin depends on the stage of transition. A negative effect during the consolidation period since transition economies face more fluctuations in economic growth while no effect after the consolidation is explained by countries gathering in the same market achieving convergence. However, for new and candidate members of the EU, Kasman et al. (2010) believed that higher risk combined with the volatility of the business cycle leads to lower interest margins. However, the old EU members have no effect. In contrast, Claeys and Vander Vennet (2008) found that GDP growth effect NIM positively in Western Europe because of increasing lending and low default. However, their findings in the Center and Eastern Europe were negative or had no effect. Claeys and Vander Vennet (2008) demonstrated the results of a transition economy by the volatility of the business cycle since high growth is interrupted by the crisis. There is minimum tendency for GDP growth to affect in speared on Latin America, the higher GDP will rise the firm capitalized value and since the default risk is low, reduce the lending cost (Brock & Suarez, 2000). Other literature confirmed the

positive relation (Drakos, 2002; Ibrahim & Law, 2019; Liebeg & Schwaiger, 2006; Schwaiger & Liebeg, 2008).

Bougatef and Korbi (2018) found that the effect of GDP growth varies according to the bank model. Islamic banks affect positively, in favorable economic conditions, banks can profit from accepted projects to increase the return to the partnership. While a negative effect of GDP growth on net interest margin for commercial banks, during good economic conditions investors are applying for banks loans, so banks may grant loans to bad borrowers and leading to reduce interest revenue in case of customer defaults albeit the result (of commercial banks) turns insignificant during robustness checks. Other studies found no effect (Ahokpossi, 2013; Cruz-García & Fernández de Guevara, 2020; Khanh & Tra, 2015; Kumari, 2014; Malim & Normalini, 2018; Maudos & Solís, 2009; Poghosyan, 2010; Rahman et al., 2023). In good economic growth, banks are competing to increase their market share by reducing their lending rate. The hypothesis:

H7: there is a negative association between GDP growth and net interest margin.

2.3.9 Interest Rate Risk

In the theoretical model, Ho and Saunders (1981) believed that the variance of interest rate of loans and deposits is positively related to the pure margin for one-year bond variance while Saunders and Schumacher (2000) claimed that both short and long rate volatility affect the pure spread. Maudos and De Guevara (2004) found that banks with higher market risk expectations operate at a higher NIM. Maudos and Solís (2009) believed that banks protect themselves from high market risk by imposing higher interest margins. According to Angori et al. (2019), money market volatility increases market risk, which in turn leads to higher NIM. Khan and Jalil (2020) asserted that interest volatility causes uncertainty in the money market so banks impose higher NIM in two models. Williams (2007) found interest rate risk to affect the net interest margin positively albeit the effect becomes insignificant when controlling for the time. Schwaiger and Liebeg (2008) claimed a positive link between interest rate risk and NIM. A risk premium exists from adjusting loan and deposit prices to consider the interest rate risk. According to Rahman et al. (2023), the nature of the bank inventory of transferring funds creates uncertainty in their transactions, so banks put the price of

interest rate that compensates for the volatility of the interest risk. Hawtrey and Liang (2008) found interest rate volatility to affects the net interest margin positively with different choices of interest rate. However, Liebeg and Schwaiger (2006) concluded a mixed sign of interest rate risk effect on the net interest margin depending on the measure. A positive sign when the standard deviation of three months interbank and slope of the term structure are used while a negative effect for the ten-year government bond yields. Also, Valverde and Fernández (2007) confirmed the positive effect using loan and deposit spread in seven European countries. In Latin America, Brock and Suarez (2000) found a positive effect of interest rate volatility in the pure spread except for Peru and Colombia. In south Asia countries, Doliente (2005) claimed that short-term interest volatility positively affects the pure spread. However, a negative effect is obtained by Angbazo (1997) interest risk exposure affects net interest margin negatively. The higher the net short-term assets the lower the risk and the risk premium leading to a lower margin. The negative effect is supported by Garza-Garcia (2010) for developing and developed countries. Others found no effect (Cruz-García & Fernández de Guevara, 2020; Ibrahim & Law, 2019; Islam & Nishiyama, 2016; Kumari, 2014; Poghosyan, 2010). As interest rate volatility represents a risk, banks ought to ask for compensation for the exposure. The hypothesis, therefore:

H8: there is a positive association between interest rate risk and net interest margin.

2.3.10 The interaction between interest rate risk and credit risk

Angbazo (1997)relaxed the dealership model by including the interaction between interest rate risk and credit risk variable and claimed the effect is positive. The positive effect is supported by Garza-Garcia (2010), interest rate risk increases the credit risk which in turn rises the net interest margin. while Angori et al. (2019) and Maudos and Solís (2009) found a negative effect of the interaction between interest rate risk and credit risk on the net interest margin, the higher volatility of the money market, the higher default risk exposure, which lowers the interest margins. Banks lower the spread during higher interest rate volatility in absence of adequate provision for loan losses.Moreover, Poghosyan (2010) claimed that banks are not pricing the risk in an appropriate manner since credit risk is amplified by market risk and vice versa. Other scholars found no effect (Angbazo, 1997; Cruz-García & Fernández de Guevara, 2020;

Hawtrey & Liang, 2008; Liebeg & Schwaiger, 2006; Rahman et al., 2023; Williams, 2007). The hypothesis:

H9: there is a negative association between the interaction between interest rate risk and credit risk and net interest margin.

2.3.11 Islamic Banks

An Islamic bank means a bank providing services that are corresponding to Islamic legislation (Shariah rules). Shawtari et al. (2019) believed that Islamic banks are having lower margins for many reasons in Yemen. Murabaha is dominated to other Islamic contracts, the financing is based on personal relationships, and Yemenis culture is based on the Islamic religion that favors Islamic financing over commercial financing.All that leading Islamic banks to hold more market share and exhibit economies of scale that reduce the cost of operations and the margins. Shawtari et al. (2019)confirmed the negative relation between Islamic banks and net interest margins. In bad economic condition such as inflation or when the investment does not pay off a good return, Islamic banks share part of their profit with the depositors, which lead to lower margin. However, Ibrahim and Law (2019)claimed that Islamic banks operations are facing additional risks than commercial banks such as displacement risk to commercial bank, Islamic banks have additional governance structure to monitor the complianceof operations to Islamic principles, and the contracts are more complex than commercial banks. Islamic banks include all these differences in the margins leading to higher margins. In Palestine, Asmar (2018)found no difference between commercial and Islamic banks. Asmar (2018) attributed the finding to the small percentage of Islamic banks in Palestine. In developing the hypothesis, the thesis based on the claim of Ibrahim and Law (2019)which is Islamic banks face additional risks are not included in the dealership model and Islamic bank will ask for the compensates. So the hypothesis:

H10: the level of NIM for Islamic bank is higher than conventional banks.

2.3.12 Control of Corruption

The index is used to show the extent of using public power for private interest. The index covers all forms of corruption from petty to superior and extends to government capture by elites and private interests (Poghosyan, 2013). Poghosyan (2013)confirmed his hypothesis of a lower margin associated with higher control of corruption for both

groups understudying since countries with convenient institutional environments for business activity operate with lower margins. However Malim et al. (2017) concluded no relationship between control of corruption and the net interest margin. Better institutional conditions lower the margins, so the hypothesis:

H11: there is a negative association between control of corruption and net interest margin

2.3.13 Rule of Law

The index captures to what extent agents have confidence and obey the rules of society. The index covers areas of contract enforcement, courts, police, etc. (Poghosyan, 2013). Poghosyan (2013)supported the negative effect since a good governance environment leads to a lower margin for low-income and emerging countries. Moreover, Rahman et al. (2023) found that sound institutional quality induces the banking system to operate in competitive and efficient environments. While Malim et al. (2017) found no effect. Therefore, the hypothesis is as follows:

H12: there is a negative association between rule of law and net interest margin.

2.3.14 Regulatory Quality

The index is used to measure the government's ability to construct sound public policies and regulations with the ability to enforce them. The regulation is extended to all the areas of the economy with the banking system included in order to develop the private sector (Poghosyan, 2013). Poghosyan (2013)confirmed the negative sign for the low-income country only while Malim et al. (2017)concluded that regulatory quality is negatively affects the net interest margin when using system generalized method of moments only. The hypothesis:

H13: there is a negative association between regulatory quality and net interest margin.

2.3.15 Islamic Versus Conventional

Islamic banks products differ from conventional counterparties since Islamic banks products must be following sharia principles. Islamic finance suggest contract that based on the equity participation and risk sharing. Islamic bank product is cost plus sale (Murabaha), credit sale (Bay ‘‘bi-thaman ajil’’), partnership contract (Musharaka and

Modaraba), forward (Salam and Istisna), and benevolent loan (Qard-e-Hasna) (Siddiqi, 2006). A review of the islamic financal contract as mentioned by Siddiqi (2006):

1. Murabaha (cost plus sales): an Islamic contract in which the bank buys a desired consumer durables or real estate for the client after a client's pre-contract promises to repurchase it from the banks at cost of purchase plus a predetermined profit.
2. Bay ‘‘bi-thaman ajil’’: the same as Murabaha but with deferred payment.
3. Musharaka: the debtor participates with the bank in financing a project using his own equity, the profit is a pre-determined ratio, and the losses depend on his shares of the capital. Used to finance trade, importing, issuing letter and in agriculture and industry.
4. Modaraba: the bank finance the whole project and hold the whole risk unless the loss were debtor mismanagement or neglect of the customer.
5. Salam: a sale with delivery is deferred; the bank pays for the seller now with the obligation of the seller to deliver a specific determined commodity on the due date. The bank sells the commodity to the client for a price higher than paid for the seller in cash or deferred price. Mostly used to meet the capital requirement and cost of operation for farmer or contractor etc.
6. Ijara: the bank leases vehicles, equipment, etc. to a customer. The bank signs a contract with the seller to deliver the client the desired commodity. Also, the bank signs a lease contract with the client allowing to transfer of the ownership of the commodity after paying the installment and residual charges. Mostly used for transaction of real estate, car, computers, etc.
7. Qard-e-Hasna: the bank provides facilities for needy students or rural farmers at a limited scale those loans with a negative net present value.

The conventional banks have no investment-specific risk in granting loans. Only the credit risk while market risk and interest risk are included in the loan prices. For default risk the conventional banks may garnish the wages of the earner or have the first right of the assets as collateral while Islamic banks become the owner when the debtor borrows money (as collateral) until the principle and the associated profits are outstanding (Siddiqi, 2006). Islamic bank pays rate of return that is depending on the profit while both the principal and profit are at risk if the bank suffers from a loss (Siddiqi, 2006).

Islamic banks face credit risk in Murabaha and Musharaka. The credit risk is the risk of non-repayment of the debtor. Credit risk arises from the information asymmetry problem since the debtor has inside information that is not accessible to banks. Murabaha risk arises from the non-performing of the project or the systematic forces (Siddiqi, 2006). Islamic banks face credit and liquidity that depend on the institutional arrangement issue (the existence of Islamic money market and center bank to set capital and liquidity requirements). For equity participation in Islamic banks are less facing moral hazard and adverse selection since joint venture and equity financing disclose company's books value and investment (Siddiqi, 2006).

It is important to study the differences between Islamic and conventional banking margins since the efficiency of the intermediation function depends on both banking models.

Lee and Isa (2017)studied the size of operation on net interest margin in Malaysia, a negative effect is discovered in the baseline regression. However, when the authors separated the sample to Islamic and conventional banks, it declared that only conventional banks margins are effecting by the size of operation with a negative effect. The hypothesis:

H14: Islamic banks moderate the relationship between size of operation and net interest margin.

For risk aversion, Malim et al. (2017)studied the risk aversion effect on the net interest margin in the Islamic bank in the OIC countries and concluded a positive effect confirming the more risk averse the Islamic banks are, the higher the margin. Bougatef and Korbi (2018)concluded that both Islamic and conventional banks are affected positively by risk aversion. Risk-averse banks ask for higher margins and well-capitalized banks pay a lower deposit rate for depositors since the exposure to insolvency risk is lower. However, Lee and Isa (2017)claimed only commercial banks are effecting by risk aversion in Malaysia. The hypothesis:

H15: Islamic banks moderate the relationship between risk aversion and net interest margin.

