



INTERNATIONAL
HELLENIC
UNIVERSITY

CREDIT RISK IN ISLAMIC BANKING

TSOUTRA VASILIKI

SCHOOL OF ECONOMICS, BUSINESS ADMINISTRATION & LEGAL STUDIES

A thesis submitted for the degree of

Master of Science (MSc) in Banking and Finance

December, 2019

Thessaloniki – Greece

Student Name: Vasiliki Tsoutra
SID: 1103180022
Supervisor: Prof. Kyriaki Kosmidou

I hereby declare that the work submitted is mine and that where I have made use of another's work, I have attributed the source(s) according to the Regulations set in the Student's Handbook.

ACKNOWLEDGEMENTS

My sincere thank to the State Scholarships Foundation which funded my Master program under the “Innovative program for Master Scholarships in Greece with affiliation in the labor market, in the context of State Scholarships Foundation’s cooperation with the National Bank of Greece, for the academic year 2018-2019”. It is very important for me that apart from the funding they offered me an internship in the bank and they gave me the opportunity to connect the theoretical knowledge with the working environment.

I would also like to thank my supervisor Prof. Kyriaki Kosmidou for her guidance. She was very cooperative and willing to help me anytime. When I had a question about my research or writing she was there to give me her advice. Although she allowed this dissertation to be my own work, she provided me with her knowledge and her instructions whenever I needed.

Furthermore, I am grateful to my family members and my friends for their encouragement to finish this dissertation. Their support is always very influential for me.

Last but not least, the biggest thank goes to my parents, Tryfona and Evangelia, for their endless psychological and financial support in order to succeed my goals. Without their love and their help I could not manage it, that’s why the minimum I can do is to dedicate this dissertation to them.

ABSTRACT

This dissertation was written as part of the MSc in Banking and Finance at the International Hellenic University.

The development of the Islamic financial system during the last years is significant. A huge field of this system is the Islamic banking which is based on the *Shariah* law. A description of this banking mode and its main characteristics are presented in this dissertation. Furthermore, due to the fact that the non-performing loans are an important part of the banks in every country, an analysis of the credit risk in Islamic banks was conducted. This analysis tests the influence of macroeconomic and bank specific determinants in the non-performing loans of 10 Islamic banks in the Gulf Cooperation Council (GCC) countries for the period 2011-2018. Using Random Effects model it was found that the GDP, the total assets and the loan loss provisions are significant indicators and affect positively the non-performing loans. On the other hand, the inflation and the Return on Average Equity (ROAE) found to be significant but negatively related indicators with the credit risk. Regarding the capital adequacy ratio, it has negative relationship with the dependent variable, but it is not a significant indicator in this analysis.

Keywords: banking system, Islamic banking, non-performing loans, credit risk

Tsoutra Vasiliki,
December, 2019

TABLE OF CONTENTS

ACKNOWLEDGEMENTS.....	iii
ABSTRACT.....	iv
TABLE OF CONTENTS	v
LIST OF TABLES.....	vi
1. INTRODUCTION.....	1
2. ISLAMIC BANKING	4
2.1. The Prohibition of <i>riba</i>	4
2.2. Financing Methods	5
2.2.1. Profit and Loss Sharing (PLS).....	5
2.2.2. Non Profit and Loss Sharing (Non-PLS)	6
3. DIFFERENCES BETWEEN AN ISLAMIC AND A CONVENTIONAL BANK.....	7
4. PROBLEMS OF ISLAMIC BANKS	9
5. KEY RISKS FACED BY ISLAMIC BANKS.....	10
5.1. Risk Management in Islamic Banking	12
6. LITERATURE REVIEW	13
7. DATA AND METHODOLOGY	17
7.1. Multicollinearity Test.....	19
7.2. Hausman Test	20
7.3. Lagrange Multiplier (LM) Tests.....	20
8. INTERPRETATION OF FINDINGS	21
9. CONCLUSION.....	24
REFERENCES.....	25

LIST OF TABLES

Table 1: Variance Inflation Factors.....	19
Table 2: Hausman test.....	20
Table 3: Lagrange Multiplier (LM) tests	20
Table 4: Random Effects model	21

1. INTRODUCTION

The banking system is an important and integral part of a country's economy. The normal operation of the financial institutions is significant as it seems to be the breeding ground for the economic growth. Although problems with the banking industry can lead to huge financial crisis, it is certain that without the banks and their evolution our life would have been totally different. A bank operates as a financial intermediary that accepts deposits from the customers and creates loans. Nowadays, there are many services that a financial institution provides not only to the individuals but also to the businesses. It is fact though, that most people in developed countries are aware of the conventional banking system and its manner of working. However apart from the western banking system there is another one, the Islamic banking which is based on the Islamic Finance system.

Although Islamic Finance seems to be a modern phenomenon, its origin dates back to the beginning of Islam. During the mid-7th century until the mid-13th century, the early Muslims engaged in transactions based on *Shariah* (Islamic law) and Islamic principles. After that period, the decline of the Islamic civilization and the Islamic Finance started. Therefore, many Islamic countries followed a Western model in their banking sector by establishing conventional banks. Especially, the first conventional bank in Islamic country was established in Egypt in 1856 (Alharbi, 2016). The establishment of conventional banks in Islamic countries continued until the middle of 20th century. It was in the 1970s when the Arab states of the Persian Gulf decided to help the development of the institutions which provide Islamic Financial services, and the Islamic Financial System started to expand. The first Islamic bank which established in 1975 was the Dubai Islamic Bank. Since then, Islamic Finance has become more popular in the Western countries and it is acceptable not only from Muslim clients but also from non-Muslim ones. However, for the non-Muslim ones, it is more complicated to understand the Islamic Finance and follow the Islamic banking model as they first should understand the Islamic principles that affect the whole Islamic finance system.

Choudhury (1983) states that the three following principles are the main ones that affect the Islamic economics:

1. Principle of *Tawheed* and Brotherhood

The word "*Tawheed*" literally means unit. This principle includes the concepts of justice and equality. In the economic field, it teaches how the relationships among the partners and the businesses should be. Apart from the allocation of sources and the maximization of profits, there is the fundamental truth of social justice. In Islam the

ability to understand this social justice comes from the knowledge and practice of the principles of Quran.

2. Principle of Work and Productivity

This principle is about work and compensation of it. It states that the payments of a person must be equivalent to the amount (e.g. man-hours) and category of labor (e.g. professions) that he has carried out. If the income of the individual is greater than his effort, he commits a form of excess (*rububiyyah*). Also, the rent on land and the sharecropping are included in the category of excess. It is worth mentioning that rent was prohibited on plain land and not on land in which there has been input of labor and capital by the owner.

3. Principle of Distributional Equity

The third principle with great importance is the right of society to redistribute private property. Two of the various items of national income that are used for the distribution wealth are the *zakah* and the *sadaqah*. The *zakah* is a tax on wealth (approximately 2.5% of the personal wealth) while the *sadaqah* is the voluntary charity.

In line with these basic principles, there are some norms of Islamic Ethics that affect the economic activities of Muslims. Obaidullah (2005) refers that Islam allows freedom in to the entrance of transactions. However this does not mean that there is total freedom for any contract. For example, there are forbidden objects and creatures that are considered as unclean. As a result, it is not allowed to invest in businesses such as the sale of alcohol, pork, tobacco, and books based on astrology. In addition, the contracts and the transactions must be free from *riba* (interest). As *riba* is a form of "excess" implies that there is a reward for time preference only which is prohibited as the reward must always go with a liability or risk. Furthermore, in Islamic transactions excessive *gharar* (uncertainty and risk) is prohibited so clear and well defined terms should be included in all forms of contracts. In addition, the object of the contract must be known and in existence. As *gharar* is not allowed, gambling, unearned income, speculation and derivatives are forbidden.

