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INFORMATION ASYMMETRY, CREDIT RISK, AND PROFITABILITY IN ISLAMIC AND CONVENTIONAL BANKS

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Abstract

The thesis empirically investigates and compares some of the main aspects of Islamic and conventional banks during four periods: the pre-financial crisis, financial crisis, post-financial crisis and entire sample periods (2002-2015). Specifically, it investigates and compares the information asymmetry, credit risk and profitability in Islamic and conventional banks. For the information asymmetry investigation, a total sample of 211 Islamic and conventional publicly listed banks from Asia, Europe and Africa is used over the period 2002-2015. Quarterly data is retrieved from Datastream for the sample. However, for credit risk and profitability investigations, annual data for 225 Islamic and conventional banks are extracted from Datastream for the periods from 2002 to 2015 from Asia, Europe and Africa. The study aims to: (i) investigate and compare the degree of information asymmetry in Islamic and conventional banks for the pre-financial crisis, crisis, post-crisis and full sample periods; (ii) investigate and compare the degree of credit risk in Islamic and conventional banks for the pre-financial crisis, crisis, post-crisis and full sample periods; and (iii) investigate and compare the degree of profitability in Islamic and conventional banks for the pre-financial crisis, crisis, post-crisis and full sample periods.

The empirical investigations provide important results in the three areas. First, the results show a significant difference in the information asymmetry level between Islamic and conventional banks for the crisis, post-crisis, and full sample periods. In fact, Islamic banks showed significantly lower information asymmetry levels than their counterparts in all information asymmetry proxy measures (i.e. Bid-Ask Spread, Share Turnover ratio and Stock Price Synchronicity SYNCH). These findings are robust with the intangibility ratio as a proxy of information asymmetry for all four periods (including the pre-crisis period). To the best of the author's knowledge, such results are presented for the first time, and will add to the Islamic banking literature.

Second, mixed results were found for the credit risk levels in Islamic and conventional banking credit risk for the four periods when Z-score and non-performing loans are used as credit risk proxy measures. However, the robustness check shows that there are no significant differences between Islamic and conventional banks in their credit risk for all of the different periods used in the study. This suggests that despite the different nature of both banks, their credit risk for the study periods do not statistically differ. These results contradict some prior studies conducted in the same area. Nevertheless, using only publicly

listed banks, this thesis covers a longer period than other studies and investigates credit risk in four periods while using a combination of different control variables.

Third, the results show that the profitability of Islamic banks is lower than conventional banks for the crisis, post-crisis and full sample period when using return-on-asset and return-on-equity as profitability measures. However, there are no significant differences between Islamic and conventional banks' profitability during the pre-crisis period. These results are robust. Nevertheless, they affirm some prior studies' findings and contradict others. This thesis uses up-to-date data for a longer period and investigates the profitability of publicly listed Islamic and conventional banks four different periods. Its findings add to the Islamic banking literature.

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AUTHOR'S DECLARATION

I declare that, except where explicit reference is made to the contribution of others, this dissertation is the result of my own work and has not been submitted for any other degree at the University of Glasgow or any other institution.

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Signature

Chapter 1 Introduction

It is important to understand the role of banks as they are the main source of finance in an economy. They act as financial intermediaries between lenders (depositors/investors) and borrowers (entrepreneurs). There are various types of banks with specific functions such as Investment Banks, Retail Banks, Universal Banks, Central Banks, Commercial Banks, Islamic Banks and others. However, some banks can have a combination of other types of banking functions (i.e. retail banks can have Islamic windows).

In the past two decades, Islamic banking has grown rapidly around the world. In its World Islamic Banking Competitiveness Report 2013, Ernst & Young reported that global Islamic banking assets were expected to cross the $1.8 trillion mark in 2013 compared to $1.3 trillion in 2012 and expected to grow to $3.4 trillion in 2018. According to the report, the Islamic banking industry continues to record strong growth, with the top 20 Islamic banks registering a growth of 16% in the last three years (i.e.2010-2013. This indicates that Islamic banking assets are rapidly growing around the world which reflects the importance of such types of banks in different countries. Due to the increasing interest in commercial activities complying with Shariaa, the Islamic rules of commercial banking, there is an increasing awareness of the importance of understanding such a system from operators in the commercial banking sector, investors, entrepreneurs and scholars. In this regard, many studies in the Islamic banking literature compare both banking systems; i.e. Islamic and conventional banking. Since interest rates are forbidden in Islamic banking, which is considered one of the main differences between conventional and Islamic banks, this thesis gives a historical view of interest rates in different eras and in the context of different religious. This thesis also gives background on Islamic banking and its various financing modes. Three main factors in the banking system will be focused on. First, the thesis attempts to investigate and compare the level of information asymmetry between Islamic and conventional banks. Second, the study examines and compares the credit risk of both banking systems. Third, the thesis investigates and compares the profitability of Islamic and conventional banks. The study will cover the period 2002-2015. In this regard, the study divides the period into four categories: the pre-crisis period of 2002-2006, the crisis period of 2007-2008, the post-crisis period of 2009-2015 and the full study period 2002-2015. The thesis uses a sample of publicly listed banks around the world. Finally, the thesis attempts to address the limitations evident in the current study.

This chapter presents an overview of the study. The rest of the chapter is organised as follows. Section 1.1 provides the motivation for this research. Section 1.2 gives an overview of the global financial crisis. Section 1.3 introduces the key research questions and contributions of the study. Finally, Section 1.4 provides a summary of the organisation of this thesis.

1.1 Motivation for this study

Several reasons motivate the current study on Islamic and conventional banking. First, Islamic banking is expanding around the world. It is attracting more clients and establishing itself as a powerful competitor for conventional banks. It is always interesting to understand how Islamic banks differ from their conventional counterparts.

Second, unlike other studies, this thesis uses a sample of only publicly listed Islamic and conventional banks around the world. Different countries are included in the sample to have a wider and more general view and conclusion of the results. Also, the study includes four periods, including the pre-crisis, crisis, post-crisis and full study period from 2002-2015. This provides comprehensive and up-to-date data for analysis compared to that used in many other studies in the same field.

Third, the study aims to investigate the asymmetric information issue in Islamic banking and compare it to conventional banks. Identifying the information asymmetry problem is extremely important, especially for insurance companies and banks. In this regard, this study focuses on the information asymmetry in Islamic and conventional banks. It shows the different ways that information asymmetry may occur in Islamic banking and compares its level of severity with that of conventional banks. There is no study, to the best of the writer's current knowledge, which has empirically investigated and compared information asymmetry between Islamic and conventional banks. In addition, identifying the severity of information asymmetry will help investors make the right investment decisions.

Fourth, the previous studies on information asymmetry are mainly focused on modelling and theoretical aspects. The Islamic banking literature lacks empirical research on information asymmetry. Therefore, this study aims to contribute to the Islamic banking literature by empirically examining information asymmetry in Islamic and conventional banks.

Fifth, although Islamic and conventional banks face credit risk problems, the unique characteristics of Islamic banks might make their effect more severe when compared to conventional banks. Identifying credit risks help the investor take proper decisions when making investments. The banking literature shows mixed results in terms of credit risk for Islamic banks compared to conventional banks. This study aims to extend the banking literature by investigating credit risk for Islamic and conventional banks to robust the previous studies findings. This study uses a sample with a longer and more recent period compared to the other studies mentioned. It also uses only publicly listed banks around the word.

Sixth, profitability is one of a bank's performances measures. It is important to know how well a bank is doing regarding its profitability. After all, the main reason for the existence of banks is for shareholders to maximise their wealth. Previous studies have not tested the significant differences between the profitability of Islamic and conventional banks, which this study aims to do using a sample of publicly listed banks around the world for the period 2002-2015.

Finally, the study aims to reveal whether there is a link between the three factors of information asymmetry, credit risk and profitability based on the analysis of the results obtained.

1.2 Research contribution

This research makes several new contributions, as well extensions to the existing banking literature. First, stakeholders make their decisions based on the available information. It is important to investigate and compare the issue of information asymmetry in the banking industry to help stakeholders make the proper decision. This research offers for the first time empirical evidence on the comparison of the information asymmetry in Islamic and conventional banks. It fills the gap in the existing literature by empirically investigating and comparing the severity of information asymmetry in Islamic and conventional banks.

Second, the study offers an alternative view to that of Jensen and Meckling (1976) regarding information asymmetry in equity-based firms. It highlights the fact that the unique nature of Islamic banks may prove an exception to their theory.

Third, using publicly listed bank data collected from the Datastream database, the study offers a comparative view of information asymmetry, credit risk and profitability in Islamic and conventional banks. Unlike private banks, publicly listed banks are open to all stakeholders. The market stock price data gives a clearer indication of the bank's real market performance rather than relying only on their accounting data. This data is collected for all of the Islamic and conventional publicly listed banks discussed in this study. As a result, the conclusion of the results can be generalised.