For credit risk, Lee and Isa (2017) claimed that Islamic banks are more sensitive to credit risk than commercial banks in Malaysia. However, Ibrahim and Law (2019) found that credit risk is not a determinant of the interest margin in Islamic banks in the OIC countries. In Yemen, Shawtari et al. (2019) tested the moderating role of Islamic banks and found that the interaction of credit risk with the dummy variable that represents the Islamic banks was insignificant. The hypothesis to be investigated:

H16: Islamic banks moderate the relationship between credit risk and net interest margin.

For liquidity risk, Lee and Isa (2017)concluded that neither Islamic nor commercial banks are effecting by liquidity risk. Shawtari et al. (2019)tested the moderating role of the liquidity risk on the bank margin in Yemeni banks and found a negative but insignificant effect. The hypothesis:

H17: Islamic banks moderate the relationship between liquidity risk and net interest margin

Finally, the specialization in lending. Bougatef and Korbi (2018) found conflicting results of the effect of specialization in lending on the net interest margin according to the bank type with a negative effect for commercial banks and no effect for Islamic banks. Bougatef and Korbi (2018) explained their result for commercial banks by banks that specialize in lending are able to determine the real assets quality of customers and reduce intermediation costs. However, the Islamic banks margin insignificant results are due to the fewer investment opportunity since they have to follow the sharia principles. Sun et al. (2017)found no effect of the specialization in lending on the net interest margin for Islamic and conventional banks. The hypothesis:

H18: Islamic banks moderate the relationship between specialization in lending and net interest margin.

Table 1 present the variable used with their expected sign and the rationality based in the previous studies.

Table 1

The explanatory variables, the expected sign, and its justification

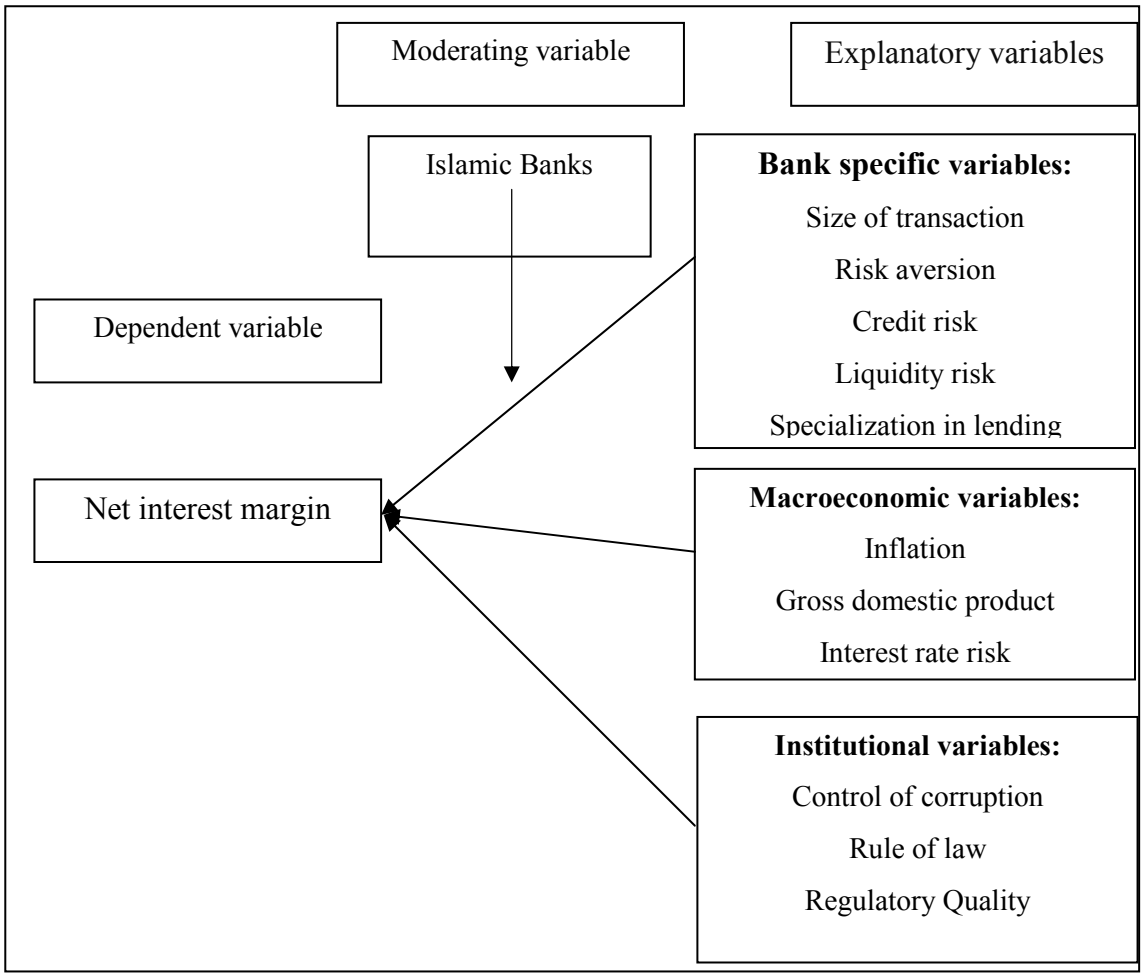
Variable	Expected sign	Rational relation
Size of operations	-	Large bank with large operation shows economic of scale which reduce the margins
Risk aversion	+	Banks that hold more equity are more risk-averse and hold more risk, so banks work on higher margins.
Credit risk	+	Banks ask for compensation for the higher credit risk
Liquidity risk	+	Banks with higher liquidity risk are gaining liquidity risk premiums.
Specialization in lending	-	Banks specializing in lending able to distinguish creditworthy customers and grant lower margin
Inflation	+	Inflation is risk that lead to price uncertainty, so bank ask for higher margin
GDP growth	-	In good economic growth, banks operate at a lower margin since banks increasing their market share by lowering the loan rate.
Interest rate risk	+	The volatility of interest rate create more risky environment and banks will ask for higher margins.
Interaction between interest rate risk credit risk	-	During higher interest rate volatility times, having insufficient provision for loan loss lowers the margin (Angori et al., 2019)
Islamic banks	+	Islamic banks face unique risks coming from the unique business model.
Control of corruption	-	Better governance context work with lower margin.
Rule of law	-	Better governance context work with lower margin.
Regulatory quality	-	Better governance context work with lower margin.
Islamic banks * Size of Operations	+/-	The relation to be investigated
Islamic banks * Risk Aversion	+/-	The relation to be investigated
Islamic banks * Credit Risk	+/-	The relation to be investigated
Islamic banks * Liquidity Risk	+/-	The relation to be investigated
Islamic banks * Specialization In Lending	+/-	The relation to be investigated

2.4 The Conceptual Framework.

Figure 1 shows model used in the thesis.

Figure 1

Conceptual model



Chapter Three

Methodology

This chapter describes the methods of the study. The chapter reviews the description of the data (duration, sample, and source). Then presents the model used in the thesis, then reviews estimation methods, and finally shows the measure of the variables with presents the empirical reference.

3.1 Data Description

The thesis is explanatory with quantitative data. The data are secondary data extracted from the balance sheet and income statement that is derived from Bankscope except for Islamic banks which is gathered through banks' websites. The macroeconomic and institutional variables are gathered from the World Development Indicators database of World Bank. Interest rate risks are gathered from International Monetary Fund with exception of the United Arab Emirates that have been acquired from their central bank website. There is a missing data for calculating the interest rate risk in Syria. The sample consists of an unbalanced dataset for than 511 banks in 20 MENA region countries for the period of 2006 - 2018. The number of years used in the thesis consistent with Maudos and Solís (2009). Appendix A provides a summary of the numbers of banks taken in the sample by country and type (Islamic or conventional)

3.2 Models

The econometrics model is based on Ho and Saunders (1981) model and following extensions. Latter studies used an augmented dealership model that gathers the theoretical bank-specific variables with country-specific variables to overcome the cross countries environments differences (macroeconomic, institutional, and regulatory) that are negligence by the theoretical model (Poghosyan, 2013). The thesis sort the independent variable to bank-specific, macroeconomic and institutional variables. Based on Maudos and De Guevara (2004), Poghosyan (2013), and Valverde and Fernández (2007), the model to be estimated in the thesis:

$$Netinterestmargin = \beta 0 + \beta 1\, sizeofoperation + \beta 2\, riskaversion + \beta 3\, creditrisk + \beta 4\, liquidityrisk + \beta 5\, Specializationinlending + \beta 6\, inflation + \beta 7\, GDPgrowth + \beta 8\, interestraterisk +$$

$$\beta 9\ the\ interactionbetweeninterestrateriskandcreditrisk +$$
$$\beta 10\ \text{Islamic banks} + \beta 11\ controlofcorruption\ + \beta 12\ ruleoflaw +$$
$$\beta 13\ regulatoryquality +$$
$$timeandcountriesdummies + \varepsilon \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (7)$$

The second model, a **moderatingvariable,** Islamic banks, is used. The following model will be used:

$$Netinterestmargin = \beta 0 + \beta 1\ sizeofoperation + \beta 2\ riskaversion +$$
$$\beta 3\ creditrisk + \beta 4\ liquidityrisk + \beta 5\ Specializationinlending +$$
$$\beta 6\ inflation\ + \beta 7\ GDPgrowth + \beta 8\ interestraterisk +$$
$$\beta 9\ the\ interactionbetweeninterestrateriskandcreditrisk +$$
$$\beta 10\ Islamic\ banks + \beta 11\ controlofcorruption\ + \beta 12\ ruleoflaw +$$
$$\beta 13\ regulatoryquality + \beta 14\ sizeofoperation * \text{Islamic banks} +$$
$$\beta 15\ riskaversion * \text{Islamic banks} + \beta 16\ creditrisk * \text{Islamic banks} +$$
$$\beta 17\ liquidityrisk * \text{Islamic banks} + \beta 18\ specializationonlending *$$
$$\text{Islamic banks} + timeandcountriesdummies + \varepsilon \ldots\ldots\ldots\ldots\ldots\ldots (8)$$

The thesis follows the literature of Angbazo (1997)and Maudos and De Guevara (2004)using the single-stage approach to investigate the relation between the variables. In the single stage, the explanatory variables enter the same equation. The two-stage that conducted by Ho and Saunders (1981), Saunders and Schumacher (2000)and other authors have the drawback of requiring a long time series and cross-section to generate the pure spread and guarantee the precision of the estimation Williams (2007).

3.3 Estimation Methods

In order to analyze the data STATA is used. The previous studies used panel data regression to test the data. The literature usually used pooled ordinary least square, fixed effect, random effect, generalized least squares, and generalized method of moments. In Panel data, the time and cross section are gathered in one dataset allowing us to observe the unit over time (Porter & Gujarati, 2009). The data used is unbalanced wide panel.

To analyze the data three panel data estimation are used that are pooled ordinary least squares, fixed effect models, and random effect models. According to Porter and Gujarati (2009): First, pooled ordinary least squares; the model neglected the

heterogeneity of the cross-section so the coefficients are the same for all cross-sections. Second, the fixed effect model, the model assumes coefficients are changing between units but are time-invariant and uses dummies to consider the heterogeneity between cross-sections. Third: Random effect model, assumes the sample are drawing of large universe and intercept represent the mean value and the differences of the intercepts are included in the error terms. Hausman test is used to choose between fixed effect and random effect model.

To overcome the heteroscedasticity and autocorrelation problems the robust standard error is used. Moreover, the study uses a large number of observations, which ignores the normality problems. Furthermore, the panel data is short with units are greater than time (N>T) so the unit root is not affecting the estimation.

According to Cruz-García and Fernández de Guevara (2020), the model consider only the new operations of loans and deposits while net interest margin include the revenue and expenses generated from all loans and deposit outstanding for the current and previous years. The proxy include inertia that may suggest a bias in estimations. To overcome this inertia, it must be added that the lagged value of the net interest margin. So to account for endogeneity, the method of generalized method of moment will be used. Following Valverde and Fernández (2007), Maudos and Solís (2009), Trinugroho et al. (2014), Cruz-García and Fernández de Guevara (2020), and other literatures.

3.4 Variable Measurement

In this thesis, four types of variable are used:

Dependent variable: net interest margin for commercial banks and equivalent variable for Islamic banks.