It is certain that there are many differences between the Islamic finance system and the western one. Especially for the banking industry, which is a huge part in the economy of every country, there are variations on the Islamic and conventional banks which may affect the whole economy. This can be confirmed from the recent global financial crisis which was mainly caused from the banking industry. Due to that recent crisis with the combination of the growing establishment of the Islamic banks in the non- Islamic countries, the analysis of the characteristics of an Islamic bank sounds very interesting.

In this dissertation, the main purpose is the understanding of the operation of an Islamic bank and the analysis of the indicators that affect the credit risk of Islamic banks. In the first chapter, a description of Islamic banking and its main economic rules is presented. After that, the dissertation continues with the description of the main financing methods and the major contracts that are consisted of. Then, the differences between an Islamic and a conventional bank are presented. In the following chapter, there is an analysis of the problems that an Islamic bank deals with. Next, the key risks of the Islamic banking and some ways to manage them are underlined. The next chapter is the literature review where past studies that analyze the credit risk of the banks are presented. After that, there is the description of the sample of data that is chosen and the methodology that was followed for this analysis. Then there is the interpretation of the findings. The final part includes the conclusion of the study.

2. ISLAMIC BANKING

According to Institute of Islamic Banking and Insurance, Islamic Banking refers to a system of banking or banking activity that is consistent with the principles of the *Shariah* (Islamic rulings) and its practical application through the development of Islamic economics. *Shariah* prohibits the payment or acceptance of interest charges (*riba*) for the lending and accepting of money, as well as carrying out trade and other activities that provide goods or services considered contrary to its principles.

Another concrete and descriptive definition for Islamic banking is given from Al-Jarhi and Iqbal (2001) who state that: "An Islamic bank is a deposit-taking banking institution whose scope of activities includes all currently known banking activities, excluding borrowing and lending on the basis of interest. On the liabilities side, it mobilizes funds on the basis of a *mudarābah* or *wakālah* (agent) contract. It can also accept demand deposits which are treated as interest-free loans from the clients to the bank. and which are guaranteed. On the assets side, it advances funds on a profit-and-loss sharing or a debt-creating basis, in accordance with the principles of the *Shari'ah*. It plays the role of an investment manager for the owners of time deposits, usually called investment deposits. In addition, equity holding as well as commodity and asset trading constitute an integral part of Islamic banking operations. An Islamic bank shares its net earnings with its depositors in a way that depends on the size and date-to-maturity of each deposit. Depositors must be informed beforehand of the formula used for sharing the net earnings with the bank".

From the definitions above, it is understandable that the Islamic banking is based in a non- interest model. This means that is much different from the conventional banking system. Therefore there are differences in the products and the contracts that are used in its operation. The main characteristics of Islamic banking are described in the next session.

2.1. The Prohibition of *riba*

One of the main economic rules for Islamic banking is the prohibition of *riba*. Especially, Islam assumes that the collection of interest is a huge sin and compares it even with murder and idolatry. As a result its prohibition is of great importance for the banking system. There are two main views that describe the *riba* and its prohibition.

The first one is the Modernist view which emphasize in the moral aspect of the prohibition of *riba*. Modernists argue that the reason why *riba* is prohibited is to prevent injustice. However, according to this, not all interests are *riba*. For example, if an amount of interests is taken from a weak man who uses a loan in order to meet his daily needs, it can be assumed as *riba*. On the other hand, if this amount of interests is demanded from a rich man or a company, may not be assumed as *riba* because there

is no question of exploitation. According to Ahmad and Hassan (2007), the Modernists permit the extra charges where they are used: “for purposes other than exploiting the weak people of the community by the strong, for loans that are similar to what were practiced in the pre- Islamic period, for the present form of interest-based banking transactions but not for usurious transactions, for business investment but not for consumption loans, for the loss suffered by the creditor due to inflation, for simple interest but not for compound interest and for institutional credit.”

The second view for the prohibition of *riba* is the Orthodox or the Conservatives one. In the Orthodox view all interest is *riba* and forbids every form of fixed and predetermined interest. For example, Van Schaik (2001) states that *riba* in debts occurs when interest in any form is paid as compensation for a loan, unless it is not agreed on beforehand and is paid completely voluntarily. In that case, *riba* is prohibited as it is gain without any effort or liability. There are three main reasons for the prohibition of *riba*. Firstly, the *riba* support the accumulation of wealth in the posses of a few and create differences among the people. The second reason is that Islam prohibits the profit that arises from financial activity unless the receiver is also exposed to the risk and the potential loss. The legal guarantee of the interest would be assumed as a certain gain without effort. In addition, Islam considers the profits through interest or usury as greedy compared with the profits that are gained through hard effort and personal work.

2.2. Financing Methods

The second main economic rule for the Islamic Banking is the risk-sharing financing method. This method refers to the profit and loss sharing financing which exists only in the model of the Islamic bank. However, this rule was more obvious in the early model of the Islamic banks as in the modern one there are also debt-based products which are not included in the PLS financing.

2.2.1. Profit and Loss Sharing (PLS)

A unique characteristic of Islamic Banking is its Profit and Loss Sharing method (PLS). PLS is a partnership where the two counterparties share the profits and losses on the basis of their capital share and their effort. In other words, the assets and liabilities of the Islamic banks are integrated in such way that borrowers share profits and losses with the banks, and banks on the other way share profits and losses with the depositors. This method is mainly based on two financing contracts: the first one is *mudarabah* (profit- sharing) and the second is *musharakah* (joint venture). These products are also called equity-based financing products and are unique to Islamic banking. Due to that, they are not so famous among the customers and according to

Obaidullah (2005) this equity-based financing method creates more challenges in the Islamic banks.

a. Mudarabah contracts

They are profit-sharing agreements where the bank takes the role of the financing partner (*rabb-al-mal*) and the customer the role of the managing partner (*mudarib*). The bank gives the entire capital for the project, and the customer contributes with the knowledge, the expertise, the management and the labor. Profits are shared by a pre-determined ratio, and losses are borne by the bank (unless they were caused by the irresponsible customer's behavior). The pre-agreed ratio for profits may not be fixed, as in that case that would be a kind of interest. There are two types of *Mudarabah* contracts, the restricted and the unrestricted. In the restricted *mudarabah* the bank may state exactly in what business the *mudarib* will invest the money while in an unrestricted *mudarabah* the customer can invest the capital in any business he wants. Usually *mudarabah* contracts are used in order to finance projects of real estate and housing development, construction of public spots and generally for infrastructural concerns.

b. Musharakah contracts

These contracts are similar to joint venture agreements, where the two counterparties share the risks and the financial results. Both the bank and the customer contribute with the capital and the management for the financing project. The profits or losses from the project are shared in a pre-agreed ratio which can be affected by the contribution in capital and effort of the partners. This method is not very common among Islamic banks, as most of them do not prefer to contribute with the management of the project. *Musharakah* financing fits in any kind of business venture that the bank wants to participate.

2.2.2. Non Profit and Loss Sharing (Non-PLS)

The early models of Islamic banking are based on the PLS financing and the partnership structure. This equity-based method is thought to be superior to conventional banking method not only from the view that it provides stability during external challenges but also from the point of ethics, fairness and social justice (Obaidullah, 2005). However, apart from these PLS financing contracts, the Islamic banks have also included the Non Profit and Loss Sharing financing method with debt-based products. The most popular among them is the *murabaha* financing, the *bai-bithaman-ajil* (*BBA*) and the *ijarah*.

a. Bai Bithaman Ajil with Murabaha

Murabaha financing is based on a mark-up or cost plus principle. It is a form of trade financing where the bank is authorized to buy a certain object and resell it to the

customer at an agreed price which includes the actual price of the object plus a known profit margin. *Bai bithaman ajil*, which is a *Shariah* approved mechanism, is a sale where the payment is deferred to a future date whether the cost and mark-up is known or not. The difference with the *murabaha* is that these factors are known to both parties of the transaction. According to Obaidullah (2005), the deferred payment facility with cost-plus sale (*BBA-murabaha*) is maybe the most popular Islamic financing product.