Fourth, Islamic banking has rapidly grown during the last decade. The banking literature shows mixed results in credit risk for Islamic banks compared to conventional banks. This study extends the existing literature by using an updated period of study, i.e. 2002-2015, to robust the previous studies findings.

Fifth, the study extends the banking literature by applying regression analysis to determine if there is a significant difference in the profitability of Islamic and conventional banks.

Finally, the study indicates the possibility of its having its results connected. The study indicates that Islamic banks have lower information asymmetry for the entire period studied. In addition, the credit risk chapter shows that Islamic banks have a lower credit risk for the entire period of study. Moreover, it is shown that the profitability of the Islamic banks is less than conventional banks for the same period. This is in line with the suggestion that Islamic banks are less opaque. Therefore, they face lower credit risk than their counterparts; however, they may have lower profitability ratios because of their low uncertainty investments. A suggestion of this conclusion could be raised, but it is not reliable. Further tests must be implemented to verify this argument.

1.3 Policy implications of the research findings

1.3.1 Islamic Banks Awareness, Competition and Products Standards

Islamic banks are growing around the world. They started to operate in countries that Islam is not the dominant religion (i.e. United Kingdome). Knowing that Islamic banks compete with other conventional banks, it is important to increase the awareness about the Islamic banks' operations and activities. In addition, there should be a clear view how Islamic banks differ from conventional banks. Unfortunately, there is a misunderstanding of

the way that Islamic banks operate where many people think that since banks do not charge interest, they are going to get free finance. This is the common idea of Islamic banking to many people. However, both Islamic and conventional banks aim to maximise their profit and thus increase their share holders' wealth. However, both banks are based on different principles in which these should be explained to stakeholders.

On the other hand, the banking industry is very competitive. Islamic banks would face very high competition and although there is a rapid growth in Islamic banking assets. However, their profitability is lower than conventional banks. Nevertheless, Islamic banking is still developing when compared to conventional banking systems. Therefore, many potentials in Islamic banks are still not exploited. This should alert Islamic banks to revise their strategies instead of copying conventional banks strategies with a twist that makes their products comply with Islamic Shariaa. They should target other market segments than Muslims. Mainly, Muslims seek Islamic banks for Islamic purposes. They want to adhere to Islamic principles and not deal with interest which is prohibited in Islam. However, the market has other customers who do not consider following the Islamic principles as a priority in their life (Kearney et al., 2012). These potential customers seek for the best deal in the market that would suit them. They look for competitive products and efficient services. Therefore, Islamic banks must try to attract this type of customers by thinking out of the box without compromising the breach of Islamic Shariaa to increase their market share and profitability.

Moreover, having different interpretations for an Islamic product from Shariaa prospective makes it challenging to be standardised. Nevertheless, as a starting point, central banks must control their Islamic standards in their countries where Islamic banks that operates in once country would have the same standards. Hence, products would have only one interpretation, and all Shariaa board committees will have the same reference in legalising products that adhere to Islamic Shariaa.

1.3.2 Mitigating Information asymmetry and credit risk

The research has several implications regarding banks' information asymmetry and credit risk. These two factors are essential in investment decision-making and are interrelated. Banks usually face high credit risk in high information asymmetry situations. Thus, banks should try to minimise the effect of information asymmetry to reduce their credit

risk. The following paragraphs give an overview of different ways of mitigating the information asymmetry problem.

There are ways that information asymmetry can be minimised such as screening and monitoring, but normally it would be very costly to be applied. Acknowledging the importance of minimising the information asymmetry problem, researchers have focused on alternative ways to mitigate it between stakeholders. Early studies by Spence (1973) and Stiglitz (1975) developed a model of signalling and built a theory for screening better employees in uncertainty situations, respectively. These are supposed to reduce information asymmetry in the hiring market for employers. Monitoring and screening can be used to reduce information asymmetry but they are costly and labour intensive which discourages firms from applying them. Asset collateralization may reduce information asymmetry (Akerlof et al., 1986). Collateral can reduce adverse selection. For example, the bank can ask for a specific value of collateral, such as a defined percentage of the total loan paid as a down payment. In fact, Islamic banks apply this but in a way that complies with Islamic Shariaa. Islamic banks back up their finance with assets. Unlike conventional bank mortgages where borrowers borrow the money from lenders (bank) and then pay it back with interest, Islamic banks provide finance instruments that comply with Islamic Shariaa such as *Musharaka*. When financing a project, buying a house through diminishing *Musharaka* and *Ijara* for example, the bank requires the borrower to participate and pay in advance a percentage of the value of the house to be a partner ownership of the house. During the payment period, the client will pay the bank instalments consisting of two elements, an acquisition payment and a rental payment. When all acquisition payments have been made, and the finance has been settled, ownership of the property transfers to the client. It can be noticed that a conventional mortgage is based on interest which is forbidden in Islamic Shariaa. However, in the case that the client fails to pay the bank, the bank can sell the house (asset) to recover its money. Moreover, Jensen and Meckling (1976) also state that agency cost occurs in situations where two or more people are involved in cooperative efforts. This also can be in situations that do not have a clear-cut principal-agent relationship (i.e. authoring an article with two or more authors). They define agency cost as the sum of monitoring expenditure by the principal, bonding expenditure by the agent and the residual loss. The authors suggest that the principal can limit the divergence agent's interest by establishing appropriate incentives incurring monitoring costs to limit any harmful decisions that can be made by the agent. In addition, the principal may go further by paying the agent bonding costs to ensure that the agent will not harm the principal or make sure that the

principal will be compensated if such decisions are made. However, the authors state that it is impossible to make sure that the agent will always make optimal decisions at the principal's viewpoint at zero cost. In fact, this sheds light on another aspect of the theory of firms, which is property rights. Jensen and Meckling suggest that firm ownership changes a manager's decision-making behaviour. For example, in a fully-owned firm managed by the owner, the owner will make operating decisions that maximise his utility. These include a monetary and non-monetary decision that help in maximising the utility such as physical appointments in the office, the attractiveness of the office staff, the level of employee discipline, etc. On the other hand, when the firm is owned by more than one owner (shareholders), agency cost is generated as a result of the divergence of the manager (co-owner) and the other shareholders' interests. This is because the manager will try to maximise his utility at the expense of other shareholders. For example, if maximising a manager's utility costs the firm some additional expenses, the manager will do this since the cost is distributed among all shareholders resulting in the manager only bearing a small fraction of it. The conflict of interest here is described as an agency problem. However, this dispute also resulted from the manager's hidden action that shareholders may be not aware of (information asymmetry). Hence, it is clear that information asymmetry exists in situations where the agency problem occurs. Nevertheless, such unwanted actions can be limited or reduced (not totally eliminated) by applying monitoring and screening activities. However, these will incur additional costs to the firm which will eventually be suffered by the owners.

Interestingly, Nayyar (1990) suggested that service firms rely on the transfer of reputation for a quality service across multiple services offered by diversified service companies in the reduction of information asymmetry. For example, a high-quality service firm's products will be extremely attractive. In other words, a well established reputation about a high-quality product will result in reducing information asymmetry between the service firm and potential buyers. However, these claims are not always the case since potential buyers may still search for the products and not rely on the company's reputation. From another viewpoint, firms may take advantage of their high reputation and produce a new low-quality product which creates a moral hazard problem. Therefore, as supported by the latter argument, this study suggests that a company's reputation may give the stakeholder a general idea about its products but not reduce the information asymmetry problem.

Another study by Tang (2006) shows a reduction in credit market information asymmetry when revealing new information about a firm's credit quality. Therefore, creditors will have a better chance to identify good firms based on their credit quality. Hence, a useful tool to reduce information asymmetry would be to use third party credit rating agencies. On the other hand, Jain (2014) explains that the misuse of credit rating can increase information asymmetry rather than decrease it. For example, investors may use credit rating as a substitute for investor analysis. This can result in a market failure in realising the full value of credit rating. In fact, when investors totally rely on credit rating as a decision tool for investments, an increase in demand of investing in a particular project may give a false sign about its real quality resulting in an information asymmetry problem. In addition, different approaches used by different credit rating agencies may produce different credit ratings which will confuse investors. Moreover, credit rating agencies rely on the quality of information provided to them. However, they may not verify the received information resulting in a false valuation. Nevertheless, this study suggests that credit rating agencies can be used as a supplement tool with other tools, such as monitoring and screening, to reduce information asymmetry, though not on their own. However, according to Utzig (2010), credit rating agencies bear some responsibility for the financial crisis in 2007. Hence, investors must reduce their dependency on credit rating agencies by basing their investment decisions on a broader range of indicators.

Another way to reduce information asymmetry can be by the voluntary disclosure of information. A firm can voluntarily disclose additional information to mitigate information asymmetry. However, the additional information may not help a lot since that the firm's management can manipulate it.

1.4 The Global Financial Crisis

The thesis sample period covers the 2007-2008 financial crisis. Therefore, this section gives an overview of the global financial crisis and some of the main reasons that caused it. The causes of the financial crisis from an Islamic perspective are also discussed.