The explanatory variables: they are mentioned in the literature to have impact in the net interest margin that are bank specific, macroeconomic, institutional variables:

Bank Specific Variables

1. The size of the operation defines the natural logarithm of total assets. Following Angori et al. (2019). Large operation exposed to greater losses at the same level of credit and market risk so bank ask for higher margins.

2. Risk aversion is captured by the equity to assets ratio. Following literature (Angori et al., 2019; Asmar, 2018; Poghosyan, 2013; Suu et al., 2020). The higher the ratio the higher the risk aversion.McShane and Sharpe (1985)argue that capitalization ratio is not satisfying proxy for risk aversion and using must interpret with caution. Since its effecting by accounting conventions, the risk of capital holding changes regarding the target market, and the capital ratio is effected by minimum capital regulation.
3. Credit risk define as non-performing loans ratio as used by Fungáčová and Poghosyan (2011), Khan and Jalil (2020), and Rahman et al. (2023). A more suitable measure for credit risk, other literature used loss provision to loan, however Schwaiger and Liebeg (2008) criticize it as a misleading measure of credit risk since its influences by other factors than credit risk such as earning management. The higher the ratio, the higher the credit risk.
4. Liquidity risk: capture the risk of not having funds to meet the customers' demands. The liquidity risk is measure by total loan to total deposits as used by Trinugroho et al. (2014). The higher the ratio, the higher the risk and the higher the risk premium asked. Usually literature used inverse ratio of liquidity that is the liquid assets to total liabilities (Angbazo, 1997; Drakos, 2002).
5. Specialization in lending: shows the specialization of banks in the traditional activity of providing loans since nowadays banks are expanding their operations for non-traditional activity as trading, fees and commissions. It measures by total loan to total assets as used by Valverde and Fernández (2007). The higher the ratio the higher the specialization in loan granting and the lower the margins.

Macroeconomic Variables

1. Inflation measure by annual inflation of the GDP defaulter as used by Demirgüç-Kunt and Huizinga (1999). The higher the rate, the higher the inflation, and the higher the net interest margins.
2. Gross domestic product: capture the annual real growth of the gross domestic product. The higher the rate, the higher the GDP growth, and the lower the net interest margin. Following Kasman et al. (2010), Kumari (2014) and other literature.
3. Interest risk volatility capture the annual standard deviation of monthly interbank rate. Following Angori et al. (2019). When the interbank money market is not

available the treasury bill rate is replaced as done by Poghosyan (2010). The higher the ratio, the higher the volatility of interest, and the higher the margins.

Institutional Variables

1. Control of corruption: The index value range from -2.5 to 2.5. The higher the index value means higher control of corruption and the lower the margins (Poghosyan, 2013). The measure used by Malim et al. (2017)and Poghosyan (2013).
2. Rule of law: the index value range from -2.5 to 2.5. Higher variable values the higher the rule of law and the lower the margin (Poghosyan, 2013). The use of the measure follows the literature (Malim et al., 2017; Poghosyan, 2013; Rahman et al., 2023)
3. Regulatory Quality: the index value are between -2.5 and 2.5. The higher the index value the higher regulatory quality and the lower the margins (Poghosyan, 2013). Following literature (Malim et al., 2017; Poghosyan, 2013) using the index as proxy for regulatory quality.

The Moderator Variable: Islamic banks. Dummy variable take a value of one if the bank is Islamic and zero otherwise. Following Asmar (2018), Ibrahim and Law (2019), and Shawtari et al. (2019).

Control Variable: Time and country dummies is used in order to control for changes in legislation, tax structure, and accounting standards across the countries and over time (Agoraki & Kouretas, 2019).

Table 2 present the measure of the variables used in the thesis and references the empirical studies that used the same measure.

Table 2

The measure of the variables and the empirical references

Variable	Measure	Empirical Reference
Net interest margin	(Interest income- interest expenses) to Total assets) Equivalent items will be used for Islamic banks	Aboagye et al. (2008), Almarzoqi and Naceur (2015), Angori et al. (2019), Asmar (2018), Entrop et al. (2015), Fungáčová and Poghosyan (2011), Islam and Nishiyama (2016), Khan and Jalil (2020), Lee and Isa (2017), Liebeg and Schwaiger (2006), Poghosyan (2010), and Schwaiger and Liebeg (2008).
Size of operation	Ln(total assets)	Angori et al. (2019)
Risk aversion	Total equity to total assets	Angori et al. (2019), Asmar (2018), Malim et al. (2017), Maudos and De Guevara (2004), and (Poghosyan, 2010, 2013)
Credit risk	Non-performing loan to total loan	Fungáčová and Poghosyan (2011), Khan and Jalil (2020), and Rahman et al. (2023).
Liquidity risk	Total loan to total deposit ratio	Trinugroho et al. (2014)
Specialization in lending	Total loan to total assets	Valverde and Fernández (2007)
Islamic banks	Dummy variable, take value of one if the banks is Islamic and zero otherwise	Asmar (2018), Ibrahim and Law (2019), and Shawtari et al. (2019).
Inflation	The annual inflation of GDP defaulter	Demirgüç-Kunt and Huizinga (1999)
GDP growth	Real GDP growth rate	Claeys and Vander Vennet (2008), Entrop et al. (2015), Kasman et al. (2010), Kumari (2014), (Poghosyan, 2010, 2013), Schwaiger and Liebeg (2008), Suu et al. (2020), and Tarus et al. (2012)
Interest rate risk	Annual standard deviationof monthly money market rates	Garza-Garcia (2010) and Poghosyan (2010)
Control of corruption	Complied by Kaufmann, Kraay, and Mastruzzi (2010)	Malim et al. (2017) and Poghosyan (2013)
Rule of law	Complied by Kaufmann et al. (2010)	Malim et al. (2017), Poghosyan (2013), and Rahman et al. (2023)
Regulatory quality	Complied by Kaufmann et al. (2010)	Malim et al. (2017) and Poghosyan (2013)

Chapter Four

Result and Discussions

This chapter presents the analysis of the thesis. It starts with descriptive statistics, then correlation matrix between the variables, then regression estimations using pooled models, fixed effect models, and the generalized method of moments with discussions on the findings.

4.1 Descriptive Statistics

Table 3 shows the descriptive statistics of the variables used in the thesis. The table presents the number of observation for each variable, the mean, the standard deviation, the minimum and the maximum values for the whole sample.

Table 3

Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
NIM	3560	.022	.026	-.15	.307
Size of Operations	3725	21.325	2.212	13.422	27.339
Risk Aversion	3716	.262	.263	-.684	1
Credit Risk	2459	.111	.171	0	1.525
Liquidity Risk	2680	2.357	20.047	0	893.226
Specialization in lending	3453	.497	.313	0	4.519
Inflation	3725	.048	.11	-.302	.465
GDP growth	3725	.03	.049	-.28	.325
interest rate risk	2932	.004	.005	0	.03
Control of corruption	3725	-.149	.743	-1.681	1.559
Rule of Law	3725	-.119	.765	-2.09	1.339
Regulatory Quality	3725	-.106	.767	-2.218	1.335
Islamic banks	3725	.23	.421	0	1

Table 3, the annual net interest margin for the thesis period is 2.2%, with a minimum value of -15% with a maximum value of 30.7%, and a standard deviation of 2.6%. The mean value is lower than reported in one-country studies conducted on the MENA countries by Asmar (2018) who found that the annual net interest margin is his sample 3.3% for the period of 2006-2016 in Palestine and Shawtari et al. (2019) who found net interest margin is 3.5% in Yemen for the period of 1996-2011.

For risk aversion, its average in the Middle East and North Africa during the sample is 26.2%, which is closer to the findings of Asmar (2018) that found the risk aversion was 21.5% in Palestine. Moreover, Credit risk which is measured by non-performing loans

is with a mean value of 11.1%. The percentage of non-performing loans is higher than reported by Shawtari et al. (2019) who found the credit risk using the non-performing loan ratio is 21% in Yemen. While annual liquidity risk for a bank during the sample period is 235.7%. This mean that there is a higher liquidity risk in the MENA countries.

For macroeconomic variables, inflation in average is 4.8% and the annual GDP growth is 3%. Finally, interest rate risk or volatility of interest is 0.4% with standard deviation of 0.05% and ranges between 0 to 3%.

For the institutional variables, the mean values of control of corruption, rule of law, and regulatory quality are -1.49, -.119, and -.106 respectively. The mean values are less than the mean found in Poghosyan (2013) for the low-income and emerging county for the period of 1996-2016. In addition, the mean value is less than Malim et al. (2017) for the period of 2005-2011 for 18 OIC countries.

The number of observations vary across variables; net interest margin is 3560, while size of operations, inflation, GDP growth, control of corruption, rule of law, regulatory quality, and Islamic banks is 3725. While risk aversion 3716, credit risk 2459, specialization in lending 3453, liquidity risk 2680 and interest rate risk 2932.

4.2 Correlation Analysis

Table 4 shows the correlation between dependent variable and independent variables used in the investigation. Table 4 suggests that the institutional variables exhibit a higher correlation with more than 80% correlation between explanatory variables. According to Porter and Gujarati (2009), a higher zero correlation between two regressors is a sufficient way to the existence of multicollinearity. The Variance Inflation Factor (VIF) test shows a value greater than 10 so there is a multicollinearity problem. To overcome this problem, the institutional variables will not present in the same regression. The separation of institutional variables in each regression is consistent with the studies of Poghosyan (2013) and Malim et al. (2017). The result of the VIF is included in appendix B. Apart from the institutional variables, the higher correlation between the explanatory variables is less than 80% with a higher 62.3% between risk aversion and the size of operations. Table 4 shows a negative correlation between risk aversion, credit risk, inflation, interest rate risk, and the net interest margin whereas the size of operations, liquidity risk, specialization in lending, GDP growth, and institutional variables are positively correlated the net interest margin.

Table 4

Correlation matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) NIM	1.000											
(2) Size of Operations	0.045	1.000										
(3) Risk Aversion	-0.013	-0.623	1.000									
(4) Credit Risk	-0.130	-0.400	0.325	1.000								
(5) Liquidity Risk	0.057	-0.170	0.043	-0.009	1.000							
(6) Specialization in Lending	0.352	0.127	-0.175	-0.345	0.164	1.000						
(7) Inflation	-0.046	-0.036	-0.108	0.196	-0.016	-0.098	1.000					
(8) GDP growth	0.009	0.040	0.043	-0.290	-0.006	0.047	-0.230	1.000				
(9) Interest rate risk	-0.032	-0.128	0.018	0.021	-0.015	-0.132	0.283	0.205	1.000			
(10) Control of Corruption	0.112	0.232	-0.085	-0.322	0.025	0.330	-0.229	0.218	-0.281	1.000		
(11) Rule of Law	0.069	0.205	-0.074	-0.336	0.030	0.300	-0.234	0.186	-0.343	0.927	1.000	
(12) Regulatory Quality	0.086	0.176	-0.019	-0.328	-0.001	0.233	-0.329	0.240	-0.399	0.869	0.905	1.000

4.3 Regression Estimation

4.3.1 Pooled Models

Table 5 presents the result of the pooled model regressions. For a better understanding of the impact of the explanatory variables on the net interest margin, several models are tested. The first column in table 5 is conducted without controlling for institutional variables. Then in columns 2, 3 and 4 the institutional variables (control of corruption, rule of law, and regulatory quality respectively) are presented. Taking control of the time is considered by using the time dummies in columns 5, 6 and 7 repeating the models of 2, 3, and 4 with the inclusion of the time dummies. The country dummies are dropped form the regression due to multicollinearity problem. The separation of the institutional variables is done because the VIF test suggests a multicollinearity problem. The result of the VIF test is presented in the appendix B. Finally, the columns 8 testing the effect of the interaction between the interest rate risk and the credit risk on the net interest margin.