In its simplest form, a *BBA-murabaha* financing structure is consisted of two parties: the bank and the customer. The bank is the vendor which sells the product to the customer on a deferred payment basis. In that case there is not the sense of *riba* as the profits are justified by the risk that the bank takes. This method is very famous in the case of a car purchase. However, as it is not possible for the bank to have in its belongings all the products that the clients need, in most cases there is a third party in this financing method which takes the role of the vendor. In that case the vendor and the bank sign a contract while a second one is signed by the bank and the customer. Sometimes though, the bank does not want to deal with the vendor directly, so the customer takes the role of the bank's agent. It is important that in a *murabaha*, a *BBA* or a *BBA-murabaha* contract the product of sale must exist in the ownership of the bank at the time of sale to the customer.

b. Ijarah

Ijarah in Islamic banking means the leasing of an asset. It is a debt-based product in which the bank has the role of the lessor (*ajir* or *mujir*) and allows the lessee (*mustajir*) to use an asset that belongs to the bank. The customer in that case by paying a pre-determined rental (*ujrat*) for an agreed period of time, can receive the benefits of the asset's use. However, in *ijarah*, the bank remains the owner of the asset so it is connected with the risks associated with the asset.

3. DIFFERENCES BETWEEN AN ISLAMIC AND A CONVENTIONAL BANK

The Islamic banks, similar to the conventional banks, operate as intermediaries between the lenders and borrowers and one of their goals is to create earnings through this process. However, these two types of financial institutions have many differences since Islam and its moral principles and objectives affect totally the Islamic banking and have a significant role in the operations of the banks.

According to Awan (2009), although the two institutions lend money to the borrowers, they have different objectives of lending. A conventional bank lends money in order to maximize the wealth of the shareholders through interests while an Islamic

bank which lend money in order to motivate businesses through profit-and-loss sharing, succeeds the distribution of the capital. In that way, a conventional bank create earnings by charging interests from its borrowers and distribute them among its shareholders which are few, while an Islamic bank distributes its profit among depositors which are many and helps the increase of wealth in the whole society. These differences on objectives lead on different strategies and modes of operation.

As far as the borrowing is concerned, conventional banks borrow funds from the depositors and lend them to the borrowers. Usually, the interest rates on deposits are fixed and the bank should pay them to depositors at the completion of term. No matter whether the bank had profits or losses, the depositors receive the interests that have been agreed. However, in order to maximize their profits, the conventional banks use to charge much higher interest to the borrowers that the interests they pay to the depositors. On the other hand, Islamic banks use to pay higher return to the depositors while they do not charge interests on debtors through the PLS financing method.

Apart from the fact that Islamic banks provide loans on a PLS basis, they also have restrictions on the purpose that the funds will be used for. They provide loans only for productive purposes and cannot fund businesses with unclean and prohibited activities like alcohol, pornography, gambling and speculation.

In addition, the fact that conventional banks charge high rates of interest on all types of loans (project- financing, consumer financing, working capital on fixed interest) can result in default of loans. The number of Non- Performing loans increased during the years of global financial crisis and it was the biggest problem for the conventional banks. Regarding the Islamic banks, Van Schaik (2001), states that the debtors in financial distress should be treated leniently. If the debtor is not able to pay back the principal, he should be given a delay without a penalty. Even better, the debt could be remitted. However, the non performing loans affected the Islamic banks during the last years, too.

According to Awan (2009), both conventional and Islamic banks make investment out of their deposits in different sectors. The difference is that while a conventional bank can invest in government Treasury bills, bonds and Term Finance Certificates for security and smooth return, an Islamic bank cannot. The reason is that Islamic banks are prohibited to invest in financial instruments which carries fixed rate of interest and can only invest in non- interest bearing ones, like equity market. This fact caused problems of excess liquidity and market risk in the past, but they have deal with that by investing in Islamic *Sukuks* (bonds) that have been issued by the central banks of many Muslim countries.

Another important difference between the two financial institutions is that Islamic banking is a risk-sharing system as both the lender and the borrower equally share the risk and they are ready to share the losses in case of economic shock. On the other hand, the conventional banking system is non-risk sharing as the lender receives

the fixed rate of interests and does not care where the money is being spent or whether the borrower faces losses. In that case the borrowers take all the risk and if they cannot meet their obligations on the bank they can even lose the collateral. However, this is not the case on Islamic banks where the lender watches the activities of the borrower and the way he uses the loan as they are both risk involved.

Regarding the distribution of income, it seems that conventional banking, which belongs to an interest-based financial system, may lead to the accumulation of wealth. In that way the rich people become richer and the poor ones become poorer. Opposite, the Islamic Financial system has a vision about the equitable redistribution of resources and wealth. This led to the creation of a compulsory tax on wealth (*zakah*) which purpose is to collect money from rich people and distribute them to the poor. In that way, they try to reserve equality among the citizens and avoid the aggregation of wealth on a small portion of people.

4. PROBLEMS OF ISLAMIC BANKS

During the last decades, there is a big expansion for the Islamic banks and their operations. However, there are still some difficulties in practice as their operations are closely related to the Islamic rules and principles.

According to Van Schaik (2001), the PLS-financing is not so famous among the clients of Islamic banks. Many times they are not willing to provide access to the banks in secret information of their business, or they do not prefer to share their earnings with the banks. Furthermore, from the perspective of the Islamic banks, there are not many interesting projects with an acceptable level of risk. As a result the mode of PLS-financing is more attractive to businesses with very high risk and low rewarding projects. Furthermore, PLS does not suit on the short-term financing and its procedure is not appropriate neither to companies which need financing for short term liquidity, nor to companies which operate in the non-profit sector, like schools for example.

Although there is progress in the Islamic banking activities during the latest years, there is still lack of developed financial products. In addition, the Islamic capital markets are underdeveloped and they have poor network. In order to succeed advance in their operations, the Islamic banks should develop their financial instruments, too. Since the Islamic financial system is unique with many differences from the conventional one, more research is necessary in order to create products that cover all needs both for the banks and their clients.

In addition, the technological equipment and the labor is an important aspect for a bank's functions. There is need for advanced methods that attend on the clients and well qualified professionals that are knowledgeable about the procedure in the

various contracts in order to inform appropriately both the Muslims clients and the non- Muslim ones who will possibly be less aware about these products.

The main and most serious problem regarding the Islamic banking is that most of the people do not really understand what it is. They may be conscious about the basic principle and the close relation with the *Shariah* law, but there is not a clear definition about the Islamic banking and the way the Islamic banks operate. According to Al-Jarhi and Iqbal (2001) there is need for many supportive institutions and arrangements to enhance the performance of necessary functions of the Islamic banks. However, this necessity is quite difficult to be realized as it requires the existence of appropriate conditions to operate together be possible to be supervised both conventional and Islamic banks. For that reason, there should be a well-defined plan for the integration of the new banking system in the environment of the conventional one.