The 2007-2008 global financial crisis started in the United States and spread all around the world. It affected almost every country regardless of its size or wealth. The wide reach of the global financial crisis means that it is important to understand it and also what its main drivers were. Kayed and Hassan (2011) define the global financial crisis as "disruptions in financial markets causing constraint to the flow of credit to families and

businesses and consequently having an adverse effect on the real economy of goods and services." The term is usually used to define different situations where investors unexpectedly lose a significant amount of their investments and financial institutions lose an unexpectedly significant amount of their value. Moreover, Claessens and Kose (2013) explain that "a financial crisis is often associated with one or more of the following phenomena: substantial changes in credit volume and asset prices; severe disruptions in financial intermediation and the supply of external financing to various actors in the economy; large scale balance sheet problems (of firms, households, financial intermediaries and sovereigns); and large scale government support (in the form of liquidity support and recapitalization)." The following are examples of financial crises: stock market crashes, financial bubbles, currency crisis, and sovereign defaults (Kayed and Hassan, 2011).

Banks are the most important channel for financing the needs of the economy. They have an important role as financial intermediaries. However, in financial crises, their credit activities decline, and as a result, the availability of the financing sources of the economy is affected (Zivko and Kandzia, 2013). The recent global financial crisis hit the global banking system. For a summary table of all of the different causes of the 2007-2008 global financial crisis, see Jickling (2010). However, this section describes excessive lending as a primary cause of the financial crises 'credit crunch'.

One of the main activities of a conventional bank is to lend funds to borrowers to earn a profit. However, driven by greed and higher expected returns, before the recent financial crash, banks provided loans to individuals who did not qualify for loans at higher interest rates (i.e. sub-prime borrowers) (Shafique et al., 2012, p.126). Hence, loans were available and affordable to unqualified individuals but obviously with high-risks. Institutions ignored the high-risk associated with such loans, and as a result, the failure of loan repayments by sub-prime borrowers caused the financial crisis. Kayed and Hassan (2011) state that the global financial crisis was mainly caused by reckless lending practices, opaque risk transfer instruments and high information asymmetry between lenders and borrowers. In addition, the lack of regulatory-supervisory and faulty risk management structures encouraged excessive risk-taking. The United States had low interest rates which allowed mortgages to be affordable and in high demand. Therefore, banks approved many loans without proper assessments to obtain more profit and commissions from their sale. In other words, banks gave priority to loan volume over loan quality (Kayed and Hassan, 2011 cited in Chapra, 2009). As a result, investors attempted to borrow beyond their means.

Borrowers took excessive mortgages to buy homes that they could not afford as home prices were high at that time. They expected to sell their houses at prices that would cover their mortgages and interest with potential capital gain. However, the housing market started to fall and the value of houses decreased. As a result, borrowers could not sell their houses, and thus, they could not pay their mortgage as house prices fell below mortgage liabilities. As previously mentioned, there were big amounts of loans given to borrowers without proper assessments being done. Consequently, when a big group of borrowers failed to pay their mortgages, banks faced huge losses - this was the first spark to ignite the financial crisis.

According to Hassan (2009), Islamic economists (e.g., Siddiqui, 2009; Chapra, 2009; Bagsiraj, 2009) attribute the financial crisis to interest rates (Riba) that are used in conventional banking. He states the following: "Huge budgetary imbalances, excessive monetary expansion, large balance of payments deficits, insufficient foreign aid, and inadequate international cooperation can all be related to flaws in the theory of interest, which is also the root of the crisis". In contrast, Islamic banking is an alternative system to conventional banking. Nevertheless, it has also been expected that this banking system would be affected by the global financial crisis, though the effect would be less severe compared to conventional banks. This is because Islamic banking is based on the core principles of Islamic economics which are justice, equity and welfare (Hassan, 2009, p.2). In other words, Islamic finance is based on Islamic Shariaa which prohibits dealing with financial transactions that involve interest (riba), gambling, cheating, gharar (risk or uncertainty), monopoly, exploitation, greed, and unfairness. Moreover, the Islamic financial system is also based on a set of values including honesty, credibility and transparency. Furthermore, a relationship based on a partnership between a client and a bank is expected to eliminate, or at least minimise, the effects of a financial crisis on the Islamic banking system. This is because Islamic banks share risk, income and wealth with their clients. In addition, financing modes in Islamic banks are backed up by assets and money is not permissible to be traded with interest (Islamic finance modes are discussed in more detail in Section 3.5). In other words, the Islamic banking system trades in the real economy. The real economy involves trade based on tangible goods such as houses, land and properties, and factories (Hassan, 2009, p.2). On the other hand, in the financial economy, people give financial values on tradable papers that are often not represented with the real asset. In such an economy, money is created out of nothing (i.e. assets that do not have real value) and is circulated in the conventional banking system. In addition, issuing "promise to repay" loans

that are more than a conventional bank's cash reserves have helped to create speculative bubbles that can be traced back over more than 300 years in the Western world (Hassan, 2009, p.6). For example, when the new money created is spent on properties and shares, their values logically tend to rise. In contrast, when banks reduce money creation, there will be fewer buyers and hence prices will fall. On the other hand, Islamic regulations prevent money creation by the banking system as banks are not allowed to lend money with interest (Riba) (i.e. finance must be backed with the real asset). Therefore, since Islamic banking is a part of the banking industry, it was expected that it would be affected by the financial crisis as it hit the economy as a whole. However, because of the uniqueness of the Islamic banking system's principles and financing modes, it is expected that the effect of the financial crisis would be less than for its counterparts.

1.5 Research Questions and Methodology

Given the different motivations discussed above, this study seeks to answer the following seven research questions. First, do Islamic banks have lower information asymmetry than conventional banks? This research question investigates the severity of the information asymmetry problem by comparing both types of banks. The second research question deals with the consistency of the information asymmetry results for the all four study periods. This question examines the consistency of the regression results for the different periods used in the study based on the constructed arguments. The third question is about whether credit risk is lower in Islamic banks compared to conventional banks. The fourth research question investigates the consistency of credit risk for all four periods. The fifth research question examines the profitability of Islamic and conventional banks. It was mentioned earlier that Islamic banking is rapidly growing. Thus, this question investigates whether their profitability is higher than that of conventional banks. The sixth research question investigates the consistency of bank's profitability regression results for all four study periods. Finally, the seventh research question investigates if there is any possible link between the regression analysis results for information asymmetry, credit risk and profitability for the study period.

These are the key research questions of this study. Based on these research questions, testable hypotheses are derived. Arguments are built for these hypotheses and discussed in detail in their respective chapters.

Regarding methodology, a quantitative approach is adopted. Empirical data were collected from the Datastream and Bankscope data bases. This thesis uses the ordinary least square regression analysis for all its tests to identify if there are any significant differences between Islamic and conventional banks regarding their information asymmetry, credit risk, and profitability. The methodology sections of the information asymmetry, credit risk, and profitability chapters discuss in detail all of the variables used.

1.6 Thesis organisation

The structure of the thesis is organised as follows. Because interest (usury) is one of the main differences between Islamic and conventional banks, Chapter 2 discusses the history of interest (usury) in different civilisations and for different religions. Many people, especially Muslims, think that interest is forbidden only in the Islamic religion. The chapter tells the story of interest (usury) in different civilisations and religions. Chapter 3 provides an introduction to Islamic banking and its differences and similarities with conventional banking. It discusses the types of deposit accounts and financial instruments that Islamic banks apply. This is followed by Chapter 4, which investigates and compares information asymmetry levels between Islamic and conventional banks. Chapter 5 investigates and compares credit risk between Islamic and conventional banks. This is followed by Chapter 6, which investigates and compares profitability between Islamic and conventional banks. Chapter 7, the concluding chapter, provides a summary of the study, a discussion of the findings and a conclusion of this thesis. It also points out the limitations of this study and ends by offering some suggestions for further studies in this research area.

Chapter 2: The History of Interest

This chapter discusses the history of interest (usury) in different civilisations and religious. Understanding the religious and moral reasons for the prohibition of interest gives ground for understanding Islamic banking and its differences with conventional banking. Section 2.1 to section 2.3 tells the story of interest in the Prehistoric, Mesopotamia, and Greece civilisations. Section 2.4 to section 2.6 discusses the different points of view of interest (usury) in the Judaism, Christianity, and Islamic religions.

2.1 Interest in different Civilisations

2.1.1 Prehistoric and Primitive Credit and Interest

Homer (1963), argues that although there have been new modern forms of credit created in recent centuries, credit is not a modern phenomenon. The provision of credit has been in existence in ancient and medieval times. Credit provision has existed in prehistoric and primitive times in the form of loans of seeds or animals or a tool or food to a son or neighbour until harvest time (Homer, 1963). These loans were considered as gifts if they were not expected to be repaid, or as loans if repayments were expected, and loans with interest if the repayment consisted of an additional amount than the original loan given. Indeed, there were loans without interest in ancient time, for instance, loans for friends. However, other loans with interest obtained for productive work also existed in ancient times. These were mainly loans of seeds and animals. For example, at harvest time, the seeds were repaid with an increase in the original quantity loaned (interest) while the animal originally loaned can be returned, with an addition of some part or with all of its progeny. There were two distinctions of loan types in these times. The loan of an identifiable object (i.e., an animal, tool, or a farm), which must itself be returned, and the loan of a commodity (i.e., seed, money, or food), which must be returned in kind but not itself since the original may no longer exist. The concept of interest in its modern form perhaps arose from these kinds of productive loans (Homer, 1963).