Table 5

Pooled models

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	**NIM**	**NIM**	**NIM**	**NIM**	**NIM**	**NIM**	**NIM**	**NIM**
Sizeof Operations	-0.00117***	-0.00132***	-0.00112***	-0.00122***	-0.00119***	-0.00103***	-0.00115***	-0.00117***
	(0.000136)	(0.000167)	(0.000173)	(0.000190)	(0.000160)	(0.000169)	(0.000183)	(0.000132)
Risk Aversion	0.0211***	0.0191***	0.0216***	0.0207***	0.0199***	0.0220***	0.0211***	0.0212***
	(0.00601)	(0.00549)	(0.00585)	(0.00566)	(0.00530)	(0.00574)	(0.00549)	(0.00619)
Credit Risk	0.00139	0.00188	0.00117	0.00175	0.00239	0.00190	0.00278	0.00103
	(0.00590)	(0.00605)	(0.00612)	(0.00627)	(0.00614)	(0.00618)	(0.00632)	(0.00919)
Liquidity Risk	-6.78e-05***	-6.66e-05***	-6.79e-05***	-6.59e-05***	-6.77e-05***	-6.91e-05***	-6.49e-05***	-6.78e-05***
	(2.07e-05)	(2.00e-05)	(2.07e-05)	(1.93e-05)	(2.01e-05)	(2.07e-05)	(1.92e-05)	(2.06e-05)
Specialization in lending	0.0189***	0.0177***	0.0192***	0.0186***	0.0178***	0.0191***	0.0184***	0.0189***
	(0.00389)	(0.00371)	(0.00377)	(0.00364)	(0.00371)	(0.00379)	(0.00362)	(0.00396)
Inflation	0.0110	0.0124*	0.0107	0.0119*	0.0188**	0.0164**	0.0202**	0.0110
	(0.00685)	(0.00644)	(0.00654)	(0.00642)	(0.00688)	(0.00674)	(0.00661)	(0.00683)
GDP growth	0.00248	-0.00314	0.00372	0.000154	0.0158	0.0223	0.0176	0.00242
	(0.0109)	(0.0115)	(0.0122)	(0.0130)	(0.0160)	(0.0162)	(0.0163)	(0.0108)
Interest rate risk	0.584***	0.602***	0.577***	0.607***	0.665***	0.645***	0.696***	0.576***
	(0.107)	(0.109)	(0.103)	(0.113)	(0.110)	(0.107)	(0.105)	(0.141)
Control of Corruption		0.00130*			0.00140*			
		(0.000701)			(0.000714)			
Islamic banks	-0.000224	-0.000326	-0.000217	-0.000169	-0.000383	-0.000267	-0.000151	-0.000228
	(0.00161)	(0.00164)	(0.00162)	(0.00158)	(0.00171)	(0.00168)	(0.00163)	(0.00163)
Rule of Law			-0.000390			-3.44e-05		
			(0.000722)			(0.000750)		
Regulatory Quality				0.000611			0.00143	
				(0.00102)			(0.00103)	
Interest rate risk*credit risk								0.0896
								(1.384)
Constant	0.0371***	0.0415***	0.0359***	0.0384***	0.0353***	0.0310***	0.0333***	0.0371***
	(0.00382)	(0.00415)	(0.00441)	(0.00423)	(0.00468)	(0.00514)	(0.00467)	(0.00387)
Time dummies	NO	NO	NO	NO	YES	YES	YES	NO
Observations	1,717	1,717	1,717	1,717	1,717	1,717	1,717	1,717
R-squared	0.098	0.099	0.098	0.098	0.112	0.111	0.112	0.098

Note: Robust standard errors in parentheses, * is indication to the significant level, ***significant at 1%, ** significant at 5%, and * significant at 10%.

4.3.2 Fixed Effect Models

Table 6 represents the fixed effect models. The first column excludes the institutional variables. In columns 2, 3, and 4, the institutional variables (control of corruption, rule of law, and regulatory quality respectively) are presented in the models. In columns 5, 6, and 7, the regressions take into consideration the dummies of time. Column 8 adds the interaction between interest rate risk and credit risk. In addition, the table shows the result of the Hausmen test. Since the chi-square is significant for all models except column 6, so the fixed effect model allows for obtaining results that are more reliable (random effect results are presented in Appendix C). The table is followed by a discussion based on the fixed effect model results in comparison with pooled models. The R squared represents the fitness of the regression equation in explaining the total variation of the explanatory variables on the dependent variable (Porter & Gujarati, 2009). The R Squared varies across models, for the fixed effect model, model 7 has the highest value at 6%. Followed by model 8 with 5.5%. Comparing model 1 with model 8, which differs only by the interaction between interest rate risk with credit risk variable. It shows an increase of the R-squared by 3.2% highlighting the importance of the variable to include in the model, while the coefficient value is statisticallyimportant with a 1% increase in the interaction variable leading to reduce the NIM by 1.089%.

Table 6

Fixed effect models

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	**NIM**	**NIM**	**NIM**	**NIM**	**NIM**	**NIM**	**NIM**	**NIM**
Sizeof Operations	-0.00178	-0.00179	-0.00169	-0.00169	-0.00464***	-0.00447***	-0.00378**	-0.00441**
	(0.00148)	(0.00149)	(0.00148)	(0.00146)	(0.00172)	(0.00170)	(0.00159)	(0.00171)
Risk Aversion	0.00969	0.00917	0.00988	0.0111	0.00277	0.00377	0.00582	0.00411
	(0.0218)	(0.0220)	(0.0217)	(0.0212)	(0.0212)	(0.0208)	(0.0202)	(0.0209)
Credit Risk	-0.0155*	-0.0154*	-0.0156*	-0.0132	-0.0136*	-0.0136*	-0.0127*	-0.00888
	(0.00862)	(0.00859)	(0.00862)	(0.00806)	(0.00746)	(0.00739)	(0.00712)	(0.00737)
Liquidity Risk	-2.62e-05	-2.62e-05	-2.46e-05	-2.97e-05	-3.58e-05	-3.36e-05	-3.54e-05	-3.39e-05
	(3.80e-05)	(3.78e-05)	(3.79e-05)	(4.09e-05)	(4.17e-05)	(4.17e-05)	(4.27e-05)	(4.19e-05)
Specialization in lending	0.00338	0.00359	0.00334	0.00349	0.00329	0.00304	0.00319	0.00330
	(0.00502)	(0.00508)	(0.00500)	(0.00480)	(0.00451)	(0.00438)	(0.00443)	(0.00446)
Inflation	0.00334	0.00338	0.00369	0.00200	0.00604*	0.00716**	0.00428	0.00560*
	(0.00267)	(0.00264)	(0.00267)	(0.00276)	(0.00318)	(0.00299)	(0.00328)	(0.00300)
GDP growth	0.00630	0.00579	0.00678	0.00798	0.0132*	0.0150**	0.0135*	0.0140**
	(0.00610)	(0.00584)	(0.00619)	(0.00614)	(0.00698)	(0.00745)	(0.00706)	(0.00700)
Interest rate risk	-0.0311	-0.0364	-0.0237	-0.0385	0.00320	0.0170	-0.00139	0.113
	(0.0597)	(0.0578)	(0.0601)	(0.0603)	(0.0737)	(0.0723)	(0.0754)	(0.103)
Control of Corruption		0.00162			0.00143			
		(0.00176)			(0.00158)			
Rule of Law			-0.00152			-0.00265		
			(0.00179)			(0.00199)		
Regulatory Quality				-0.00643***			-0.00508***	
				(0.00164)			(0.00162)	
Interest rate risk* credit risk								-1.089*
								(0.620)
Constant	0.0644*	0.0644*	0.0626*	0.0628*	0.126***	0.122***	0.108***	0.120***
	(0.0345)	(0.0346)	(0.0344)	(0.0340)	(0.0388)	(0.0384)	(0.0360)	(0.0386)
Time dummies	NO	NO	NO	NO	YES	YES	YES	NO
Hausmen test	27.54***	27.60***	27.31**	30.21***	38.56**	24.05	33.14**	39.74***
R-squared	0.023	0.024	0.024	0.040	0.052	0.053	0.061	0.055

Note: robust standard errors in parentheses, * shows the significant level, *** at 1%, ** at 5%, and * at 10%.

Size of the operation is found to be negative in all estimations of the pooled model. However, in the fixed effect models was only significant when the dummies are included. The findings support the first hypothesis, there is a negative significant effect. The interpretation is that large banks are able to distribute their operations to different agents granting a lower margin (Almarzoqi & Naceur, 2015), the result was obtained by the authors in Azerbaijan and Uzbekistan. The findings support the literature (Fungáčová & Poghosyan, 2011; Khan & Jalil, 2020; Maudos & De Guevara, 2004). Large banks exhibit economies of scale.

In the robustness check, Fungáčová and Poghosyan (2011) reported inconsistent results in the effect of the size of the operation on the net interest margin according to the bank ownership structures in Russia. Foreign banks declared a positive effect since the large size is connected to market share in the Russian context. While private domestic banks recorded a negative effect so the presence of economies of scale is more important than the loss per unit of operation in setting the price. Finally, state banks findings were irrelevant.

The negative effect of the size of the operation is consistent with Zhou and Wong (2008), large banks grow using aggressive growth policies to lower the impaired loan ratio or the concern of the management is to increase the loan sales ignoring the adjustment of risk. In addition, the findings are line with Lee and Isa (2017), large banks can use sophisticated technology and economies of scale to reduce their net interest margin. The results are consistent with Poghosyan (2013) in emerging and low-income countries due to economies of scale. However, their findings in low-income countries were less significant and lost significance in some models when institutional characteristics were presented in the models. The findings contradict with Poghosyan (2010), higher margins are compensation for higher risk per operation for large stake banks. The findings of the current thesis are not in line with Maudos and Solís (2009) who concluded the positive relationships in some models in their investigation in Mexico and Ibrahim and Law (2019) in Malaysia. The findings are not in line with other literature that concluded no effect of the size of the operation on the net interest margin (Angori et al., 2019; Cruz-García & Fernández de Guevara, 2020; Islam & Nishiyama, 2016; Liebeg & Schwaiger, 2006; Schwaiger & Liebeg, 2008).

Risk aversion is positive in the pooled effect. However, it lost significance in all models of the fixed effect. So the second hypothesis is not supported. The findings of the fixed effect models are consistent with the literature (Almarzoqi & Naceur, 2015; Cruz-García & Fernández de Guevara, 2020; Endri et al., 2021). The findings disagree with literature that found a positive effect (Asmar, 2018; Entrop et al., 2015; Fungáčová & Poghosyan, 2011; Khanh & Tra, 2015; Poghosyan, 2010; Williams, 2007). Banks with higher risk aversion ask for higher margins. The findings consistent with Aboagye et al. (2008) and Kumari (2014) who claimed that the return expectation of the shareholder might encourage banks to increase the interest margin. The findings of the current thesis conflict with the findings of Lee and Isa (2017), equity is a costly source of financing which lead banks to work at a higher margin to increase their profitability. The findings disagreed with Khan and Jalil (2020), Banks benefit from solvency regulation to induce net interest margin. The findings are inconsistent with Islam and Nishiyama (2016)solvent banks work at higher margins. The findings conflicting the results of Al-Muharrami and Murthy (2017), well-capitalized banks pay lower deposit rates since the need for external financing is less. The findings are inconsistent with Poghosyan (2013) who declared a negative effect of risk aversion on the net interest margin. Risk-averse banks will not accept to finance a profitable project if it includes higher risk. The findings are inconsistent with Zhou and Wong (2008) in China and Suu et al. (2020) in Vietnam.