5. KEY RISKS FACED BY ISLAMIC BANKS

In general, risk is the uncertainty of a future outcome and the possibility of loss. The banks which operate as financial intermediaries are maybe exposed to all risk types due to the various products and services that provide. Furthermore, a risk in the banking sector may arise not only from the exposure of the bank towards a single person but also to its exposure towards the market. Regarding the Islamic banks, they deal with two types of risks. In the first category belong the risks that are common to that of a conventional bank. Some of the most important are the following ones:

Credit risk: According to Basel Committee on Banking Supervision (BCBS, 2000), credit risk is the potential that a bank borrower or counterparty will fail to meet its obligations in accordance with agreed terms. This kind of risk can underlie in all Islamic modes of finance (Ahmed and Khan, 2007). In *murabaha* contracts it appears when the counterparty defaults in paying the debts in full and in time due to external systematic sources, internal financial causes or moral hazard. If this is the case, it should be recognized the cause of non-performance as Islam does not allow debt restructuring based on damages apart from the case of moral hazard. In *mudarabah* and *musharakah* contracts the credit risk is the non-payment of the share of the bank by the business or individual when it is due mainly because of the asymmetric information. Given the importance of credit risk, its recognition and its management are key issues for Islamic banks.

Market risk: According to European Banking Authority, Market risk can be defined as the risk of losses in on and off- balance sheet positions arising from adverse movements in market prices. Market risk is also called systematic risk when it comes

from macro sources (currency and equity price risks) and cannot be diversified in order to be eliminated.

Operational risk: Operational risk is defined as the risk of loss resulting from inadequate or failed internal processes, people and systems or from external events (including legal risk) (BCBS, 2011). This risk includes losses resulting from non-compliance with the *Shariah* law and may arise since the banks do not have enough qualified labor or the appropriate technological equipment.

Liquidity risk: Liquidity is the ability of a bank to fund increases in assets and meet its obligations in time, without having extreme losses (BCBS, 2008). The liquidity risk can be separated in two categories, the funding liquidity risk and the asset liquidity risk. The funding liquidity risk arises when there is difficulty in acquiring cash at reasonable cost from borrowings while the asset liquidity risk arises from the sale of assets. According to Ahmed and Khan (2007), the Islamic banks deal with important liquidity risks. A reason why this may happen is the slow development of Islamic financial products which lead to obstacles in raising funds quickly. This problem gets bigger as there is not inter-Islamic bank money market. Furthermore, the conventional banks can benefit from the lender of last resort (LLR) in an emergency. However, due to the fact that the LLR facilities are based on interest they are not allowed for Islamic banks.

However, apart from the above risks which are common for both financial institutions, there is a second category of risks in Islamic banking. According to Rhanoui and Belkhoutout (2019), the risks that are specific to Islamic banks are:

***Shariah* non-compliance risk:** This risk appears when the bank fails to comply with the rules and principles of *Shariah* law.

Rate of return risk: This risk is related to the rate of return provided to depositors in Islamic banks, who will be unsatisfied if they get lower returns on their deposits than the market rate.

Displaced commercial risk: This risk is a result of the above one (rate of return risk) and it appears when the Islamic banks cannot pay competitive rates of return to their clients. Due to the fact that this result can lead the depositors to withdraw their funds, the Islamic banks are willing to sacrifice their earnings for the benefit of the depositors.

Equity investment risk: This risk appears when there is participation in a financing activity, as *mudarabah* and *musharakah* contracts for example.

The recognition and the evaluation of risks is a very significant field in the banking industry. With the appropriate risk management the bank could see these risks as opportunity and take advantage of them rather than try to avoid them.

5.1. Risk Management in Islamic Banking

The challenges that exist in the environment of the Islamic banks in combination with the increase of the above risks make the suitable management of them necessary. An appropriate framework for this management could be designed in line with the CAMELS system. This acronym stands for Capital adequacy, Asset quality, Management quality, Earnings, Liquidity and Sensitivity to the environment. This system is a monitoring approach that is used by the bank supervisors in order to rate the financial institutions, so its analysis is important for the risk management in the banking sector.

Capital adequacy: In this part of the framework, it is assessed the capital of the bank, its leverage and its ability to raise equity. Furthermore the adequacy of the reserves is important, as it is a measure of the loan loss reserves and shows the level of the potential loan losses that the bank can stand.

Asset quality: This category assesses the quality of the bank's assets and measures the high risk assets. Therefore, the loans which are a big part of the assets in a bank are examined. If there are lent in high risk borrowers, the bank may not collect the payments. This can lead to the increase of bank risks, such as the credit risk and the liquidity one.

Management quality: In this field it is measured the ability of the financial institution to react in harsh circumstances. The quality of the institution's strategy, its goals, its financial performance and its operation system are very important in order to fulfill its goals. Furthermore, the human resources are a very significant part which can lead to the success. The staff of the bank should be provided with guidance and support for the new products and operations in order to be more productive. In addition, internal and external audit is necessary in order for the risks to be recognized and measured in time. This will lead to their appropriate management and their elimination.

Earnings: This part reflects the ability of the financial institution to continue and even grow its operation. It is assessed the ability of the bank to generate earnings with the assets that it possesses. Therefore it is checked how well these assets have been used in order to create profits. In addition, the stability of the earnings is very important for the future of a financial institutions and its resilience to stand in difficult economic conditions.

Liquidity: For the financial institutions, liquidity is very important as the lack of liquid assets can lead to bank run. In this category, it is measured the interest rate risk and the liquidity risk. Furthermore it is assessed the availability of the funds to cover the needs of the bank and the productivity of the assets. In addition, a significant part is the cash flow projections, so the evaluation of the successful projecting is necessary.

Sensitivity: This category measures the sensitivity of the financial institution to the market risks. The bank can be separated in various groups in order to be examined the sensitivity of each one in the risks and the level to which the earnings are affected by them.

The CAMELS (Capital adequacy, Asset quality, Management quality, Earnings, Liquidity, Sensitivity to the environment) framework is appropriate for both conventional and Islamic banks. However, regarding the Islamic financial institutions, *Shariah* law is the core guide for their operations. The supervision of the implementation of this law is necessary in order for the Islamic banks to be appropriately examined. Sarker (2005), refers that the regulators and supervisors have not developed instructions regarding the *Shariah* law in order to exist a common operation line for the banks. Therefore, he proposed a second “S” for the CAMELS framework. This “S” refers to the *Shariah* rating and he states that the creation of a *Shariah Matrix* which would cover both the assets and the liabilities side of the Islamic banks is essential.

6. LITERATURE REVIEW

It is a fact that the amount of non- performing loans (NPLs) leads to the deterioration of the bank’s profitability during the last years. Although most of the banks deal with the problem of such loans, their peak was during the global financial crisis. According to the European Central Bank, a bank loan is considered as NPL, when the borrower has not pay the agreed installments or interest for more than 90 days. This is also called as “bad debt”. However, regarding the Islamic banks which do not use the interest- based method in the financing field, a loan is considered to be unhealthy when the borrower does not pay the whole amount of debts in full and in time. In addition, in some Islamic contracts such as *mudarabah* and *musharakah* a loan can be named as non-performing when the counterparty does not pay the share to the bank.

From the definitions of credit risk and non-performing loans, it is obvious that the amount of NPLs affects and especially leads the credit risk of the banks. This is the reason why the most of the researchers use the non-performing loans as quantitative variable in order to measure the credit risk and find out what other variables affect it.

The variables that can affect the credit risk can be separated in two main categories: macroeconomic variables and bank- specific variables. In the first category, variables such GDP, inflation, unemployment rate and interest rate can be included. Regarding the second category, it refers to all factors that are related to the bank’s performance such as the total assets, asset quality, loan loss provisions, return on assets, return on equity, capital adequacy, and other factors which affect the operation of the banks. In order to be found the determinants that affect the credit

risk, most of the researchers use the amount of NPLs as dependent variable and choose some of the macroeconomic and bank-specific variables as independent.

Vogiazas and Nikolaidou (2011) analyzed the credit determinants in the Bulgarian banking sector. By using time series modeling techniques they found that macroeconomic and financial markets' indicators affect the credit risk. Especially, the unemployment rate, the construction index, the industrial production index and the real effective exchange rate are important factors for the increase of non-performing loans. Furthermore, the global financial crisis affected the credit quality of the Bulgarian banks. However, they found that the Greek twin crisis did not influence the quality of the Bulgarian loan portfolio.