2.1.2 Mesopotamia: Sumer, Babylonia, and Assyria

Mesopotamia, which is in modern-day Iraq, was a very important region in an ancient civilisation. Due to the strategic location of navigable rivers Tigris and Euphrates between the east and west, trade played a major role in Mesopotamia. There were different civilisations in Mesopotamia in various eras: Sumerian history, circa 3000 B.C, Babylonian Empire, 1900 B.C., and the Assyrian in 732 B.C. (Homer 1963). In Sumer, people recorded transfers and loans in legal documents which were witnessed in front of officials and deposited in temples. Nevertheless, interests on loans also existed in this era. Mews and Abraham (2007) also mention that there is evidence that interest rates of 20% and more were charged on loans of silver and barley in the Civilisation of Sumer. Failure to repay these debts caused one to be enslaved to wealthy landowners. As a result, the Babylonian monarch was motivated to issue an occasional cancellation of debt servitude. From the Sumerians, financial customs; Hammurabi perpetuated his code (Code of Hammurabi) in the time of Babylonia. Hammurabi law is considered as one of the first forms of law. Among many regulations that the code formulated was the credit regulation. For example, all interests due on land were cancelled in case of crop failure caused by storm or drought for that year. Like early Sumerian customs, the code required that all loan contracts must be written in the presence of an official and witnessed. Failure on implementing that will cause the lender to lose all his rights to claim repayments. However, to protect the creditors, pledges and sureties were permitted. For example, any property or real person could be pledged such as wife, children slaves, land, and houses. The person's signature was often required in the loan contract. In the case of failure of repaying the debt, and a person was pledged, the lender would be entitled of servitude for a maximum period of three years depending on the amount of debt (Homer, 1963).

On the other hand, temples owned great wealth, and they were active in finance. They received deposits and valuables and were also the seat of justice. They provided loans to poor people without interests and sometimes with interests. They also provided loans for slaves so they can purchase their freedom. The financial transactions did not change in the Assyrian era from the financial transactions in the time of Babylonia. Nevertheless, Homer states that interest-free for short term loans were more frequent at this time, but with heavy penalties for default.

2.1.3 Usury in Greece

Usury comes from the Latin word usura. It means money paid for the use of money. The medieval canon law defined it as the intention of the lender to obtain an additional return from a loan than the principal amount (Hassan et al., 2009). According to Maloney (1971), despite the absence of a universal acceptance of the way of borrowing, people were familiar with lending in ancient Greece. In fact, credit facilitated the trade activities, for instance, there was extensive borrowing at interest on ship loans (Homer, 1963). Charging interest on loans was logical for most Greece citizens since that the lender put his money at risk by lending it to others. The increased growth in land and sea commerce expanded the moneylenders market. In fact, loans on sea commerce charged higher interest than loans on land commerce. Moneylenders explained the differences in interest rates as a result of high risk is associated with sea trade when compared to land trade (Maloney, 1971). The type of trade was not the only factor that influenced interest rates among Greece. Other factors also had an impact on the interest rates such as to whom the loan with given, ship destination and the political and economic situations of the country.

Despite charging interest on loans which was a standard practice in Greece history, oppositions for the concept also existed. Oppositions to conventional loans were from family traditions, reactions to abuses, and from the Philosophers. These are discussed in the following paragraphs.

Family traditions played a role in providing interest-free loans or free loans (eranos) to family members. Maloney (1971) define eranos as 'a gratuitous loan made by several persons who had come together to help a common friend'. Hence, the main difference between the eranos and the conventional loan is that interest is not charged in eranos while its added to the principle the conventional loans. Eranos was considered as a highly respected practice because the creditor was giving up an opportunity to gain from his money for a family member or a friend. It was common that the borrower who seeks eranos to approach his friends to pull up a free loan. The practice of eranos also extended beyond the family to corporate enterprises reducing the dependency on conventional loans.

Moneylender's greed was the primary motivation for the public opposition to interest on loans (Maloney, 1971). An entire family slavery by moneylenders was permitted and a common practice in ancient Greece when the loans with interests defaulted. Moreover, because of the high-interest rates charged, the debt was an insupportable burden (Homer,

1963). Slavery continued for insolvent debtors until the 6th century B.C, when Solon stopped this practice. He forbade pledging of the body like a security for a loan. Maloney (1971) quoted Aristotle explaining this matter as 'all borrowing was on the security of the debtor's person down to the time of Solon: it was he who first became head of the People. Thus the most grievous and bitter thing in the state of public affairs for the masses was their slavery; not that they were not discontented about everything else, for they found themselves virtually without a share in anything.' Hence, at the time of Solon, all those enslaved for debt were freed, and those who were sold abroad were repurchased at the state expense. Solon eliminated slavery because of debts, but other practices on loans remained such as taking interests on interests (Anatocism) and subtracting the interest from the capital even before handing it over (instant discount of interest from the loan) (Homer, 1963 and Maloney, 1971).

The third opposition to interests on loans in ancient Greece came from the philosophers. Political theory was considered as a practical science in the old Greece. Philosophers took the responsibility of showing others how things might be otherwise or better. Mainly their political theories were idealistic but practical. Among the philosophers that condemned the practice of interest on loans was Plato and Aristotle (Maloney, 1971). They wanted to have a city-state free from the intellectual and moral corruption. They saw that the state's purpose was to seek the highest good for its citizens by having a moral city that aimed to make its citizens honest. Hence, they thought, if charging interest on loans was evil and reflected badly on the society, the state should eliminate it. Plato refused usury (interests) on loans in ancient Greece. He wrote in 360 B.C.:

'In marrying and giving in marriage, no one shall give or receive any dowry at all; and no one shall deposit money with another whom he does not trust as a friend, nor shall he lend money upon interest; and the borrower should be under no obligation to repay either capital or interest.'

He outlawed profit on loans. He saw that greed, which is led by moneylenders, will make debtors eager for a revolution (Maloney, 1971). He also aimed to form a community which cares for each of its members. Usury was against his aims because it created selfishness and strife. Similarly, Aristotle agreed with Plato's views on usury in 350 B.C., and he wrote:

‘There are two sorts of wealth-getting, as I have said; one is a part of household management, the other is a retail trade: the former necessary and honorable, while that which consists in exchange is justly censured; for it is unnatural, and a mode by which men gain from one another. The most hated sort, and with the greatest reason, is usury, which makes a gain out of money itself, and not from the natural object of it. For money was intended to be used in exchange, but not to increase at interest. And this term interest, which means the birth of money from money, is applied to the breeding of money because the offspring resembles the parent. Wherefore of any modes of getting wealth this is the most unnatural.’

Aristotle states that money is a medium of exchange, and it is against its nature if it is used as a way of generating profit by itself. Hence, charging interest on loans is against the nature of money which is unaccepted in Aristotle’s view of point. He also believed that charging interest on loans is unfair. In fact, Aristotle considered moneylending among the most despicable occupations because it benefits from the needs of others by a wrong way (Maloney, 1971). Interest (usury) was considered as an unethical practice by Aristotle because money is not productive by itself. He argued that renting a garden is a productive practice, where the garden can produce fruits every year, and from this product, the renter can pay out the rent to the garden owner. On the other hand, he also thought that money is a medium of exchange. When a person gets a loan, he receives the loan amount with no additional value above the loan itself. Hence, according to Aristotle’s view, taking interest on the loan is unfair because the lender gets more money than the actual amount he lent to the borrower. Money cannot produce additional value like the garden since it is only a medium of exchange (Brook, 2001). However, because of greed, moneylenders attempt to make a profit from what is a medium of exchange. However, Aristotle did not consider that money loses its value over time. He thought that a 100 pound today will still worth a 100 pound after a year of now to anyone, at any time for any purpose. However, when moneylenders provide loans, they lose the opportunity of investing their money in other projects that may generate profits. This is because they do not have immediate access to their loans. Nevertheless, Aristotle considered usury as unproductive, unnatural and therefore unethical and unfair. His view of money as unproductive led him to consider the practice of moneylending as unethical. In other words, from Aristotle’s view of point, usury takes something without creating anything which is immoral (Brook, 2001).

Although the great ideas and thoughts of Aristotle and Plato on loans at interests, Athens did not listen to them. Athens did not follow their ideas because loans at interests were essential, widely spread and accepted to Athenian economic life.