Credit risk turns out to be significant in most models of the fixed effect models albeit it is at 10% significance level. The results contradict the third hypothesis, there is a relationship but it is negative. The findings are in line with Khan and Jalil (2020), banks do not monitor granting loans properly and focus on market share expansion. The result is consistent with Fungáčová and Poghosyan (2011) and Trinugroho et al. (2014). The higher the non-performing loan ratio, the higher margin since customers are demanding higher deposit rates from banks that hold higher credit risk. The findings are consistent with Williams (2007), banks buy market share through writing off low asset quality that reducing the net interest margin which rising the credit risk. The findings are consistent with Brock and Suarez (2000) in Argentina and Peru, in the absent of adequate loan loss reserve, higher non-performing loans reduce income-generated which reduce the spread in addition lower margins may be seen as a way for banks to grow in their problems. The findings are inconsistent with the findings of Rahman et al. (2023) a positive effect

of non-performing loan ratio on the net interest margin. Banks are passing the cost to their customers in the form of the higher loan rates. The findings contradictother literature that found a positive effect (Asmar, 2018; Claeys & Vander Vennet, 2008; Kasman et al., 2010; Kumari, 2014; Maudos & De Guevara, 2004; Tarus et al., 2012; Valverde & Fernández, 2007). Banks with higher credit risk will impose higher interest margins. Furthermore, the finding conflict with the literature that found no effect (Aboagye et al., 2008; Almarzoqi & Naceur, 2015; Ben Khediri & Ben-Khedhiri, 2011; Cruz-García & Fernández de Guevara, 2020; Ibrahim & Law, 2019; Islam & Nishiyama, 2016; Khanh & Tra, 2015; Liebeg & Schwaiger, 2006; Zhou & Wong, 2008)

Liquidity risk is not significant in the fixed effect models. The results provide no support for the fourth hypothesis. The findings are in line with Lee and Isa (2017), Sun et al. (2017) and Williams (2007). The measure currently used is the loan-to-deposit ratio, which was used by Trinugroho et al. (2014). The choice was dependent on the data availability. The result of the fixed effect is inconsistent with Trinugroho et al. (2014) who declared a positive effect. More liquid banks are having higher opportunity costs. The result of the current investigation disagrees with Angbazo (1997). Banks with higher liquid assets are having lower margins since the loss of liquidity premium. The results contradictthe finding of Drakos (2002), Fungáčová and Poghosyan (2011) and Shawtari et al. (2019). Holding more liquid assets will reduce the net interest margin. Fungáčová and Poghosyan (2011) confirmed the negative sign for the private domestic and foreign banks while state-owned banks were not affected by liquidity risk, due to the state intervention in the case of liquidity problems. The findings are inconsistent with Ahokpossi (2013), who concludes that higher liquidity risk leads to a higher cost of borrowing at emergency needs for funds. The findings are inconsistent with Malim and Normalini (2018). Islamic banks ask for compensation for holding more liquidity risk that arises from their liquidity risk management, which follows the Islamic rules of not using interest-bearing instruments.

The specialization in lending is positive and significant in the pooled models. However, in the fixed effect the result is not significant. The fifth hypothesis is rejected. The findings of the fixed effect models are not in line with Maudos and Solís (2009) who claimed a negative effect since banks specialized in granting loans benefit from economies of scale and the existence of more funds from deposit cross-subsidization

that enable banks to lend at lower loan rates. The findings contradict Bougatef and Korbi (2018) who declare that commercial banks are experienced in distinguishing creditworthy customers and reducing intermediation costs. The results are conflictingwith the findings of Al-Muharrami and Murthy (2017), banks with risker loans are able to generate higher income leading to higher margins. The findings disagree with the findings of Valverde and Fernández (2007), specialized banks have higher efficiency which leads to lower margins.

Inflation is positive and significant in the pooled model and is significant in models 5 and 6 in the fixed effect after the inclusion of time dummies. The sixth hypothesis is supported. The positive relation is in line with the literature (Demirgüç-Kunt & Huizinga, 1999; Drakos, 2002; Kasman et al., 2010). Banks benefit from inflationary environment since the increase in the income side more than the cost side leading to higher margins. The findings are in line with Poghosyan (2010) inflation considers a risk since it leads to price uncertainty leading to higher interest margins. The findings agree with Malim et al. (2017) in the Islamic banking, higher inflation increases the default risk so banks ask for higher margins. The results are consistent with the findings of Tarus et al. (2012), despite unanticipated inflation is not being reflected in the short-interest rate, banks will include the inflation premium in the medium and long-term interest resulting an increase in the net interest margin. Moreover, the findings are consistent with Agoraki and Kouretas (2019), inflation affects the net interest margin positively due to the failure of the governmental policies of money supply, economic performance, and financial instability. The findings are consistent with other literature that claimed a positive relation (Ahokpossi, 2013; Khanh & Tra, 2015). The results disagree with Abreu and Mendes (2001), the cost is more affected than the revenue leading to lower interest margin. The findings inconsistent with Brock and Suarez (2000)in all country sample except of Argentina. The results are disagreeing with Claeys and Vander Vennet (2008) for West Europe countries and Malim and Masron (2018) for islamic banks in the OIC in post crisis. In addition, the results contradict the literature that recorded a negative connection (Angori et al., 2019; Khan & Jalil, 2020) and contradict other literature that claims no effect (Al-Muharrami & Murthy, 2017; Almarzoqi & Naceur, 2015; Endri et al., 2021; Ibrahim & Law, 2019; Islam & Nishiyama, 2016; Kumari, 2014; Malim & Normalini, 2018; Maudos & Solís, 2009; Rahman et al., 2023; Shawtari et al., 2019).

GDP growth was not significant in pooled models and fixed effect; however, it turns positive using time dummies albeit the significance at 10%. The results disagree with the seventh hypothesis that assumes a negative effect of the GDP growth on the net interest margins. The findings using time dummies (that is control for the changing of legislation, tax structure, and accounting standards over time (Agoraki & Kouretas, 2019)) is consistent with Brock and Suarez (2000)during the expansion of the economy the firms increase their capitalized value and reduce the cost of lending since default risk is lower. The findings are in line with the findings of Claeys and Vander Vennet (2008) in Western Europe, higher economic growth leads to lower default risk and more lending that lead to an increase in the net interest margin. The findings are in line with Kasman et al. (2010) during the consolidation period and for new and candidate members of the EU, since transition economies face more fluctuations. The findings consistent with other literature (Drakos, 2002; Ibrahim & Law, 2019; Schwaiger & Liebeg, 2008). However, it is inconsistent with other literature that claims GDP growth affects the net interest margin inversely (Angori et al., 2019; Entrop et al., 2015; Islam & Nishiyama, 2016; Suu et al., 2020; Tarus et al., 2012; Valverde & Fernández, 2007). Due to competition in the upturn economy, banks provide loans with lower rates and acceptance standards (Entrop et al., 2015). However, the acceptance of loans from unqualified customers in good economic growth may lead to lower interest margins in case of default (Bougatef & Korbi, 2018). The findings disagree with Ahokpossi (2013) in sub-Saharan African countries. The negative and significant effect is only when the country dummies enter the regression suggesting country characteristics are not included in their estimation. The findings are inconsistent with literature that claims no relation (Cruz-García & Fernández de Guevara, 2020; Khanh & Tra, 2015; Kumari, 2014; Maudos & Solís, 2009; Rahman et al., 2023).

Interest rate risk is positive in all models of pooled effect. Nevertheless,it turns insignificant in the fixed effect models. The eighth hypothesis is rejected. The fixed effect model results are not consistent with the literature of Angori et al. (2019), Maudos and Solís (2009), and Maudos and De Guevara (2004). Banks expectations of higher market risk make them work in higher margin as protection. The results conflict the findings of Khan and Jalil (2020). Higher uncertainty in the money market in the facets of higher volatility lead to higher margin. The findings conflict other literature that found a positive effect of interest rate risk on the net interest margin (Angori et al.,

2019; Doliente, 2005; Rahman et al., 2023; Williams, 2007). The results are not in line with Schwaiger and Liebeg (2008). Banks are receiving risk premia for holding more risk. Despite that Saunders and Schumacher (2000) and Hawtrey and Liang (2008) reported the same relation for different interest rate choices, Liebeg and Schwaiger (2006) asserted contradicting results using long and short interest rates during robustness checks. That is positive when using the interbank rate and slope of the term structure while a negative relationship when using the standard deviation of ten years of government bond yields attributing the difference for the behavior of interbank and ten years' government bond yields. The findings are inconsistent with Garza-Garcia (2010) who found a negative effect on the baseline and subsample of developing and developed countries. The results conflict with the findings of Angbazo (1997)who found a negative effect.

The interaction between the interest risk and credit risk is negative and significant on the fixed effect. The result is in line with the ninth hypothesis. The finding is consistent with the literatureAngori et al. (2019) andMaudos and Solís (2009). The higher the interest risk and the higher the default risk lead to lower net interest margins especially in the absence of adequate provisions for loan losses. The findings are in line with Poghosyan (2010), banks mispriced the risk since credit risk increase with market risk. The finding is consistent with Garza-Garcia (2010) finding for the developed countries while it contradicts their findings for the entire sample and developing countries Garza-Garcia (2010) found the higher the interest risk rises the likelihood of default, which rise the net interest margin. The findings are inconsistent with other literature that declared no effect (Angbazo, 1997; Cruz-García & Fernández de Guevara, 2020; Hawtrey & Liang, 2008; Liebeg & Schwaiger, 2006; Rahman et al., 2023; Williams, 2007).

Islamic banks dummyin the pooled effect is not significant which suggest no difference between Islamic and conventional banks in the region. The tenth hypothesis is not supported by the findings. The findings are in line with Asmar (2018). The findings are conflicting with the results of Shawtari et al. (2019) in Yemen who concluded a negative effect. Islamic banks may sacrifice part of the profit for the depositors when the result of investments or macroeconomic conditions does not comply with depositor's expectations for the purposes of sustainability. The findings disagree with

Ibrahim and Law (2019) who asserted a positive connection. Islamic banks face more risk compared to commercial banks due to contract complexity and different governance structure. However, in the fixed effect the Islamic banks dummy is dropped since it accounted for the dummies of the regression.

For the institutional variables, control of corruption was weakly significant on the pooled effect at the 10% level it turns out to be not significant in the fixed effect. The results contradict the eleventh hypothesis that assumes a negative effect of control of corruption on the net interest margin. The findings of the fixed effect are consistent with Malim et al. (2017). The findings contradict Poghosyan (2013) for low-income countries and emerging countries. Better control of corruption leads to a lower net interest margin.

Rule of law is not significant in all models of pooled and fixed effect models. The result disapproved of the twelfth hypothesis that argues a negative relation of rule of law on the net interest margin. The findings are in line with Malim et al. (2017). However, it contradicts the findings of Poghosyan (2013) for the two groups and Rahman et al. (2023) in emerging markets.

Finally, regulatory quality is negative and significant in the fixed effect. The results support the thirteenth hypothesis of a negative effect of the regulatory quality on the net interest margins. The results are in line with the finding of Poghosyan (2013) for the low-income countries and not in the line with the findings of the emerging country. Nevertheless, the findings are not consistent with Malim et al. (2017) in the OIC countries.

A summary of the results of the fixed effect model are presented in Appendix D.

4.3.3 Pooled Models After Adding the Moderating Variable

Appendix E shows the regressions with the moderating variable (Islamic banks) in the pooled models. The first regression is presented without the inclusion of institutional variables, then the next three regressions are using institutional variables which are control of corruption, rule of law, and regulatory quality respectively then the last three regressions are repeated using time dummies to control for changes in the macroeconomic environment that are not included in the models.

4.3.4 Fixed Effect Models After Adding the Moderating Variable

Appendix F shows the effect of the explanatory variables on the net interest margin using the Islamic banks as moderating variables using the fixed effect models. The first regression is presented without the inclusion of institutional variables, then the next three regressions are using institutional variables which are control of corruption, rule of law, and regulatory quality respectively then the last three regressions (2,3, and 4) are repeated using time dummies to control for changes in the macroeconomic environment that are not included in the models. The results of Hausmen test suggest that fixed effect models are the reliable results exceptfor column 4 (the results of the random effect after adding the moderating variables are presented in Appendix G). For the R squared, the value of the seventh model was the greater with 11%, while models 2 and 3 have the same R squared of 7.3% and models 5 and 6 have the same R squared 10.2%.

Appendix F shows a negative effect of the size of operations on the net interest margin without differences according to Islamic banks. The findings contradictLee and Isa (2017) who found that only conventional banks' margin effect by the size of operation in their subsamples. Furthermore, risk aversion affects net interest margin positively for the two types of banks. The findings are consistent with Malim et al. (2017) and Bougatef and Korbi (2018) who found a positive effect of the risk aversion on the net interest margin when the effect is studied with separation of the sample for Islamic and conventional banks. While it disagreed with Lee and Isa (2017) who found that commercial banks' margins are only effected by the risk aversion.

Furthermore, credit risk is not significant for both banks, which supports the findings of Shawtari et al. (2019) in Yemen. The findings inconsistent with Lee and Isa (2017) in Malaysia who found that Islamic banks are more sensitive to credit risk and Ibrahim and Law (2019) who found credit risk does not affect the bank margins in OIC countries.

Liquidity risk turned negative and significant when time dummies are included in the model (models 5, 6, and 7). The findings disagree with Trinugroho et al. (2014). The higher the liquid assets (lower liquidity risk), the higher the opportunity cost and the lower the margin. The findings consistent with other literature that concluded holding higher liquid assets will decrease the net interest margins (Ahokpossi, 2013; Angbazo, 1997; Drakos, 2002; Fungáčová & Poghosyan, 2011; Shawtari et al., 2019; Williams,

2007).