Shingjergji (2013), investigated the relationship between the NPLs ratio and several bank specific factors in the Albanian banking system. He used the Ordinary Least Squares estimation for the panel data form he created and was found that capital adequacy ratio is negatively related to NPLs ratio, but it was not statistically significant. Furthermore, the results have shown that the return on equity (ROE) and the loan to asset ratio have negative relationship with the NPLs ratio while the loans level and the net interest margin show a positive relationship with the NPLs ratio.

Mehmood, Younas and Ahmed (2013), analyzed the macroeconomic and bank specific factors of non-performing loans for 13 commercial banks in Pakistan during the years 2003-2012. They found that market share (MS), return on assets (ROA), return on equity (ROE) and liquidity ratio reduce the non-performing loans. In addition, GDP decreases the NPLs but it was statistically significant only in 1%, same as ROE. Regarding the inflation rate and interest rate they found that they have a positive relationship with non-performing loans.

Inekwe (2013), examined the relationship between real GDP and non-performing loans in Nigeria during the period 1995-2009. The results have shown that there is a significant relationship between these variables. However, contrary to most of the other countries, the results have shown positive relationship between real GDP and NPLs in Nigeria. According to the researcher, the findings may imply that the improvement in the real economy of Nigeria was not enough to lead to a decrease of the NPLs mainly due to the harsh economic conditions.

Firmansyah (2014), investigated the determinants of non-performing loans of Islamic banks in Indonesia. The analysis included monthly data from all *Shariah* Rural Credit Banks (SRCBs) in Indonesia from 2010 to 2012. The results have shown that the GDP and inflation have negative relationship with the credit risk, so their increase is a positive signal for the decrease of non-performing loans. On the other hand, it was found that the liquidity has a positive relationship with the credit risk. Regarding the size of the banks and the ratio of operating expenses, the results have shown that they do not affect the non-performing loans in the SRCBs.

Abusharbeh (2014), analyzed the effect of different Islamic types of financing and credit risk on future earnings for the Islamic banks of Indonesia. It was used a

sample of 11 Islamic banks during the years 2008 to 2013. The research showed that the increase of *mudarabah* and *musharakah* contracts leads to the increase of non-performing financing. Also it was found that Islamic banks in Indonesia participate in a low level in PLS financing in order to avoid the risk of non-performing financing. Furthermore, the results showed that *murabaha* contracts have a positive and significant effect on profitability but they do not affect the non-performing financing of Islamic banks. However, the study showed that the Islamic banks managed effectively the credit risk that appeared in sharing financing.

Hayati Ahmad and Nizam Ahmad (2014), examined the factors that influence the credit risk of Islamic banks in Malaysia and they made a comparison of these factors between Islamic and conventional banking. By using data from 6 Islamic banks and 6 conventional banks for the period 1996-2002, they found that the factors that affect the two types of financial institutions are different. Especially, it was shown that management efficiency, risk-weighted assets and size of total assets affect significantly the credit risk of Islamic banks while the loan exposure to risky sectors, regulatory capital, loan loss provisions and risk-weighted assets are significant factors for the course of credit risk in conventional banking.

Misman et al (2015), investigated the factors that affect credit risk in Islamic banks. They conducted a research with yearly data from 1995 to 2013 for the Islamic banks in Malaysia and they used the fixed effect model for their analysis. The results showed that the financing quality and the capital adequacy ratio have significant and negative relationship with the credit risk level of the Islamic banks. Furthermore the capital buffer variable has a positive and significant effect on credit risk in the fixed effect model. In addition their research showed that foreign Islamic banks are more likely to have lower credit risk than local Islamic banks.

Waemustafa and Sukri (2015), analyzed the macroeconomic and bank specific factors that influence credit risk in Islamic and conventional banking. Their sample was of 15 conventional and 13 Islamic banks in Malaysia for the period 2000-2010. Regarding the conventional banks, they showed that the loan loss provisions, the debt-to-total asset ratio, the regulatory capital, the size, the earning management and the liquidity are important factors that influence the credit risk of the banks. Apart from the loan loss provisions that affect positively the non-performing loans the rest of them affect the credit risk negatively. Regarding the Islamic banks they found that the regulatory capital and the Islamic contracts are significant variables and affect positively for their credit risk. As far as the macroeconomic factors are concerned, they showed that only Inflation and M3 have a significant and negative effect on both financial institutions.

Marouf and Guellil (2017), conducted an empirical study in order to identify the main macroeconomic factors that explain the credit risk in the Algerian banking system. They gathered data from 1980 to 2014, and they used the Ordinary Least Squares (OLS) method. The results have shown that the financial development, the

money supply and the political stability have a positive relationship with the rate of NPLs in Algeria. Regarding the GDP and the non-performing loans there is a negative relationship. All of the variables were statistically significant.

Wiryo and Effendi (2018), investigated the influence of macroeconomic and banking factors on credit risk in Islamic banking. They gathered data from Central Bureau of Statistics and Central Bank Indonesia from 2010 to 2016 and they used the Fixed Effect Method (FEM) model. The results showed that the total assets (SIZE) of the banks have positive and significant effect on credit risk. On the other hand, the financing expansion, the financing quality, GDP and inflation have negative and significant relationship with the credit risk.

Rasheed and Siddiqui (2019), analyzed the determinants of the non-performing loans of both conventional and Islamic banks. They gathered data from 8 conventional banks and 4 Islamic banks of Pakistan for the years 2008 to 2017. The research showed that the staff strength affects negatively the amount of NPLs in conventional banking whilst it affects positively this number in the Islamic banks. In addition, there is an insignificant but positive relationship between capital adequacy ratio and non-performing loans in conventional banking, while in Islamic banking this relationship is negative. Furthermore the amount of loans is a positive and significant factor to the credit risk of conventional banks in Pakistan whereas this indicator has a negative impact on the non-performing financing of Islamic banks. Regarding the Gross interest Income and Markup, they have positive relationship with the non-performing loans of both different banks. In addition, the number of branches affects positively the NPLs in conventional banks whereas there is a negative but insignificant relationship between them in Islamic banking.

Tlemsani and Suwaidi (2016), investigated the performance of conventional and Islamic banks in the UAE during the period 2007-2008. They found that although the financial crisis has impacted the global banking system, the Islamic financial institutions had better performance than the conventional ones. Especially, they underlined that in terms of liquidity, Islamic banks outperformed and they were less likely to have bankruptcy problems. Furthermore, regarding the credit risk, the Islamic banks managed to have lower percentage of non-performing loans than the conventional ones.

Salam and Nawaz (2018), conducted a study in order to investigate the differences between conventional and Islamic banking in the fields of profitability, efficiency and liquidity. They found that the two financial institutions differ in terms of their performance. Specifically, they found that Islamic banks outperform from conventional ones and showed a positive trend. Furthermore they found that Islamic banks suffered less than conventional ones during the global financial crisis.

Although these studies show that Islamic banks may have not been affected in such extent that the conventional banks were affected from the non-performing loans, it is certain that the credit risk is an important field for their performance. It is essential

though to analyze which macroeconomic and bank specific indicators are significant and affect this risk.