2.2 Interest in Different Religions

2.2.1 Usury (Interests) in Judaism

In Hebrew, the word Neshekh means ‘a bite’; which is believed to be a reference to the interest charged from debtors for loans (Visser and McIntosh, 1998). According to Taeusch (1942), the meaning of usury has been translated from the Hebraic conception to English and Germany. The author refers to a passage in the Exodus, which mentions that there are conditions where usury is unacceptable. These are determined by to whom the loan is given. For example, it is forbidden to charge interests from widows and orphans. However, The Old Testament states:

‘He lends at interest and takes a profit. Will such a man live? He will not! Because he has done all these detestable things, he is to be put to death; his blood will be on his own head.’(Ezekiel 18:13).

Here, the Torah (the Jewish five holy books of Moses (May peace be upon him)), strictly prohibit usury. This is based on the concept that rich and poor are created equally in the image of God (Mews and Abraham, 2007; Jafri and Margolis, 1999). Furthermore, other verses from The old Testament also state that it is morally wrong to charge interest on loans. (Mews and Abrahamv, 2007). For example, the Book of Leviticus states:

‘Do not take interest or any profit from them, but fear your God, so that they may continue to live among you’ (Leviticus 25:36).

Moreover, the Book of Exodus states:

‘If you lend money to any of my people with you who is poor, you shall not be like a moneylender to him, and you shall not exact interest from him’ (Exodus 22:25).

It can be noticed that, on both versus, the interest is only forbidden when lending to the poor and destitute. On the other hand, the Book of Deuteronomy states:

‘Do not charge a fellow Israelite interest, whether on money or food or anything else that may earn interest. You may charge a foreigner interest, but not a fellow Israelite, so that the LORD your God may bless you in everything you put your hand to in the land you are entering to possess’ (Deuteronomy 23:19-20).

Unlike the Books of Leviticus and Exodus, the forbidden of interest in the book of Deuteronomy includes all moneylending except in business dealing with foreigners (Visser and McIntosh, 1998). In other words, it is acceptable to charge non- Jews interest when lending them money, but it is forbidden to charge interest to fellow Jews on loans (Jafri and Margolis, 1999). This practice may look like a double standard, but at the same time, it can be understood as legitimating Jewish money-lender to gain compensation in their dealing with foreigners. Either ways, if the Jewish Holy books state that it is forbidden to deal with interest, this practice should be applied to everybody; not just within people with the same faith or religion. However, as previously discussed, interest was legal among the Mesopotamians (See section 2.1.2).

2.2.2 Usury (Interests) in Christianity

Usury in Christianity went through different stages in different eras such as the Dark and Middle Ages, and the Reformation. These are the critical eras where different arguments and opinions arose about usury. According to Hassan et al. (2009), there are three basic sources the derived the Christian doctrine. They state these sources as ‘First, there were the scriptures, especially the Gospels and the teachings of Jesus. Second, as the Middle Ages progressed and the Church became increasingly institutionalised, the words of Jesus were not sufficient to cover all eventualities and were supplemented, and to a great extent supplanted, by canon law based on the rulings of ecumenical councils and Church courts. Third, schoolmen and theologians laid the foundations of Christian theology, drawing on ethical principles developed by Greek philosophers such as Plato and Aristotle’. The following paragraphs give an overview about usury in Christianity.

(i) Dark and Middle Ages

According to Brook (2001), during the Dark Ages, human society returned to the pre-civilised state, where the concept of the economy had little meaning and barter was the primary mean of trade. Money was not used in the European trade for centuries and loans were made with goods and the interest charged was also in goods. Christianity was spread

in Europe during the Dark and Middle ages (approximately 500-1500 A.D). The Dark and Middle ages refer to the period between the fall of the Roman Empire and the beginning of the Italian Renaissance and the Age of Discovery. After the fall of the Roman Empire, the Catholic Church became the most powerful institution is Europe. As a result, the Pope was the most powerful man, and the Church gave powers to kings and queens (Trueman, 2015). People were taught from early ages about Hell and Heaven. They also were taught that they could go to Heaven only if the Roman Catholic Church allow them. The Church had complete control of people's lives. For instance, farmers worked for free in the Church's farms because the Church would not pay them and they were terrified of going to Hell (Trueman, 2015). During this period, the Church considered the Bible as the primary source of knowledge and therefore, it had a final word on all matters.(Brook, 2015). Scholars consulted the Scripture for every question and problem. Hence, in the issue of usury, the old Testaments opposed it (See section 2.1). However, although the New Testament does not clearly oppose usury, it shows that it is a moral duty to help those in need by giving them money or goods without expecting anything in return (i.e. neither principal nor interest) (Brook, 2001). As Luke states,

'But love your enemies, and do good, and lend, expecting nothing in return, and your reward will be great, and you will be sons of the Most High, for he is kind to the ungrateful and the evil' (Luke 6:35).

According to Jafri and Margolis (1999), in the Bible (Christian's Holy book), Jesus (May peace be upon him) prohibited interest and allowed his followers to lend money to others, even enemies, without charging any interests. In fact, the Church reached a point where it considered the usurer, and anyone considers usury lawful as irreligious and infidels. In medieval times, Christians who obtained a return from a loan other than the principle amount were considered sinners (Hassan et al., 2009). Christian morality demonstrates the virtue of self-sacrifice on behalf of the weak and poor. It condemns selfish actions such as profiting from usury. Therefore, from the beginning, Christianity opposed usury on scriptural and moral grounds (Brook, 2001). However, as previously mentioned in section (2.1), there is a weakness on all these pronouncements: the Bible's double standard on usury. First, there was a general forbidden of interest without mentioning a particular group of people or faith. Second, Jews were forbidden from taking interests from poor and destitute. Third, Jews were forbidden from taking interests from other Jews, but allow them to take interests from others. According to Brook (2001), the Church and civil authorities allowed

Jews to practice usury during the Dark and middle ages. Although money lending was dangerous, Jews found it very profitable. Christians were allowed to borrow from Jews, but they did not like this type of relationship. They felt that because of the religious reasons, Jews were allowed to profit from them by exploiting them and charging interest. These hate feelings resulted in violence against Jews. Many Jews were killed because of the money that they have lent to other people. From another angle, the conflicts of pronouncement in the Bible showed that there are problems in the matter of dealing with usury. How come that Jews are not allowed to lend to other Jews with interest? Moreover, why is this practice permitted when they lend to a non-Jew person? Also, how come that the Bible gives the Jews the right to profit from Christians and any other non-Jew person, but at the same time prohibit the same practice when it comes to Jewish people? These questions confused people. Moreover, other interpretations arise. Among these was that usury was seen as a tool that weakens the borrower and strengthened the lender. Hence, when lending to an enemy at interest, the enemy would suffer. This explanation and belief led the Christians to practice the money lending with interest to their enemies during the Crusades (Brook, 2001). However, as previously discussed, in Mosaic Law (Old Testament), charging interest to a fellow Jew is sinful and it is not for foreigners (Lewis et al., 2007). Despite its Judaic roots, Christianity had a continuous debate on the issue of prohibition of usury for around a thousand year (Visser and Macintosh, 1998). In the fourth century AD, and based on its Judaic roots, the Roman Catholic Church prohibited taking interest by the clergy. This rule was extended to the laity in the fifth century, and in the eighth century, usury was considered as a general criminal offence. However, the New Testament states: 'But love ye your enemies, and do good, and lend, hoping for nothing again; and your reward shall be great, and ye shall be the children of the Highest' (Luke 6: 35). The versus indicates that Jesus (May peace be upon him) shows an anti-usury attitude towards usury where he urges to love and lend the enemies without expecting a return.

By the early 11th century, the Canon law was created by ecclesiastical authority (Church leadership) for the Church and its members (Hassan et al., 2009). Peter (2012) defines Canon law as 'sets of norms for the regulation of Christian conduct in the world and the relations of Christians with each other'. In other words, the Canon law governs the Church and gives guidance to all its members in the way of living their lives. Some Canon laws have been practised before the 12 century. Papal Encyclia of Saint Leo the Great, pope from 440 to 461, was the first to issue a Canon law rule against usury. On the other hand, Pope Benedic issued the last Papal Encyclical against usury in 1745 (although it was not an

infallible decree). However, despite the change in the importance of the usury issue, the Catholic Church continued its opposition to the practice (Hassan et al., 2009). Nevertheless, Catholics and Protestants (branches of Christianity) had different interpretations of the Bible in the matter of the use of usury. Among the differences between the two branches is Catholic Church‘s attitudes about economics are based on the Bible and Aristotelian doctrine. It is not only based on the Bible. On the other hand, the Protestants Church believes that the Bible is the only authority for Christian belief (Jafri and Margolis, 1999).

It is essential to mention that some medieval scholars influenced the Church’s view on usury. Saint Thomas Aquinas is considered as the most important of the scholastic philosophers, ranking in status as a philosopher alongside Plato, Aristotle, Kant and Hegel (Hassan et al., 2009). He succeeded in convincing the Chruch Fathers that Aristotle’s views should form the basis of Christian philosophy. These views were basically about forbidding usury.