The interaction is positive and strongly significant at 5%. The positive effect of the interaction means that the effect of liquidity risk on the net interest margin is higher in Islamic banks than conventional banks. The positive relationshipcan be explained by the findings of Malim and Normalini (2018). Islamic banks' liquidity management is difficult compared to conventional banks since there is a prohibition on using interest-bearing instruments leaving Islamic banks to ask for higher margins to compensate for the liquidity risk. The result of interaction of liquidity risk and Islamic banksdummy is inconsistent with Shawtari et al. (2019) who found no effect of the interaction of liquidity risk and Islamic bank dummy on the net interest margin in Yemen.

For the specialization in lending variable is not significant at the fixed effect for both Islamic and conventional banks. The findings conflict with the findings of Bougatef and Korbi (2018) who found that conventional banks grant loans based on better evaluating the customer's credit position that reduce their intermediation cost, while inconsistent with Sun et al. (2017) who found no effect for Islamic and conventional banks.

At the bank-specific level, hypotheses 14, 15, 16, and 18 are rejected since no effect for the moderating variable, which suggests no differences according to bank models. While hypothesis 17 is confirmed with a positive effect.

For the macroeconomic variables, inflation rate and GDP growth, the result supports the findings in table 6 after the inclusion of time dummies. For interest rate risk, the effect is positive in all models of the pooled effect and lost significance in the fixed effect. The findings support the results before the interaction is presented to the regression (support the result obtained in tables 5 & 6).

For the institutional variables, control of corruption and rule of law are not significant in the fixed effect model. However, regulatory quality is found negative in the fixed effect model as found in table 6. The results in line with the findings of Poghosyan (2013).

A summary of the results of the fixed effect models after adding the moderating variable are presented in Appendix D.

4.3.5 The Generalized Method of Moments (GMM) Models

Table 7 presents the result of the generalized method of moments models. The first column shows the result without using institutional variables. Then column 2 shows the result using control of corruption variable, column 3 using the rule of law variable, model 4 using the regulatory quality variable, model 5 using the interaction between interest rate risk and credit risk. Table 7 shows the Hansen test is greater 5%, so the null hypothesis is accepted and the instruments are valid. The second order correlation is insignificant so the instruments are exogenous.

Table 7

The generalized method of moments models

	(1)	(2)	(3)	(4)	(5)
VARIABLES	**NIM**	**NIM**	**NIM**	**NIM**	**NIM**
L.NIM	0.651***	0.649***	0.635***	0.633***	0.650***
	(0.151)	(0.148)	(0.149)	(0.149)	(0.151)
Sizeof Operations	-0.000*	-0.000	-0.000	-0.000	-0.000*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Risk Aversion	0.003	0.004	0.005	0.005	0.004
	(0.006)	(0.007)	(0.006)	(0.006)	(0.006)
Credit Risk	-0.004	-0.004	-0.005	-0.005	-0.005
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Liquidity Risk	-0.000	-0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Specialization in lending	0.003	0.004	0.004*	0.004*	0.003
	(0.002)	(0.002)	(0.003)	(0.002)	(0.002)
Inflation	0.004**	0.004**	0.004**	0.003**	0.004**
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
GDP growth	0.004	0.005	0.006	0.007	0.004
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Interest rate risk	0.134**	0.130**	0.130**	0.116*	0.114
	(0.062)	(0.063)	(0.062)	(0.064)	(0.072)
Control of Corruption		-0.000			
		(0.000)			
Islamic banks	0.001*	0.001*	0.001*	0.001*	0.001*
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Rule of Law			-0.001*		
			(0.000)		
Regulatory Quality				-0.001**	
				(0.000)	
Interest Rate Risk * Credit Risk					0.220
					(0.338)
Constant	0.015*	0.014	0.013	0.014*	0.016*
	(0.008)	(0.009)	(0.008)	(0.008)	(0.008)
Observations	1,519	1,519	1,519	1,519	1,519
AR(1) p	0.00117	0.00111	0.00127	0.00144	0.00119
AR(2) p	0.971	0.952	0.956	0.955	0.970
Hansen p	0.181	0.188	0.196	0.197	0.180

Note: * represent the significance level, *** significant at 1%, ** significant at 5%, and * significant at 10%.

The results show no effect of the bank-specific variables (risk aversion, credit risk, and liquidity risk). Nevertheless, the size of operations affects the net interest margin negatively in one model but with no economic impact. The negative effect supports the findings of the fixed effect model that banks with large size of operations operate at lower margins. The findings in line with Fungáčová and Poghosyan (2011), Khan and Jalil (2020), and Maudos and De Guevara (2004).

Furthermore, specialization in lending is positively related to the banks margin at 10% significance level in models 3 and 4. The positive effect of specialization on the net interest margin is consistent with Al-Muharrami and Murthy (2017) who claimed that higher loan to assets ratio increase the interest income leading to higher net interest margin. However, the findings disagree with Maudos and Solís (2009), banks specialized in a product reduces their intermediation margins because of the economies of scale. The results disagree with Valverde and Fernández (2007) who believed that specialized bank have information advantage.

For the macroeconomic level, inflation rate affects the net interest margin positively, which supports the findings of the fixed effect models. The findings consistent with literature that confirm that revenue side is affected by inflation more than cost side (Demirgüç-Kunt & Huizinga, 1999; Kasman et al., 2010). The findings disagree with Abreu and Mendes (2001) who found that the cost side is more effect than revenue side. Interest rate risk affect the net interest margin positively in all models at 5% significant level, which supports the finding of the pooled effect models. The result supported literature that claimed that bank work with higher margin because of the higher market risk (Khan & Jalil, 2020; Maudos & De Guevara, 2004; Maudos & Solís, 2009).

Islamic banksdummy has a weak effect on the net interest margin with a positive effect that is in line with Ibrahim and Law (2019). Islamic banks are facing more risk compared to commercial banks, which are the complexity of the contract, unique risk exposure, and the additional boards for monitoring according to Islam principles. The findings inconsistent with Shawtari et al. (2019), Islamic bank sacrifice part of it profit for the depositors . The findings disagree with Asmar (2018) who found no effect of islamic bank on the net interest margin.

For the institutional variables, rule of law is a negative effect albeit it is weak at a 10% significant level. The findings are consistent with Rahman et al. (2023) in emerging countries. Sound institutional quality benefits the banking sector by reducing the net interest margin. Regulatory quality is negative and significant, which supports the findings of Poghosyan (2013) and conflicts with the findings of Malim et al. (2017). Finally, control of corruption is not significant which supports the finding of Malim et al. (2017).

A summary of the results of the generalized method of moments are presented in Appendix D.

4.3.6 The Generalized Method of Moments (GMM) Models Adding the Moderating Variable

Table 8shows the GMM result using the moderating variable. The first column the moderating variable introduce to the model without the institutional variables while the next three columns use one of the institutional variables (control of corruption, rule of law, and regulatory quality respectively). The table shows that Hansen test is greater than 5%, which means the instruments are valid while the second-order correlation is insignificant so the instruments are exogenous.

Table 8

The generalized method of moments models after adding moderating variable

	(1)	(2)	(3)	(4)
VARIABLES	**NIM**	**NIM**	**NIM**	**NIM**
L.NIM	0.621***	0.622***	0.605***	0.604***
	(0.170)	(0.166)	(0.166)	(0.165)
Sizeof Operations	-0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Risk Aversion	0.000	0.001	0.002	0.002
	(0.007)	(0.007)	(0.007)	(0.007)
Credit Risk	-0.005	-0.006	-0.006*	-0.006*
	(0.004)	(0.004)	(0.003)	(0.004)
Liquidity Risk	-0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Specialization in lending	0.003	0.003	0.004	0.004
	(0.002)	(0.003)	(0.003)	(0.003)
Inflation	0.004**	0.004**	0.004**	0.004**
	(0.002)	(0.002)	(0.002)	(0.002)
GDP growth	0.004	0.005	0.007	0.007
	(0.005)	(0.005)	(0.005)	(0.005)
Interest rate risk	0.131*	0.126*	0.128*	0.103
	(0.073)	(0.074)	(0.073)	(0.076)
Control of Corruption		-0.000		
		(0.000)		
Islamic banks	0.010	0.009	0.009	0.010
	(0.013)	(0.013)	(0.013)	(0.013)
Islamic banks * Size of operation	-0.001	-0.001	-0.001	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)
Islamic banks * Risk aversion	0.027	0.027	0.028	0.028
	(0.018)	(0.018)	(0.017)	(0.017)
Islamic banks * Credit risk	0.019	0.020	0.019	0.019
	(0.017)	(0.017)	(0.017)	(0.016)
Islamic banks * Specialization	0.012	0.012	0.012	0.012
	(0.008)	(0.008)	(0.008)	(0.008)
Islamic banks * Liquidity risk	-0.000	-0.000	-0.000*	-0.000*
	(0.000)	(0.000)	(0.000)	(0.000)
Interest rate risk * credit risk	0.221	0.222	0.219	0.284
	(0.336)	(0.335)	(0.330)	(0.338)
Rule of Law			-0.001**	
			(0.001)	
Regulatory Quality				-0.001**
				(0.000)
Constant	0.015*	0.014	0.013	0.013
	(0.008)	(0.008)	(0.008)	(0.008)
Observations	1,519	1,519	1,519	1,519
AR(1) p	0.00204	0.00189	0.00214	0.00235
AR(2) p	0.824	0.847	0.835	0.847
Hansen p	0.133	0.139	0.146	0.150

Note: * represent the significance level, *** significant at 10%, ** significant at 5%, and * significant at 10%.

Table 8 shows that from the bank specific variables only credit risk shows a negative and significant effect at 10% level. The findings of credit risk support the findings of the fixed effect models. The results are consistent with Fungáčová and Poghosyan (2011) who explain their findings by market discipline argument in deposit market in which depositors ask for higher deposit rate when banks are having higher non-performing loan ratio. The results agree with Khan and Jalil (2020), banks grant loans without monitoring in order to increase the market share.

The interaction of the liquidity risk and Islamic banks is negative and significant however with little economic impact. The findings are conflicting with the result of Shawtari et al. (2019) who found no effect of the interaction between liquidity risk and Islamic banks in Yemen.

For the macroeconomic variables, the inflation rate and the interest rate risk are positive and significant which support the findings in Table 9. While institutional variables, rule of law and regulatory quality are negative and significant. The findings of the rule of law and regulatory quality support the findings of Poghosyan (2013), good institutional environment lead to lower net interest margin.

A summary of the results of the generalized method of moments models after adding moderating variable are presented in Appendix D.

Chapter Five

Conclusions

The net interest margin is an important indicator as it shows the efficiency and cost of conducting the intermediation function. The thesis studied net interest margins using Ho and Saunders (1981)model and later extensions in the Middle East and North Africa region. The region characterizes by the dominance of bank financing and operates under the dual banking system. The thesis contributes to the literature since a little research is done on the intermediation margin in dual banking systems. Furthermore, the thesis studied variables that have not been investigated in the region namely: interest rate risk, the interaction between interest rate risk and credit risk, and institutional variables (rule of law, control of corruption, and regulatory quality). In order to test the determinants of the net interest margin in the MENA region, a wide panel is used that consists of 511 banks from twenty countries for the period of 2006-2018. The pooled models, fixed effect models, random effect models, and generalized methods of moments are used.

The results of the study are the size of the operation, credit risk, the interaction between interest rate risk and credit risk, regulatory quality, liquidity risk, and the rule of law have a negative effect on the net interest margin. While inflation, gross domestic product, interest rate risk, specialization in lending, and Islamic banks positively affect the net interest margin. Moreover, the interaction between the liquidity risk and net interest margin is positive which suggest that liquidity risk effect on the net interest margin higher in Islamic banks.