7. DATA AND METHODOLOGY

Based on the literature review, it is certain that the credit risk is affected from several macroeconomic and bank specific factors. In the following analysis, it will be investigated the effect of two macroeconomic and four bank specific factors in the non-performing loans of Islamic banks in the Gulf Cooperation Council (GCC) countries during the period 2011-2018. More specifically, the banks' data was taken from the Bank Focus database while the values of the macroeconomic variables were gathered from the datasets of World Development Indicators (WDI). In addition, some constraints have been used in the Bank Focus database in order for the sample to be created. Firstly, the banks should operate in countries that are part of the GCC and then a classification has been made with regard of their total assets. The 10 biggest banks that have had available data for the examined indicators have been chosen in order to be used in this analysis. Especially, the chosen ten banks are: Kuwait Finance House, Qatar Islamic Bank SAQ, Abu Dhabi Islamic Bank- Public Joint Stock Co., Masraf Al Rayan (Q.S.C.), Emirates Islamic Bank PJSC, Boubyan Bank KSCP, Noor Bank, Qatar International Islamic Bank, Ahli United Bank KSC and Barwa Bank.

The linear panel data model for the six chosen independent variables is :

$$y_{it} = \beta_0 + \sum_{j=1}^6 \beta_j X_{j,it} + \varepsilon_{it}$$

Where

y= the dependent variable,

β_0 = the constant,

β_j = the coefficient of the independent variable j

X_j = the value of the independent variable j

ε = the error term

This model is implemented into the estimation equation as follows:

$$NPLS_{it} = \beta_0 + \beta_1 GDP_{it} + \beta_2 INFLATION_{it} + \beta_3 TOTAL_ASSETS_{it} + \beta_4 LLP_{it} + \beta_5 ROAE_{it} + \beta_6 CA_RATIO_{it} + \varepsilon_{it}$$

Where the dependent variable is :

$NPLS_{it}$ = the common logarithm of the number of non-performing loans of bank i in year t

and the independent variables are:

β_0 = the constant

GDP_{it} = the common logarithm of Gross Domestic Product in thousands of the country that operates the bank i in year t

$INFLATION_{it}$ = the inflation rate of the country that operates the bank i in year t

$TOTAL_ASSETS_{it}$ = the common logarithm of total assets of bank i in year t

LLP_{it} = the common logarithm of loan loss provisions of bank i in year t

$ROAE_{it}$ = the Return on Average Equity of bank i in year t

CA_RATIO_{it} =the capital adequacy ratio of bank i in year t

ε_{it} = the error term

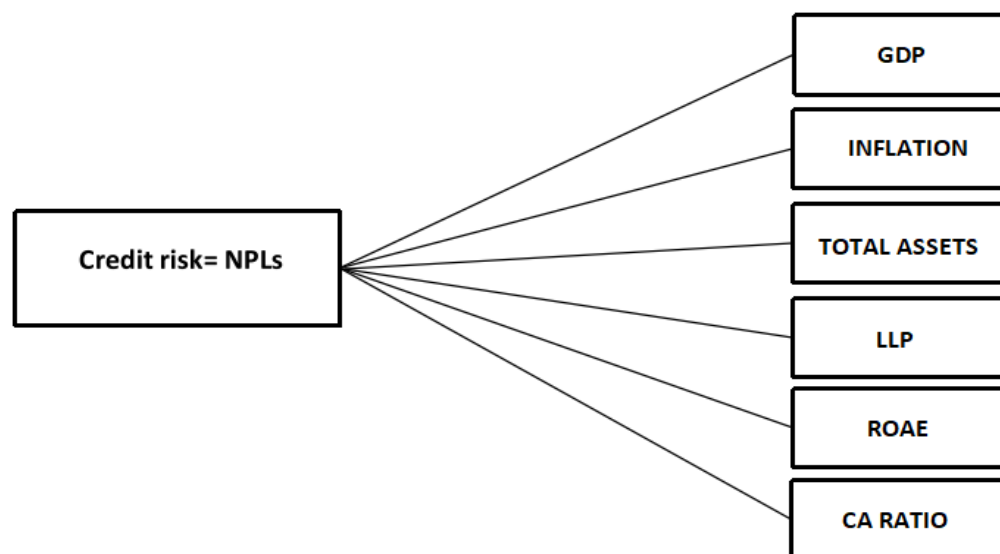


Figure 1: Research Framework

In the figure above the Research Framework is presented. In the left box there is the dependent variable which is the credit risk. In this analysis, the credit risk of the banks is measured by the amount of the non-performing loans. In the right boxes, there are the independent variables, which are the GDP, the inflation, the total assets or in other words the SIZE of the banks, the amount of the loan loss provisions, the

ROAE and the capital adequacy ratio. The significance level for this analysis is chosen to be 5%.

7.1. Multicollinearity Test

A test in order to check the existence of multicollinearity in our variables is very important for the analysis. Multicollinearity appears when the independent variables in the regression model are correlated. Although this problem does not reduce the overall predictive power of the model, it can produce estimates that are not statistically significant. Usually, multicollinearity occurs when there is a panel with long time series (over 20 years). Although in this study the examined period is smaller, a test for checking the existence of this problem is needed. The Variance Inflation Factors (VIF) are a method that measures the level of collinearity between the regressors in the equation. The results for this test in Eviews 9 are presented in the following table.

Table 1: Variance Inflation Factors

Variance Inflation Factors			
Sample: 2011 2018			
Included observations: 80			
Variable	Coefficient Variance	Uncentered VIF	Centered VIF
GDP	0.037958	2392.740	1.146754
INFLATION	8.529992	4.911728	1.109213
TOTAL_ASSETS	0.019061	901.5238	1.422701
LLP	0.000458	9.839841	1.199647
ROAE	0.508222	6.486670	1.236907
CA_RATIO	1.351983	39.55869	1.418538
C	4.795756	4366.314	NA

There are two forms for the Variance Inflation Factors, the uncentered and the centered. The uncentered VIF is the ratio of the variance of the coefficient estimate from the original equation divided by the variance from a coefficient estimate from an equation with only one regressor and with no constant. The centered VIF uses also the constant and it is presented numerically as: $1 / (1 - R^2)$, where R^2 is the R-squared from the regression of that regressor on all of the other regressors in the equation. Generally, a value smaller than 5 for the centered VIF means that there is no multicollinearity in the model. As it is presented in the above table, all of the values of the centered VIFs are much smaller than 5, so it is concluded that there is not collinearity among the regressors.

The next step for the analysis is the selection of the model. There are three main models that can be estimated for panel data. The Fixed Effects model, the Random Effects model and the simple Ordinary Least Squares Model (OLS).

7.2. Hausman Test

In order to decide between the Fixed Effects and Random Effects model, a Hausman test was run. The null Hypothesis in that test is that the preferred model is the random effects and the alternative Hypothesis is that the preferred model is the fixed effects one. The results from the test are presented below.

Table 2: Hausman test

Correlated Random Effects - Hausman Test			
Test period random effects			
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Period random	2.651743	6	0.8511

The Probability in this test is bigger than 0.05 (Prob.=0.8511>0.05) and this means that the result is not significant. Therefore the null hypothesis is not rejected and between the two tests the best one is the random effects.

7.3. Lagrange Multiplier (LM) Tests

The Lagrange Multiplier (LM) tests are used in order to take the decision between a random effects regression and a simple OLS regression. The results of these tests are presented below.

Table 3: Lagrange Multiplier (LM) tests

Lagrange Multiplier Tests for Random Effects			
Null hypotheses: No effects			
Alternative hypotheses: Two-sided (Breusch-Pagan) and one-sided (all others) alternatives			
Test Hypothesis			
	Cross-section	Time	Both
Breusch-Pagan	24.64752 (0.0000)	1.923628 (0.1655)	26.57115 (0.0000)
Honda	4.964627 (0.0000)	-1.386949 --	2.529800 (0.0057)

King-Wu	4.964627 (0.0000)	-1.386949 --	2.243580 (0.0124)
Standartized Honda	6.978867 (0.0000)	-1.186875 --	0.108273 (0.4569)
Standartized King- Wu	6.978867 (0.0000)	-1.186875 --	-0.233085 --
Gourieriou, et al.*	--	--	24.64752 (<0.01)
*Mixed chi-square asymptotic critical values:			
	1%	7.289	
	5%	4.321	
	10%	2.952	

The null Hypothesis in these tests is that there are not significant differences across units (there is no panel effect). Regarding the time-specific effects, the p-value of the two-sided Breusch Pagan test is bigger than 0.05 (Prob.=0.1655>0.05), which means that we do not reject the null Hypothesis. This is also certified from the other tests which have negative values indicating that there are not time-specific effects. However, as far as the testing for cross section effects is concerned, the p-values of all tests are smaller than 0.05 (Prob.=0.00<0.05), which means that the null Hypothesis is rejected. Therefore, there is strong evidence that there are cross- section random effects. This means that the appropriate model for our analysis is the Random Effects model.