At the beginning of the 13th century, the rebirth of new logic and observations were difficult to ignore. Economic activity was increasing throughout Europe because of the trade with the Far East and exposure to rapidly developing cultures and economies of North Africa and the Middle East. As a result, there was a high demand for capital and credit. Hence, moneylenders arose throughout Europe, and the economy grew even faster (Brook 2001). Europe did import not only goods but also knowledge such as the Arabic numerical system, mathematic, double-entry accounting, science and Aristotle’s works. Hence, Europe paid attention to Aristotle’s ideas and his writings. In the matter of usury, and based on Aristotle’s limited economic experience, usury appeared to be unproductive. Nevertheless, this era thinkers were exposed to the extensive use of moneylending. Therefore, scholars set to solve the usury matter rationally. The idea that usury was unproductive, and it only permitted the rich to exploit the poor was losing credibility. This is because the public started to observe the set of credit benefits and its relationship with economic growth. However, since usury is banned in the Bible, the Church tried to find reasons for explaining to people why such a useful practice is not allowed. Over the next 400 years, different ideas and arguments were made in this case. However, the argument of selling something that does not belong to the lender was brought out by the Church. The argument was: lenders cannot sell time since they do not own it. Nevertheless, the same argument was used in defense of usury as the time value of money. Those advocates of usury claimed that interest is a compensation for a delay in using the lender’s funds. This was a recognition of the relationship between interest and

time. Scholars started to observe things in reality away from faith and religion. However, they kept getting to a conclusion that usury is unproductive and immoral until the 16th century and at the time of the Reformation where usury started to be partially accepted by the Church and civil law. It was still forbidden in theory (Brook, 2001). As a result of usury prohibition, people found different ways to get a loan and pay interest without showing that it is a usury deal. A common way of disguise a loan was its association with various exchange rates. To hide a loan, it can be made in one currency and repaid in another after a period in a different location with interest by paying in a different currency.The exchange rate plays the role of interest.

Church officials frequently manipulated usury laws. For example, the Church prohibited usury when it wanted to borrow money. In other times, when the Church itself acted as a moneylender, it allowed usury. In theory, the Church was against usury, but in practice, it was violating its moral laws. To solve this dilemma, the Church did not use usury term since it was illegal, but they named it as interest. According to Brook (2001), 'Interest was considered compensation for a loss that a creditor had incurred through lending. Compensation for a loan was illegal if it was a gain or a profit, but if it was reimbursement for a loss or an expense it was permissible. Interest was, in a sense, "damages," not profit. Therefore, interest was sometimes allowed, but usury never.' Hence moneylenders were allowed to charge interest as the penalty for delayed payments. Loans were structured to be delayed in payment so interests would be charged. During the time, people realised the lender's time and effort of providing loans, and hence they were allowed to charge interest. Again, the concept of investment opportunity arose, and people accepted that by moneylending, moneylenders suffer from the inability of using their money elsewhere. Therefore, as compensation, interest was allowed.

Although the clear prohibition of usury in the Christian doctrine, people in Greece and Roman continued dealing with it and showed no regret. Florance, the centre of banking and trade in medieval Europe, prohibited usury at the beginning. However, later on, it imported Jews to conduct forbidden transactions for Christians (loans with interests) (Jafri and Margolis, 1999). Moreover, there ways to avoid the prohibition of usury. For example, people lend money without charging interest, but they charged damages (penalty fees) for delays in repayments. They had an implied agreement that loan repayment would be delayed as a condition of the loan.

(ii) Reformation

Later on, around the 16th century, the Protestant Reformation had some new views when compared to the Catholic Church's views on the charging of interest. Martin Luther, a German professor of theology, composer, priest, monk and a seminal figure in the Protestant Reformation, did not entirely condemn usury but showed ways that it was misused. He pointed out that usury contradicts with the principle of the duty to work because the usurer collected his interest without making any effort (Jafri and Margolis, 1999). Instead, he specified that money lent for specific commodities must conform with reasonable interest rates (6-8 percent per year). Because of this attitude, charging interest became socially accepted as long as it was within reasonable limits and hence, by the time, anti-usury laws were repealed (Jafri and Margolis, 1999).

In summary, from ancient Greece to the Dark and Middle Ages and until the 21st century, moneylending has been morally condemned and legally restrained. People still deal with it for different purposes as it is also considered as one of the economy drivers in the world.

Despite the prohibition of usury by the pops and Churches and along with the growing aspect of commercialisation, the pro-usury counter-movement began to grow (Visser and Macintosh, 1998). Moreover, the rise of pro-capitalism was associated with this movement. Accordingly, Visser and Macintosh (1998) state that 'usury passed from being an offence against public morality which a Christian government was expected to suppress to being a matter of private conscience [and] a new generation of Christian moralists redefined usury as excessive interest'. This view on usury remained to present-day as the indicative views of the Church of Scotland. As cited in Visser and Macintosh (1998), the Church of Scotland (1998) declaration report on the ethics of investment and banking states that: 'We accept that the practice of charging interest for business and personal loans is not, in itself, incompatible with Christian ethics. What is more difficult to determine is whether the interest rate charged is fair or excessive'. Therefore, in the modern days, if the interest rate is fair and not excessive, it is not considered to be prohibited nor counted as a sin in Christianity. Nevertheless, what rate is seen as fair to borrowers? Different people have different financial situations. A 10% interest rate may be fair to a borrower but would be a

lot for another poorer borrower. Therefore, the fair interest rate concept can be debatable, where one rate might be valued differently depending on borrowers' financial abilities.

2.3 Rational of Usury Prohibition in Christianity

The medieval Churchmen gave grounds for the ban on usury in Christianity due to any number of reasons. These are:

1. It is against Jesus (May peace be upon him) teachings. Although there are different interpretations of the Bible, usury was considered as the worst form of gain from the beginning. It is unearned income.

2. Hebrew law prohibited usury except to whom and how the ban is applied. Nevertheless, Christians should have few illusions on that point from the early years which they did not (Hassan et al., 2009). This rise a question about adjusted Hebrew law. The original scripts in the Old Testament stated that usury was forbidden which should be taken into consideration.

3. Usury contradicts with Aristotle's views where money is considered as a medium of exchange and not as a money maker. In addition to the Bible, the Catholic Church takes into account Aristotle's views. Thus, Aristotle's has forbidden usury and so the Catholic Church.

4. Usury is an injustice. Borrowers borrow money because they are in need of it. Creditors should not take advantage of poor people by providing loans with interests. The loop may never end, and the poor will remain poor since that he has to pay additional amount than the principle loan.

2.4 The History of Islamic Finance

Over the centuries, Mecca, in the Kingdom of Saudi Arabia, has been and remains a popular destination for pilgrims. As a result, it has become a trading city where different people from different countries meet and exchange goods. In other words, Mecca used to be a city of trade even before the arrival of the Islamic religion. Nevertheless, after Islam was born, people from different countries visit Mecca for Islamic religious reasons. People continue trade activities provided that these adhere to Islamic principles and rules. Islamic

finance concepts are attached with the birth of Islam in the 7th century where it began in Mecca. Islam has its principles and rules (Shariaa) for financial transactions. Therefore, Muslims have used a version of Islamic finance for many centuries. According to Chapra and Khan (2000) and Chapra and Ahmed (2002), from the early stage in Islamic history, Muslims were able to establish a financial system without the payment of interest on loans to finance their trade activities and consumer needs. The system is based on profit and loss sharing modes. Therefore, the origin of Islamic finance concept is attributed to the Islamic religion. It is prohibited in Islamic faith to charge interest on loans. The primary source of Islamic Shariaa, Holy Quraan, clearly states that interest is forbidden. People cannot simply make money out of money (for example conventional banks charging interests, this is discussed in section 2.5). However, trade is permitted in Islam provided that it adheres to the Islamic Shariaa. Muslims are encouraged to trade, invest and make an effort to have their gains in case of success or losses at failure.

Bayt Al- Mal or house of public treasury was the first type of Islamic finance system that Muslims used. It was established by the Prophet Mohammed (May peace be upon him) to manage the Islamic state funds (Rahman, 2015). Essentially, goods, funds, donations or any supplies were pooled in the fund treasury and then distributed among the deserving and entitled needy persons (Mughal, 2012).

Initially, in the era of Prophet Mohammed (May peace be upon him), Bayt A-Mal was used as a temporary place for wealth for distribution to those who are entitled to it, Nothing was kept as reserved fund for emergencies or future needs, and all of the wealth was distributed (Mughal, 2012). The same principle continued after the death of the prophet in the era of his first successor (Khalifah) Abu Baker Siddiq. However, in the era of second Khalifah Umar, the Islamic empire expanded to a larger geographical area. The expansion covered Iraq, Egypt, Libya, Syria and Persia, eastern Anatolia and the southern Armenian and Jerusalem. This led to an increase in revenues which increased wealth, but at the same time, there were no immediate expenditures. Nevertheless, because the wealth must be preserved and because it is a national trust, a suggestion was made to Khalifah Umar to set up a diwan (journal book) as practiced by non-Arabs to record everything concerned with Bayt Al-Mal (Abdullah, 2012). Thus, the Diwan of Bayt Al-Mal recorded everything regarding incomes and expenditures with a full audit at that time. Hence, it was in the period of Khalifah Umar that Bayt Al-Mal acted as a financial institution with the responsibility for the administration of wealth in the Islamic state.