The findings of the current thesis are helpful for governments who care for the welfare of society, which is reflectable by lower intermediation costs, bank management who care about efficiency in performing the intermediary, which is also reflectable by lower margins. In order to maintain a lower margin, banks' management should be attention to the variables (size of operation, credit risk, the interaction between interest risk and credit risk, specialization in lending, liquidity risk) that are found to affect the net interest margins. Banks should focus on diversification since specialization in lending comes with lower efficiency, higher credit risk, higher intermediation cost. Moreover, Islamic banks can reduce the risk of their model by adopting new risk management instruments. For policymakers, enhancement of the governance framework as contract

enforcement and sound public policies in the Middle East and North Africa may lead to lower net interest margins. Also, achieving a favorable economic condition improves efficiency and reduces the net interest margins.

During the thesis investigation, several limitations existed. First, the lack of data for some variables, the data needed for the calculation of the interest rate risk for Syria and the United Arab Emirates were not provided in the International Monetary Fund while in other countries a suitable interest rate is taken. Second, time for gathering the Islamic bank variable through banks websites. Finally, important variables ignored becasuse the data unavailability to calculation such as operating expenses, Lerner index (market power measure) , and ownership (local and foreign).

For future research, the current study investigated the role of Islamic banks in moderating the relationship, but other factors can be investigated in future research such as ownership structure, local or foreign banks

List of Abbreviations

Abbreviation	Meaning
NIM	Net Interest Margin
GDP growth	Gross Domestic Product
GMM	Generalized Method Of Moments
MENA	Middle East and North Africa
OIC	Organization of the Islamic Cooperation
VIF	Variance Inflation Factor

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Appendices

Appendix A

Bank type in the sample

Country	Number of bank	Islamic bank	Conventional banks	Non-defined
United Arab Emirates	34	10	24	0
Bahrain	43	21	20	2
Algeria	17	1	16	0
Egypt	52	4	43	5
Israel	14	0	14	0
Iraq	48	19	28	1
Iran	23	22	1	0
Jordan	29	4	22	3
Kuwait	39	12	20	7
Lebanon	40	4	36	0
Libya	8	1	6	1
Morocco	21	0	19	2
Malta	17	0	17	0
Oman	21	2	17	2
Palestine	11	2	9	0
Qatar	17	7	9	1
Saudi Araba Kingdom	23	7	13	3
Syria	15	4	11	0
Tunisia	35	4	28	3
Yemen	4	1	3	0
Total banks	511	125	356	30

Appendix B

Variance Inflation Factor

Variable	VIF	1/VIF
Size	2.44	0.409516
Risk Aversion	1.72	0.581876
Credit Risk	1.33	0.7514
Liquidity risk	1.29	0.776406
Specialization in lending	1.89	0.52874
Inflation	2.93	0.34083
GDP growth	1.81	0.552939
Interest rate risk	2.74	0.365449
Control of Corruption	40.17	0.024895
Rule of Law	43.04	0.023234
Regulatory Quality	27.74	0.036052
Islamic banks	1.23	0.813313
Year		
2007	2.16	0.46293
2008	2.44	0.409662
2009	4.04	0.247251
2010	3.41	0.292967
2011	7.86	0.127164
2012	7.87	0.126988
2013	9.25	0.108058
2014	9.66	0.103517
2015	10.07	0.09932
2016	9.79	0.102157

Variable	VIF	1/VIF
2017	9.67	0.103367
2018	7.85	0.127448
Country		
2	2.52	0.397053
3	4.66	0.214552
4	31.27	0.031983
5	3.32	0.300911
7	6.12	0.163331
8	7.32	0.136545
9	10.25	0.097578
10	30.87	0.032398
11	2.29	0.437314
12	8.74	0.114445
13	1.97	0.506668
14	4.34	0.230437
15	6.08	0.16439
16	2.31	0.432092
17	7.17	0.139535
19	11.89	0.084102
20	5.05	0.198168
Mean VIF	8.75	

Appendix C

Random effect models

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	NIM	NIM	NIM	NIM	NIM	NIM	NIM
Size	-0.00162*	-0.00170*	-0.00154*	-0.00140	-0.00261***	-0.00237***	-0.00211**
	(0.000905)	(0.000935)	(0.000910)	(0.000891)	(0.000915)	(0.000884)	(0.000852)
Risk Aversion	0.00969	0.00856	0.0103	0.0122	0.00702	0.00916	0.0104
	(0.0173)	(0.0176)	(0.0172)	(0.0169)	(0.0168)	(0.0164)	(0.0162)
Credit Risk	-0.0134*	-0.0131*	-0.0137*	-0.0127*	-0.0116*	-0.0122*	-0.0120*
	(0.00769)	(0.00765)	(0.00773)	(0.00729)	(0.00687)	(0.00688)	(0.00664)
Liquidity Risk	-2.53e-05	-2.55e-05	-2.38e-05	-2.90e-05	-3.55e-05	-3.34e-05	-3.53e-05
	(3.43e-05)	(3.42e-05)	(3.43e-05)	(3.60e-05)	(3.65e-05)	(3.67e-05)	(3.73e-05)
Specialization in lending	0.00688	0.00673	0.00706	0.00748	0.00653	0.00695	0.00720
	(0.00605)	(0.00592)	(0.00615)	(0.00619)	(0.00561)	(0.00585)	(0.00594)
Inflation	0.00379	0.00390	0.00400	0.00255	0.00751**	0.00786**	0.00550*
	(0.00263)	(0.00257)	(0.00263)	(0.00269)	(0.00315)	(0.00313)	(0.00330)
GDP growth	0.00790	0.00690	0.00853	0.0104	0.0171**	0.0191**	0.0183**
	(0.00648)	(0.00621)	(0.00662)	(0.00668)	(0.00723)	(0.00763)	(0.00734)
Interest rate risk	-0.0110	-0.0145	-0.00729	-0.0255	0.0502	0.0526	0.0305
	(0.0590)	(0.0584)	(0.0593)	(0.0590)	(0.0684)	(0.0682)	(0.0722)
Control of Corruption		0.00156			0.00158		
		(0.00141)			(0.00135)		
Islamic banks	0.000162	0.000163	3.90e-05	-0.000890	0.000253	7.29e-05	-0.000597
	(0.00309)	(0.00307)	(0.00308)	(0.00312)	(0.00303)	(0.00305)	(0.00304)
Rule of Law			-0.00121			-0.00163	
			(0.00141)			(0.00152)	
Regulatory Quality				-0.00465***			-0.00358**

				(0.00141)			(0.00151)
Constant	0.0575***	0.0594***	0.0555**	0.0522**	0.0771***	0.0718***	0.0665***
	(0.0214)	(0.0223)	(0.0216)	(0.0210)	(0.0214)	(0.0207)	(0.0199)
Observations	1,717	1,717	1,717	1,717	1,717	1,717	1,717
Time dummies	NO	NO	NO	NO	YES	YES	YES

Note: robust standard errors in parentheses, * shows the significant level, *** at 1%, ** at 5%, and * at 10%.

Appendix D

Summary results of regressions

Variable	Expected sign	Fixed effect models	Fixed effect models adding the moderating variable	GMM model	GMM after adding the moderating variable	Result
Size of operation	-	-	-	-		Supported
Risk aversion	+		+			Supported
Credit risk	+	-			-	Not supported
Liquidity risk	+		-			Not supported
Specialization in lending	-			+		Not supported
Inflation	+	+	+	+	+	Supported
GDP growth	-	+	+			Not supported
Interest rate risk	+			+	+	Supported
Interaction between interest rate risk and credit risk	-	-				Supported
Islamic banks	+			+		Supported
Control of corruption	-					Not supported
Rule of law	-			-	-	Supported
Regulatory quality	-	-	-	-	-	Supported
Islamic banks* Size of operation	+/-					Not supported
Islamic banks * Risk aversion	+/-					Not supported
Islamic banks * Credit risk	+/-					Not supported
Islamic banks * Liquidity risk	+/-		+		-	Mixed result
Islamic banks * Specialization in lending	+/-					Not supported

Note: (+), (-), and (+/-) indicate a positive, negative, a significant relation respectively

Appendix E

Pooled models after adding moderating variable

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	NIM	NIM	NIM	NIM	NIM	NIM	NIM
Size of Operations	-0.000900***	-0.00106***	-0.000865***	-0.000954***	-0.000921***	-0.000763**	-0.000866***
	(0.000227)	(0.000263)	(0.000250)	(0.000256)	(0.000280)	(0.000273)	(0.000275)
Risk Aversion	0.0192**	0.0168**	0.0196**	0.0188**	0.0167**	0.0191**	0.0184**
	(0.00727)	(0.00693)	(0.00738)	(0.00713)	(0.00681)	(0.00733)	(0.00703)
Credit Risk	0.00527	0.00593	0.00506	0.00580	0.00744	0.00681	0.00802
	(0.0104)	(0.0106)	(0.0106)	(0.0108)	(0.0104)	(0.0104)	(0.0106)
Liquidity Risk	-6.22e-05**	-6.10e-05**	-6.23e-05**	-6.04e-05**	-6.08e-05**	-6.24e-05**	-5.80e-05**
	(2.40e-05)	(2.34e-05)	(2.41e-05)	(2.26e-05)	(2.40e-05)	(2.46e-05)	(2.29e-05)
Specialization in lending	0.0185***	0.0172***	0.0187***	0.0182***	0.0173***	0.0187***	0.0180***
	(0.00401)	(0.00375)	(0.00383)	(0.00371)	(0.00373)	(0.00383)	(0.00367)
Inflation	0.0120*	0.0135**	0.0117*	0.0129*	0.0204***	0.0178**	0.0215***
	(0.00636)	(0.00595)	(0.00604)	(0.00597)	(0.00638)	(0.00628)	(0.00633)
GDP growth	0.00270	-0.00362	0.00378	0.000404	0.0153	0.0224	0.0179
	(0.0115)	(0.0122)	(0.0130)	(0.0137)	(0.0163)	(0.0167)	(0.0167)
Interest rate risk	0.558***	0.577***	0.552***	0.584***	0.667***	0.648***	0.707***
	(0.143)	(0.151)	(0.141)	(0.158)	(0.101)	(0.0966)	(0.106)
Control of Corruption		0.00145*			0.00158**		
		(0.000673)			(0.000675)		
Islamic banks	0.0339	0.0351	0.0336	0.0341	0.0350	0.0337	0.0342
	(0.0275)	(0.0274)	(0.0275)	(0.0275)	(0.0280)	(0.0280)	(0.0281)
Islamic banks* Sizeof Operations	-0.00161	-0.00166	-0.00160	-0.00162	-0.00171	-0.00165	-0.00167
	(0.00135)	(0.00135)	(0.00135)	(0.00135)	(0.00137)	(0.00137)	(0.00137)

Islamic banks* Risk aversion	0.00361	0.00402	0.00375	0.00305	0.00963	0.00898	0.00817
	(0.0164)	(0.0161)	(0.0163)	(0.0160)	(0.0166)	(0.0167)	(0.0164)
Islamic banks* Credit risk	-0.0350	-0.0361	-0.0349	-0.0352	-0.0352	-0.0340	-0.0342
	(0.0299)	(0.0298)	(0.0300)	(0.0300)	(0.0290)	(0.0293)	(0.0292)
Islamic banks* Specializationin lending	0.00572	0.00550	0.00579	0.00578	0.00600	0.00616	0.00640
	(0.00860)	(0.00860)	(0.00867)	(0.00856)	(0.00867)	(0.00874)	(0.00856)
Islamic banks*Liquidity risk	1.02e-05	1.45e-05	8.45e-06	1.39e-05	-1.48e-05	-1.51e-05	-1.31e-05
	(0.000131)	(0.000132)	(0.000132)	(0.000133)	(0.000134)	(0.000135)	(0.000135)
Interest rate risk* credit risk	0.363	0.375	0.365	0.324	0.133	0.117	0.0362
	(1.221)	(1.256)	(1.216)	(1.233)	(1.157)	(1.124)	(1.136)
Rule of Law			-0.000339			5.42e-05	
			(0.000728)			(0.000754)	
Regulatory Quality				0.000622			0.00147
				(0.00100)			(0.00102)
Constant	0.0313***	0.0360***	0.0303***	0.0326***	0.0291***	0.0247***	0.0268***
	(0.00623)	(0.00684)	(0.00656)	(0.00629)	(0.00790)	(0.00787)	(0.00739)
Observations	1,717	1,717	1,717	1,717	1,717	1,717	1,717
R-squared	0.104	0.106	0.104	0.105	0.120	0.118	0.119
Time dummies	NO	NO	NO	NO	YES	YES	YES

Note: robust standard errors in parentheses, * shows the significant level, *** at 1%, ** at 5%, and * at 10%.