8. INTERPRETATION OF FINDINGS

After concluding that the appropriate model for our analysis is the Random Effects, the panel data regression was run. In the following table, the results from the method Panel EGLS (Cross-section random effects) in Eviews 9 are presented. The dependent variable is the amount of NPLs and in the table below it is shown the relationship that the independent variables have with the independent and whether this relationship is statistically significant or not.

Table 4: Random Effects model

Dependent Variable: NPLs
Method: Panel EGLS (Cross- section random effects)
Sample: 2011 2018

Periods included : 8				
Cross-sections included :10				
Total panel (balanced) observations: 80				
Swamy and Arora estimator of component variances				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
GDP	1.179544	0.259631	4.543148	0.0000
INFLATION	-6.182403	1.865749	-3.313630	0.0014
TOTAL_ASSETS	0.740492	0.167617	4.417749	0.0000
LLP	0.040302	0.016342	2.466242	0.0160
ROAE	-1.707448	0.536775	-3.180936	0.0022
CA_RATIO	-1.253746	0.743792	-1.685614	0.0961
C	-9.419132	2.717106	-3.466605	0.0009

Regarding the GDP, it is presented to have a statistically significant relationship with the credit risk of the Islamic banks as the p-value is lower than 0.05 (Prob.=0.0000). Although this fact is in accordance with the past research, there is an important difference in this analysis. The effect of the GDP on the dependent variable is positive. This means that an increase in the Gross Domestic Product will lead to the increase of the non-performing loans in the Islamic banks. This result is not in line with the most of the studies that presented in the literature review. Especially, Marouf and Guellil (2017), Mehmood, Younas and Ahmed (2013), Wiryono and Effendi (2018), Firmansyah (2014), found that the effect of the GDP in the NPLs is negative. This means that they resulted in the fact that the improvement in the economic condition of the country leads to a decrease of the credit risk. However, there is a study from Inekwe (2013), which resulted in the same paradox with this analysis. By examining a research in order to find the relationship between the real GDP and the non-performing loans in Nigeria for the period 1995-2009, he found that the two variables have negative and statistically significant relationship. He attributed this result not only in the fact that the credit facilities that obtained from the banks in Nigeria were not properly utilized in productive activities but also to the difficult economic conditions. This is also may be the reason for this result in the present analysis. While the examining period is from 2011 to 2018, it is possible that the Islamic banks have not repair their damages from the global financial crisis fully and the customers are still affected from that harsh economic environment.

As far as the inflation is concerned, the p-value is lower than 0.05 so it is a statistically significant variable. Furthermore the direction of this macroeconomic variable is negative with the dependent variable and this means that an increase in inflation leads to a decrease in the credit risk of Islamic banks. These results are in accordance with the most of the examined past studies. Specifically, Wiryono and Effendi (2018), Firmansyah (2014), Waemustafa and Sukri (2015) found in their

studies that inflation has a significant and negative relationship with the non-performing loans.

An important part of this analysis is the bank-specific factors. The first one is the total assets of the Islamic banks. By introducing the number of total assets as variable, it is examined whether the size of the Islamic banks affects the credit risk. The p-value for this indicator is lower than the significance level ($\text{Prob.}=0.0000 < 0.05$), so it is statistically significant. Furthermore, it is presented to have a positive relationship with the credit risk. This fact indicates that the bigger the bank the greater amount of non-performing loans will have. The studies of Wiryono and Effendi (2018), Hayati Ahmad and Nizam Ahmad (2014) resulted also to the fact that the size of the banks is significant and affects negatively the credit risk in Islamic banking.

Regarding the loan loss provisions, it is a statistically significant bank-specific factor, too. In addition it seems to have a positive relationship with the dependent variable. So it is presented that the increase in the amount of the loan loss provisions leads in the increase of the credit risk in Islamic banks. Hayati Ahmad and Nizam Ahmad (2014), Waemustafa and Sukri (2015), have found in their studies that the loan loss provisions affect the credit risks in conventional banking.

The Return on Average Equity is another important indicator for the banks. It measures the financial performance of the banks based on the average equity over the period. In the analysis, this bank-specific determinant is presented statistically significant in the chosen significance level of 5%. Furthermore, it affects negatively the dependent variable. This indicates that the increase of ROAE in Islamic banks causes a decrease in the credit risk. Shingjergji (2013), and Mehmood, Younas and Ahmed (2013) found that this ratio has a negative relationship with the credit risk of the banks.

As far as the capital adequacy ratio is concerned, it is a measure of a bank's capital and it is expressed as a percentage of the risk-weighted credit exposures of the bank. In the present analysis, this bank-specific indicator it is not statistically significant in the chosen significance level of 5% as its p-value is higher than 0.05. However, it is presented statistically significant in the significance level of 1%. Regarding the direction, it has a negative relationship with the dependent variable. This indicates that if it was a significant variable, an increase of this ratio would cause a decrease in the credit risk. Shingjergji (2013), found the same result in his study, as he concluded that the capital adequacy ratio has a negative effect on credit risk but it was not a statistically significant variable in his analysis, too. However, Mismam et al (2015), found that this ratio is both statistically significant and has a negative relationship with the credit risk of the banks.

9. CONCLUSION

During the last years, the development of Islamic banking is obvious. There is an increase in Islamic banks not only to Muslim countries but also to non-Muslim ones. Maybe the immigration of Muslim population in western countries and the pressure of the existed Muslim minority were significant for this change. However, this is not the only reason for such an increase. There is a need for something new, for financial institutions which provide new products and services to the customers. In that way there is diversification for the customers and different opportunities to fulfill their goals and cover their needs. However, as Islamic banking is a newly entranced sense, more research is necessary in order to be totally applicable in the environment of the conventional banks.

In this dissertation, a small description about Islamic banking and its special characteristics has been presented. The differences of Islamic banks with the conventional ones were highlighted. Furthermore, the problems that Islamic banks face in accordance with the bank risks are presented. For the profitable operation of these financial institutions an appropriate risk management framework is necessary. In addition, the importance of the non-performing loans and the credit risk in the banking industry was underlined. In order to be found what determinants are significant for the credit risk in Islamic banks, an analysis was conducted.

After the presentation of the Multicollinearity test, the Hausman test and the Lagrange Multiplier tests it was found that the best model for the analysis of the chosen sample is the Random Effects. The research included both macroeconomic and bank specific factors in order to be found their relationship with the credit risk in Islamic banks. Regarding the macroeconomic determinants, the GDP found to be significant and positive related with the non-performing loans. On the other hand, inflation has a significant but negative relationship with the credit risk of Islamic financial institutions. As far as the bank specific indicators are concerned, both total assets and loan loss provisions have significant and positive relationship with the non-performing loans of the banks. Contrary, the Return on Average Equity (ROAE) is a statistically significant determinant but it has negative relationship with the credit risk of the banks. Regarding the capital adequacy ratio, it has negative relationship with the dependent variable but it is not statistically significant indicator.