According to Rahman (2015), Bayt Al-Mal has two main divisions. The first division deals with Bayt Al-Mal revenues and their sources, while the second deals with its expenditures and liabilities. On the one hand, Bayt Al-Mal has different sources of income which can be identified as the following:

- Zakat: Annually payment of Muslim possessions like gold, silver, camels, cows, sheep, goats, grain, fruits and so forth.

- Kharaj: Tax of the lands conquered by force and by the settlement.

- Jizyah: Tax received from the free non-Muslims under Islamic rule through a peace treaty. It is a charge for the protection of their lives and properties.

- Ghanimat: War spoils are the wealth that is taken from disbelievers by fighting except the lands and real estates

- Ushr: Tax Muslims to impose on the foreign merchants who come with their goods from a place that Islamic system does not apply and at war with the Islamic State. It has identified tithing ten goods are taken from each dealer once a year.

These revenues are placed in Bayt Al-Mal and must be used in accordance of Islamic Shariaa for the welfare of the society (Abdullah, 2012). Bayt Al-Mal is a national trust and not a personal property of the ruler. It must be used for improving the nation.

On the other hand, the Bayt Al-Mal expenditures are as follows: Salaries of executive, judicial and legislative organs, maintenance of buildings (civil and military), salaries and purchase of supplies needed for the Muslim army, prizes, social welfare, education, training and maintenance of the poor who have no source of income or women and children who are disabled and have no guardian to look after (and if they have any guardian, he or she is himself or herself a poor) (Rahman, 2015; and Mughal, 2012). At present, the combination of Ministry of Finance, Central Bank, and Treasury of the State carry out the historical role of Bayt Al-Mal. Appendix 2.1 shows a summary of Bayt Al-Mal revenues and expenditures.

Every Muslim has the right to ask for a loan from Bayt Al-Mal, for instance, the Khalifah Uthman took a loan of 100,000 dirhams for a given period from the Bayt Al-Mal

with the witness of some of the Sahaba, and he paid it back when it was due (Elsergany, 2010).

In the period of the third (Uthman) and fourth Khalifah (Ali), the same financial system of Khalifah Umar continued except that other income started coming from the produce of forests and the lease of state property (Ijara).The same financial system continued in the period of Banu Umayyah (662-750 A.D) with no changes. In fact, it is in this era, Muslims conquered the Indian sub-continent in 92 A.H and Spain in the 711 A.D and transferred the same financial system to them.

In the period of Banu Abbas (750-1258 AD) the same financial system also continued to be used with no changes. Despite the Islamic prohibition of interest, banks that are interest based were allowed to be established during the period of Ottmani (1281– 1924 AD). The reason behind this was the attempts by the Ottmani Empire to reduce the cost of borrowing funds from other European countries since the empire was at war with other nations and needed funds. According to Schoon (2008), Middle Eastern tradespeople used financial instruments in the era of Islamic civilisation, which lasted from the late 6th to early 11th century AD, which complies with Islamic Shariaa. However, Middle Eastern and Asian regions became important trading partners for European companies such as Dutch East India Company. Hence, European banks, which are interest based, started to establish branches in the Middle Eastern and Asian areas. Moreover, during the 19th and 20th centuries, the European countries colonised the Islamic world. Muslims were ruled under the Europeans systems such as Russia, Holland, Britain, and France. These countries also made their influence and contributed in transferring the western banking system, which is interest-based, to the Muslim countries (Venardos, 2012). Because of this and Middle Eastern and Asian countries became trading partners, Western (conventional) banking system expanded and displaced Islamic financial system in Muslim nations (Chachi; 2005).

However, in the early 20th century, Muslim countries started to pursue independence from European colonisers. Iraq, for example, achieved independence from Britain in 1932. Syria was independent of France in 1946. Similarly, Lebanon achieved independence from France in 1941 and Algeria won the war of independence from France in 1962. Other Muslim countries also gain their independence from Britain and France are Egypt in 1952 and Kingdom of Morocco in 1956 respectively (Venardos, 2012).

According to Venardos (2012), the Middle Eastern Oil is considered as one of the most important factors in the revival of Islamic fortunes in the 20th century. Western countries showed an increase in oil demand. Hence, oil trade created investments opportunities in countries such as Kingdom of Saudi Arabia, Iraq, Qatar, Kuwait, Iran, United Arab Emirates and Algeria. The huge amount of money generated from oil trade helped these countries to develop. However, money was kept in conventional banks that do not comply with Islamic Shariaa. Nevertheless, in recent years, there has been a significant interest to revive the use of Islamic finance in the Muslim countries. This was as a result of Muslims' desire to be able to conduct their financial transactions away from the interest which is prohibited according to the Islamic Shariaa (Zaher and Hassan; 2001). Hence, there was a need to develop a modern version of the historic Islamic financial system that can cope both the world financial system and at the same time complement the Islamic principles (Iqbal and Llewellyn; 2001. According to Ariff (1988), Egypt undertook the first modern experiment of Islamic banking in the year 1963 when opening the Mit Ghamr Savings Bank. The bank's transactions were based on profit-sharing. Moreover, the bank's clients were not charged or paid interests. The bank acted as an investment bank rather than a commercial bank since that it directly, or through a partnership, invested in trade and industry and shared profits with depositors (section 3.3 discusses the similarities and differences between deposit accounts in Islamic and Conventional banks). However, some problems faced Mit Ghamr Bank such as the scarcity of and unavailability of proper guidelines concerning the principles and practice of Islamic banking. Another issue was to find Muslim economists that are well knowledgeable in Islamic Shariaa. These issues led to the establishment of the organisation of Islamic countries in the 1970's aiming to encourage Muslim countries to set up their Islamic banking system. From there, a true formation of Islamic banking system started to develop in many countries. For example, the Kingdom of Saudi Arabia (Islamic Development Bank in 1975), the United Arab Emirates (Dubai Bank in the year 1975), Egypt (Faisal Islamic Bank in 1977) and in Malaysia (Bank Islam Malaysia in 1983). During the years, other Islamic institutions were established to help in drawing the guidelines for Islamic finance practice and set research centres for the Islamic finance such as the Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI). Having clear guidelines encouraged some countries to change completely into an Islamic Banking systems such as Sudan Iran and Pakistan. Other countries allowed to have Islamic windows in conventional banks and to establish fully fledged Islamic banks alongside to traditional banks. For example, the first fully-fledged Islamic bank in Oman was founded in the year 2012. Interestingly, economists around the world started to realise the importance

of Islamic banking system. For instance, in 2004, the Al Rayan Bank (previously known as Islamic Bank of Britain) became the first Islamic commercial bank established outside the Muslim world (Alrayanbank.co.uk). Today, there is around 395 financial institutions that provide Islamic banking services around the world in term of the fully Islamic bank, Islamic windows, and institutions that comply with Islamic principles (Econ.worldbank.org).

Islamic Banking and Conventional banking have the same functions of financial systems. Similarly, problems that encounter these functions are common to both systems. The differences in these systems are related to the way of their performance (for example, different modes of finance) and type of contracts issued (Munawar and Molyneux, 2004). For instance, Islamic banking contracts must always comply with Islamic Shariaa, while conventional banking is much related to interest- based contract relationship which is forbidden in Islam.

2.5 Rational of Usury (interest) Prohibition in Islam

According to the Quran (Muslim Holy book), interest is forbidden. Muslims believe that Quran is God's words, and hence, they must follow and obey to get to heaven after death, Many Quranic verses clearly state that interest (Riba) is prohibited. For example, the Quran states 'Those who consume interest cannot stand [on the Day of Resurrection] except as one stands who is being beaten by Satan into insanity. That is because they say, "Trade is [just] like interest." But Allah (God) has permitted trade and has forbidden interest. So whoever has received an admonition from his Lord and desists may have what is past, and his affair rests with Allah (God). But whoever returns to [dealing in interest or usury] - those are the companions of the Fire; they will abide eternally therein'. (Quran 2:275). The verse clearly shows that trade is permitted in Islam but not interest. There are other verses in Quran where they state the prohibition of interest. These are:

'Allah (God) destroys interest and gives increase for charities. And Allah does not like every sinning disbeliever' (Quran 2:276)

'O you who believe! Be afraid of Allah and give up what remains (due to you) from Riba (usury) (from now onward), if you are (really) believers.'(Quran 2:278)

O you who believe! Eat not Riba (usury) doubled and multiplied, but fear Allah that you may be successful.'(Quran 3:130).