Appendix F

Fixed effect models after adding moderating variable

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	NIM	NIM	NIM	NIM	NIM	NIM	NIM
Sizeof Operations	-0.00319***	-0.00323***	-0.00315***	-0.00327***	-0.00653***	-0.00634***	-0.00576***
	(0.00103)	(0.00103)	(0.00104)	(0.00102)	(0.00179)	(0.00180)	(0.00172)
Risk Aversion	0.0506***	0.0497***	0.0505***	0.0500***	0.0392***	0.0401***	0.0414***
	(0.0125)	(0.0127)	(0.0125)	(0.0124)	(0.0134)	(0.0131)	(0.0130)
Credit Risk	-0.00279	-0.00279	-0.00286	-0.00184	-0.000566	-0.000632	-0.000467
	(0.00458)	(0.00456)	(0.00459)	(0.00440)	(0.00426)	(0.00426)	(0.00420)
Liquidity Risk	-3.69e-05	-3.72e-05	-3.59e-05	-4.19e-05	-5.13e-05*	-4.90e-05*	-5.09e-05*
	(2.43e-05)	(2.40e-05)	(2.45e-05)	(2.73e-05)	(2.68e-05)	(2.76e-05)	(2.87e-05)
Specialization in lending	0.00253	0.00272	0.00252	0.00261	0.00240	0.00221	0.00227
	(0.00417)	(0.00422)	(0.00417)	(0.00397)	(0.00356)	(0.00348)	(0.00349)
Inflation	0.00282	0.00285	0.00301	0.00163	0.00545**	0.00638**	0.00393
	(0.00221)	(0.00218)	(0.00224)	(0.00228)	(0.00271)	(0.00263)	(0.00282)
GDP growth	0.00766	0.00719	0.00793	0.00930	0.0157**	0.0172**	0.0161**
	(0.00658)	(0.00646)	(0.00670)	(0.00680)	(0.00753)	(0.00788)	(0.00758)
Interest rate risk	0.0534	0.0473	0.0576	0.0113	0.0842	0.0950	0.0578
	(0.0691)	(0.0696)	(0.0704)	(0.0679)	(0.110)	(0.109)	(0.112)
Control of Corruption		0.00156			0.00163		
		(0.00156)			(0.00150)		
Islamic banks* Sizeof Operations	0.00530	0.00543	0.00533	0.00583	0.00616	0.00610	0.00633
	(0.00626)	(0.00625)	(0.00626)	(0.00621)	(0.00626)	(0.00620)	(0.00618)
Islamic banks* Risk aversion	-0.0623	-0.0611	-0.0617	-0.0581	-0.0546	-0.0548	-0.0532

	(0.0431)	(0.0428)	(0.0431)	(0.0424)	(0.0449)	(0.0447)	(0.0444)
Islamic banks* Credit risk	-0.0280	-0.0279	-0.0279	-0.0294	-0.0297	-0.0296	-0.0306
	(0.0297)	(0.0298)	(0.0298)	(0.0291)	(0.0275)	(0.0274)	(0.0271)
Islamic banks* Specializationin lending	0.00238	0.00253	0.00226	0.00186	0.00179	0.00104	0.00129
	(0.0148)	(0.0148)	(0.0149)	(0.0144)	(0.0141)	(0.0142)	(0.0140)
Islamic banks*Liquidity risk	0.000255**	0.000254**	0.000253**	0.000256**	0.000280**	0.000274**	0.000272**
	(0.000113)	(0.000113)	(0.000113)	(0.000112)	(0.000117)	(0.000116)	(0.000115)
Interest rate risk* credit risk	-0.993	-0.983	-0.995	-0.632	-0.963	-0.954	-0.735
	(0.656)	(0.658)	(0.654)	(0.602)	(0.658)	(0.654)	(0.639)
Rule of Law			-0.000829			-0.00200	
			(0.00173)			(0.00188)	
Regulatory Quality				-0.00627***			-0.00487***
				(0.00154)			(0.00150)
Constant	0.0705**	0.0708**	0.0696**	0.0708**	0.138***	0.135***	0.122***
	(0.0307)	(0.0309)	(0.0308)	(0.0305)	(0.0375)	(0.0375)	(0.0354)
Observations	1,717	1,717	1,717	1,717	1,717	1,717	1,717
R-squared	0.072	0.073	0.073	0.088	0.102	0.102	0.110
Hasumen test	95.64***	85.96***	83.98***	13.24	57.03***	60.30***	116.70***

Note: robust standard errors in parentheses, * shows the significant level, *** at 1%, ** at 5%, and * at 10%.

Appendix G

Random effect models after adding moderating variable

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	NIM	NIM	NIM	NIM	NIM	NIM	NIM
Size of operations	-0.00196***	-0.00204***	-0.00190***	-0.00182***	-0.00291***	-0.00268***	-0.00245***
	(0.000685)	(0.000697)	(0.000709)	(0.000686)	(0.000929)	(0.000926)	(0.000921)
Risk Aversion	0.0340***	0.0326***	0.0344***	0.0356***	0.0284**	0.0307**	0.0317**
	(0.0124)	(0.0122)	(0.0123)	(0.0122)	(0.0124)	(0.0125)	(0.0125)
Credit Risk	-0.00258	-0.00235	-0.00281	-0.00281	-0.000838	-0.00143	-0.00180
	(0.00454)	(0.00455)	(0.00464)	(0.00453)	(0.00463)	(0.00468)	(0.00464)
Liquidity Risk	-4.30e-05*	-4.35e-05*	-4.15e-05*	-4.70e-05*	-5.38e-05**	-5.12e-05*	-5.33e-05**
	(2.38e-05)	(2.35e-05)	(2.41e-05)	(2.55e-05)	(2.59e-05)	(2.67e-05)	(2.70e-05)
Specialization in lending	0.00580	0.00567	0.00594	0.00630	0.00550	0.00588	0.00608
	(0.00560)	(0.00547)	(0.00569)	(0.00575)	(0.00516)	(0.00541)	(0.00549)
Inflation	0.00381*	0.00391*	0.00398*	0.00269	0.00736***	0.00768***	0.00554**
	(0.00223)	(0.00218)	(0.00226)	(0.00227)	(0.00270)	(0.00271)	(0.00280)
GDP growth	0.0100	0.00912	0.0105	0.0124*	0.0194***	0.0212***	0.0205***
	(0.00657)	(0.00634)	(0.00668)	(0.00681)	(0.00713)	(0.00747)	(0.00727)
Interest rate risk	0.0665	0.0621	0.0699	0.0286	0.133	0.135	0.0978
	(0.0650)	(0.0654)	(0.0653)	(0.0639)	(0.102)	(0.102)	(0.107)
Control of Corruption		0.00144			0.00154		
		(0.00130)			(0.00126)		
Islamic banks	-0.0338	-0.0352	-0.0348	-0.0408	-0.0375	-0.0374	-0.0412
	(0.0938)	(0.0938)	(0.0938)	(0.0937)	(0.0922)	(0.0915)	(0.0912)

Islamic banks* Size	0.00172	0.00178	0.00176	0.00198	0.00188	0.00187	0.00200
	(0.00411)	(0.00411)	(0.00411)	(0.00411)	(0.00402)	(0.00399)	(0.00398)
Islamic banks*Risk aversion	-0.0492	-0.0484	-0.0488	-0.0471	-0.0435	-0.0440	-0.0433
	(0.0371)	(0.0367)	(0.0371)	(0.0367)	(0.0381)	(0.0382)	(0.0379)
Islamic banks*Credit risk	-0.0307	-0.0309	-0.0306	-0.0313	-0.0320	-0.0315	-0.0323
	(0.0272)	(0.0274)	(0.0272)	(0.0268)	(0.0252)	(0.0250)	(0.0249)
Islamic banks* Specializationin lending	0.00764	0.00765	0.00767	0.00766	0.00701	0.00684	0.00709
	(0.0133)	(0.0132)	(0.0133)	(0.0132)	(0.0127)	(0.0128)	(0.0128)
Islamic banks* Liquidity risk	0.000266***	0.000268***	0.000262***	0.000263***	0.000273***	0.000265***	0.000265***
	(9.34e-05)	(9.43e-05)	(9.33e-05)	(9.25e-05)	(9.83e-05)	(9.68e-05)	(9.65e-05)
Interest Rate Risk * Credit Risk	-0.860	-0.849	-0.863	-0.605	-0.887	-0.886	-0.722
	(0.615)	(0.617)	(0.611)	(0.582)	(0.619)	(0.615)	(0.617)
Rule of Law			-0.00100			-0.00141	
			(0.00137)			(0.00145)	
Regulatory Quality				-0.00446***			-0.00348**
				(0.00134)			(0.00145)
Constant	0.0609***	0.0631***	0.0595***	0.0577***	0.0799***	0.0748***	0.0703***
	(0.0156)	(0.0159)	(0.0162)	(0.0156)	(0.0204)	(0.0204)	(0.0201)
Observations	1,717	1,717	1,717	1,717	1,717	1,717	1,717
Time dummies	NO	NO	NO	NO	YES	YES	YES

Note: robust standard errors in parentheses, * shows the significant level, *** at 1%, ** at 5%, and * at 10%.

جامعة النجاح الوطنية
كليَّة الدراسات العليا

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دليل من دول الشرق الاوسط وشمال افريقيا

إعداد
اجياد مجيد احمد بحلق

إشراف
د. اسلام عبد الجواد

قدمت هذه الرسالة استكمالاً لمتطلبات الحصول على درجة الماجستير في التمويل، من كلية الدراسات العليا، في جامعة النجاح الوطنية، نابلس–فلسطين.

2023

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الملخص

لم يتم توثيق محددات صافي هامش الفائدة بشكل جيد في النظام المصرفي المزدوج، بينما درست الادبيات السابقة المحددات لكل نوع على حدة (اسلامي او تقليدي) او باستخدم متغير وهمي يمثل البنك الاسلامي، تركز الدراسة على الاختلافات بين البنوك الاسلامية والتقليدية.

تفحص الدراسة العوامل التي تؤثر على صافي هامش الفائدة في منطقة الشرق الاوسط وشمال افريقيا باستخدم متغير معدل للعلاقة وهو كون البنك اسلامي. ايضا، تكشف الدراسة عن تاثير مخاطر اسعار الفائدة وتقاطع مخاطر اسعار الفائدة مع المخاطر الائتمانية و المتغيرات المؤسساتية لاول مرة في المنطقة.

تستخدم الاطروحة بيانات اللوحة ل 511 بنك في عشرين دولة للفترة بين 2006 –2018. هامش الفائدة الصافي هو المتغير التابع، بينما حجم العمليات والنفور من المخاطر والمخاطر الائتمانية و مخاطر السيولة والتخصص في الاقراض والتضخم والناتج المحلي الاجمالي و مخاطر اسعار الفائدة والتقاطع بين مخاطر اسعار الفائدة والائتمان و السيطرة على الفساد وقوة القانون و الجودة التنظيمية كمتغيرات مستقلة بينما البنوك الاسلامية كمتغير معدل. تستخدم الدراسة التاثير المجمع و نموذج التاثير الثابت ونموذج التاثير العشوائي و طريقة الفروق العامة للعزوم.

خلصت الدارسة الى التاثير السلبي لحجم العمليات ومخاطر الائتمانية و التفاعل بين مخاطر الفائدة والائتمانية ومخاطر السيولة والجودة التنظيمية وقوة القانون على صافي هامش الفائدة و بينما التضخم والناتج المحلي الاجمالي ومخاطر اسعار الفائدة والتخصيص في الاقراض و البنوك الاسلامية كان ايجابيا. بالاضافة لذلك وجدت الدارسة ان مخاطر السيولة تأثر على هوامش البنوك الاسلامية اكثر من البنوك التجارية.

توصي الدراسة البنوك ان تركز على تنويع عملياتها، وتشجع البنوك الاسلامية على تبني وسائل جديـــدة لادارة المخاطر. بالاضافة الى تحسين اطر الحوكمة مثل انفاذ العقود.

الكلمات المفتاحية: صافي هامش الفائدة؛ منطقة الشرق الاوسط وشمال افريقيا؛ الصـــيرفة الاســـلامية؛ النظـــام البنكي المزدوج.