There are several limitations of this study that should be investigated in future research. Firstly, a comparison between Islamic banks and conventional ones in terms of credit risk will be interesting. In addition, future studies may include more macroeconomic and bank specific determinants in order to analyze their cause to the non-performing loans of the banks. As the development of Islamic financial institutions is increasing, more research in all fields of their operation should be done in order to be integrated in the conventional banking environment successfully.

REFERENCES

- Abedifar, P., Molyneux, P. and Tarazi, A., 2012. Risk in Islamic banking. HAL id: hal-00915115f
- Abusharbeh, M.T., 2014. Credit risks and profitability of Islamic banks: Evidence from Indonesia. *World Review of Business Research*, 4(3), pp.136-147.
- Ahmad, A.U.F. and Hassan, M.K., 2007. Riba and Islamic banking. *Journal of Islamic Economics, Banking and Finance*, 3(1), pp.1-33.
- Ahmad, N.H. and Ahmad, S.N., 2004. Key factors influencing credit risk of Islamic bank: A Malaysian case. *The Journal of Muamalat and Islamic Finance Research*, 1(1), pp.65-80.
- Ahmed, H. and Khan, T., 2007. 10 Risk management in Islamic banking. *Handbook of Islamic banking*, p.144.
- Alharbi, A., 2016. Development of Islamic Finance in Europe and North America: Opportunities and Challenges. *Uluslararası İslam Ekonomisi ve Finansı Araştırmaları Dergisi*, 2(3), pp.109-136.
- Al-Jarhi, M.A. and Iqbal, M., 2001. Islamic banking: answers to some frequently asked questions. *Occasional paper*, 4.
- Awan, A.G., 2009. Comparison of Islamic and conventional banking in Pakistan. *Proceedings 2nd CBRC, Lahore, Pakistan*, pp.1-36.
- Basel Committee on Banking Supervision, 2011. Principles for the sound management of operational risk. *Technical Report*.
- Chong, B.S. and Liu, M.H., 2009. Islamic banking: interest-free or interest-based?. *Pacific-Basin finance journal*, 17(1), pp.125-144.
- Choudhury, M.A., 1983. Principles of Islamic economics. *Middle Eastern Studies*, 19(1), pp.93-103.
- Di Mauro, F., Caristi, P., Couderc, S., Di Maria, A., Ho, L., Kaur Grewal, B., Masciantonio, S., Ongena, S. and Zaheer, S., 2013. Islamic finance in Europe. *ECB Occasional Paper*, (146).
- Febianto, I., 2012. Adapting risk management for profit and loss sharing financing of Islamic banks. *Modern Economy*, 3(01), p.73.

- Firmansyah, I., 2014. Determinant of non performing loan: The case of islamic bank in indonesia. *Buletin Ekonomi Moneter dan Perbankan*, 17(2), pp.241-258.
- Inekwe, M., 2013. The Relationship between Real GDP and Non-performing Loans: Evidence from Nigeria (1995–2009)'. *International Journal of capacity building in education and Management*, 2(1), pp.1-7.
- Karimi, A., 2014. Evaluation of the Credit Risk with Statistical analysis. *International Journal of Academic Research in Accounting, Finance and Management Sciences*, 4(3), pp.206-211.
- Khairi, K.F., Laili, N.H., Sabri, H. and Yusuf, M.M., 2018. Risks in Islamic Banks: Challenges and management. *Journal of Engineering and Applied Sciences*, 13(8), pp.2081-2085.
- Marouf, F.Z. and Guellil, Z., 2017. The Macroeconomic Determinants of Credit Risk: The Algerian Banking System.
- Masiukiewicz, P., 2017. Expansion of Islamic Finance in Europe. *Journal of Intercultural Management*, 9(2), pp. 31–51.
- Mehmood, B., Younas, Z.I. and Ahmed, N., 2013. Macroeconomic and bank specific Covariates of non-performing loans (NPLs) in Pakistani commercial banks: Panel data evidence. *Journal of Emerging Economies and Islamic Research*, 1(3), pp.1-14.
- Misman, F.N., Bhatti, I., Lou, W., Samsudin, S. and Rahman, N.H.A., 2015. Islamic banks credit risk: a panel study. *Procedia Economics and Finance*, 31, pp.75-82.
- Narayan, P.K. and Phan, D.H.B., 2017. A survey of Islamic banking and finance literature: Issues, challenges and future directions. *Pacific-Basin Finance Journal*.
- Obaidullah, M., 2005. Islamic financial services.
- Radzi, R.M. and Lonik, K.A.T., 2016. Islamic Banks' Risks: It's Rating Methodology and Shariah Assessment Solutions. *Journal of Islamic Banking and Finance*, 4(2), pp.48-60.
- Rhanoui, S. and Belkhoutout, K. ,2019. Risks Faced by Islamic Banks: A Study on the Compliance Between Theory and Practice. *International Journal of Financial Research*, 10(2), p. 137.
- Salman, A. and Nawaz, H., 2018. Islamic financial system and conventional banking: A comparison. *Arab Economic and Business Journal*, 13(2), pp.155-167.
- Sarker, A., 2005. CAMELS rating system in the context of Islamic banking: A proposed 'S'for Shariah framework. *Journal of Islamic Economics and Finance*, 1(1), pp.78-84.

Shingjergji, A., 2013. The impact of bank specific variables on the non performing loans ratio in the Albanian banking system. *Research Journal of Finance and Accounting*, 4(7), pp.148-152.

Siddiqui, D.A., 2019. A Comparative Analysis of Non-Performing Financing in Islamic and Conventional Banks of Pakistan.

Sundararajan, V. and Errico, L., 2002. *Islamic financial institutions and products in the global financial system: Key issues in risk management and challenges ahead* (Vol. 2). International Monetary Fund

Tlemsani, I. and Al Suwaidi, H., 2016. Comparative analysis of Islamic and conventional banks in the UAE during the financial crisis. *Asian Economic and Financial Review*, 6(6), p.298.

Van Schaik, D., 2001. Islamic banking. *The Arab Bank Review*, 3(1), pp.45-52.

Vogiazas, S.D. and Nikolaidou, E., 2011. Credit risk determinants in the Bulgarian banking system and the Greek twin crises. In *MIBES International conference* (pp. 177-189).

Waemustafa, W. and Sukri, S., 2015. Bank specific and macroeconomics dynamic determinants of credit risk in Islamic banks and conventional banks. *International Journal of Economics and Financial Issues*, 5(2), pp.476-481.

Wiryo, S.K. and Effendi, K.A., 2018. Islamic Bank Credit Risk: Macroeconomic and Bank Specific Factors. *European Research Studies*, 21(3), pp.53-62.

Online Sources

Bank, E. C. (no date) What are non-performing loans?, European Central Bank. Available at: <https://www.ecb.europa.eu/explainers/tell-me/html/npl.en.html>

BankFocus - Login (no date). Available at: <https://orbisbanks.bvdinfo.com/version-20191121/home.serv?product=orbisbanks>

EViews Help (no date). Available at: http://www.eviews.com/help/helpintro.html#page/content%2Fpanel-Panel_Equation_Testing.html%23ww191025

Free data, statistics, analysis, visualization & sharing - knoema.com (no date) Knoema. Available at: <https://knoema.com/>

Getting Started in Data Analysis: Stata, R, SPSS (no date). Available at: <https://www.princeton.edu/~otorres/>

Home | islamic-banking.com (no date). Available at: <https://www.islamic-banking.com/>

Market risk (no date) European Banking Authority. Available at: <https://eba.europa.eu/regulation-and-policy/market-risk>

Principles for Sound Liquidity Risk Management and Supervision, (2008). Available at: <https://www.bis.org/publ/bcbs144.htm>

Principles for the Management of Credit Risk, (2000). Available at: <https://www.bis.org/publ/bcbs75.htm>

WDI - Home (no date). Available at: <http://datatopics.worldbank.org/world-development-indicators/>