‘And their taking of Riba (usury) though they were forbidden from taking it and their devouring of mens substance wrongfully (bribery, etc.). And We have prepared for the disbelievers among them a painful torment.’(Quran 4:161)

In summary, the Quran clearly states in many areas that interest is forbidden, and Muslims must not deal with it. The fact that Muslims believe that they have direct instruction from God not to deal with interest is an enough reason for them to avoid it, even if they do not know why. However, the prohibition of interest is believed to be for the best of people. For example, charging interest concentrate the wealth in the hand of a minority of the society. Charging interest on loans is considered as a low-risk investment, and hence, the wealth will be concentrated in the hands of minority rich people who already have money. The rich get richer by charging interest while the poor get poorer from the extra burden of repaying the principal amount and interests to the money lender. On the other hand, there are several mechanisms in Islam to minimise the concentration of wealth in the hands of minorities such as Zakat (a wealth tax that is used to help those who are poor and in need). Also, people should help each other which will results in love and harmony, unlike interest which causes hate and envy. In addition to these reasons, Razi Razi, a Persian/Arab scholar who died in 1209 (as cited in Hassan et al., 2009), set five grounds for the Islamic prohibition of Riba (interest):

1. According to the saying of the Prophet Mohammed (May peace be upon him): ‘a man’s property is unlawful to the other as his blood’. This indicates that it is forbidden to take a person’s money in an injustice way. Riba (interest) is gaining additional money on a loan without making an effort. This is unfair since that lender makes no effort in gaining the extra amount of money that he gets.

2. Riba (interest) demotivate people from participating in active professions, trade, and work since it is easy money, and people can get rewards without doing anything but giving loans.

3. Riba contract is against justice and equity. It enables the rich to become richer by charging interests on given loans and at the same time makes the poors poorer as they have to repay the principal in addition to the additional interest amount to creditors.

4. If Riba contract is made legal, people may borrow more than their needs at high-interest rates. This may cause a default in payments and results in a stressed

relationship between lenders and borrowers. Also, this may lead to conflicts and the society to strip of its goodliness

5. The Quran (Muslim's Holy Book) clearly states the prohibition of interest. Therefore, Muslims must obey and follow God's will and command.

The last point is sufficient for most scholars. This is because the Quran (Muslim's Holy book) text clearly states that interest is prohibited. Therefore, Muslims can not question God's will and commands. Trade is allowed in Islam but charging interest on loans is not. The Quran has stated to return the principal on loans (Hassan et al., 2009)

2.6 Religious and Moral Grounds for Interest Prohibition

The previous sections highlighted the history of interest through different eras, civilisations, and religions. Interestingly, all civilisations and religions laid down on a conclusion that usury (interest) is an injustice and immoral act. Also, the three religions (Judaism, Christianity, and Islam) which were discussed previously have a shared vision on usury. All three religions, at some point, forbid usury. Mainly, the prohibition of usury (interest) was because the Holy Books statements on that matter. However, the ban on usury has been relaxed in Judaism and Christianity during the time. Nevertheless, Islam remains on its strictly forbidden of dealing with interest. Nevertheless, some scholars look at the different Islamic finance modes as the same as interest. In fact, despite the different reasoning that scholars give to people on the Islamic way of finance, there will always be doubts about them. Islamic scholars claim that Islamic finance methods adhere to Islamic Shariaa by applying profit and loss methods and debt financing as well. However, it may be a different way of finance that complies with Islamic principles, but others will still look at it as a legal way of charging interest without disobeying God's commands. In conclusion, the chapter highlighted the history of interest during different civilisations and religions. It is important to understand the history of interest and the religious and moral reasons for its prohibition. As prohibition of interest is the main pillar of Islamic Shariaa, it is necessary to understand from where the ban of interest was orginated. Acknowledging this matter helps in understanding the Islamic banking finance modes and hence, one of the main difference between Islamic banks and conventional banks.

Chapter 3: Introduction of Islamic Banking

It is important to understand the role of banks as they are a major source of finance for an economy. They act as financial intermediaries between lenders (depositors/investors) and borrowers (entrepreneurs). There are various types of banks with specific functions such as Investment Banks, Retail Banks, Universal Banks, Central Banks, Commercial Banks, Islamic Banks and others. However, some banks can have a combination of other types of banks' functions (i.e. retail banks can have Islamic windows). This research aims to examine information asymmetry levels in Islamic and conventional banks. Those with better information are usually more successful at 'buying low and selling high.' For example, people with superior information about a stock have the chance to benefit more from selling the stock at a high price before it falls or buying the stock at a low price before it rises and hence makes an abnormal return. Also, addressing the information asymmetry problem gives investors an opportunity to make better investment decisions regarding investments quality and risks (Chong and Liu, 2009, p. 127). Moreover, depositors want to assure that their deposits are managed in the best way to generate a positive return.

In the past two decades, Islamic banking has grown rapidly around the world. Ernst & Young reported in its World Islamic Banking Competitiveness Report 2015 that "the combined profit of Participation banks crossed the US$10b mark. By 2019, collective profits would touch US$37b as the industry continues its double-digit annual growth". According to the report, it is expected that the global profit pool of Islamic banks is set to triple by 2019. This indicates that Islamic banking is rapidly growing around the world which reflects the importance of such types of banks in different countries. Due to the increasing interest in commercial activities complying with Shariaa, the Islamic rules of commercial banking, there is an increasing awareness of the importance of understanding such a system from operators in the commercial banking sector, investors, entrepreneurs, and scholars. As a result, non-Muslim countries, such as Switzerland, started to establish Islamic Banks. Dar Al-Maal Al-Islami Trust (DMI) was founded in 1981 as the first Islamic bank in Switzerland. Also, another Islamic bank called Al Barka Group was established in the United Kingdom in 1981. Islamic Bank International of Denmark was also set up in 1982 in Copenhagen. These countries established Islamic banks after recognising the wide range of benefits of such system to their financial economy. Thus, these examples can be taken as an indication of the importance of Islamic banking system around the world.

3.1 Islamic Banking Background

It is necessary here to clarify the fundamental reasons for the existence of Islamic banking and how it is different from conventional banking. According to a religious population website (http://www.religiouspopulation.com), in 2014, the Muslim population reached 2.08 billion around the world with an increase of 1.84% compared to the year 2013. This shows that Muslims are covering a big slice in different societies around the world; particularly in the middle east and Eastern Asia. Nevertheless, Muslims are supposed to adhere to their Islamic principles in all of their life activities including their financial transactions. According to El-Komi and Croson (2013; p.253), 'the Consultative Group to Assist the Poor (CGAP) conducted a global survey in 19 Muslim countries in 2007, in which 20–40 percent of the respondents cited religious reasons for not using conventional microloans'. This high rate indicates the importance of the religious aspect to customers. Hence, it is important to provide financial services and products that comply with Islamic Shariaa which will result in attracting Muslim customers to banks that comply with their religious principles in a world that have an open competition. Hence, it can be stated that Islamic banking provides an alternative way of banking that does comply with Islamic rules and is not based on interest (Abdul Rahman, 2007; p.123). As previously noted, Egypt, the United Arab Emirates, Sudan, Bahrain, Malaysia, the Philippines, Iran, and Pakistan are considered to be the pioneer countries which have Islamic banks in the Middle East and Eastern Asia. It is interesting to note that Pakistan and Iran converted to a fully Islamic banking system in 1979 and 1983 respectively (Ariff, 1988; pp.56-57).

An interesting question that that could be asked: how does Islamic banking differ from conventional banking (commercial banking)? Similarly to conventional banks, Islamic banks play the role of intermediaries and aim to generate profits from their operations. They have their finance activities, which comply with Islamic Shariaa, that offer a variety of deposit and financing products to their customers (Obaidullah, 2005; p.17). They are designed to achieve returns for their depositors and dividends for their shareholders. However, some criticisms find the term Islamic banking to be misleading due to the similarities in the contracts in Islamic and conventional banking (El Gamal, 2000, pp.iv-v). In fact, at first glance, Islamic banks may look the same as conventional banks regarding their forms. However, Islamic banks greatly differ in terms of their substance and content as they are based on Shariaa (Islamic principles), which originates from the Quraan (Islam's Holy book), and Sunnah (this entails explanations and practices rendered by the Prophet

Muhammad) (Iqbal, 2002). These lay down general guidelines to determine and distinguish Islamic compliant economic activities (Khan, 2010). It is essential to state that there are different schools of thoughts in Islam where different opinions might appear for specific activities from one school of thought to another.

There are different schools of Islamic thought such as Hanafi, Shafi'i, Maliki, Hanbali, Abadhi, Shia'i and others. These were founded in various eras. In fact, Islamic schools of thoughts were founded after the death of the Prophet Mohammed (May peace be upon him). Exploring each of Islamic school of thought in depth will divert the essence of this study. However, rather than trying to identify the differences of these schools of thoughts, this study explains the schools of thoughts similarities and how these affect the study.

3.1.1 Beginning of Islamic Schools of Thought

A question can be raised, why there are different Islamic schools of thoughts? To answer this questions, there is a need to go back to the origins of these schools. At the time when Prophet Mohammed (May peace be upon him) was alive, there were no Islamic schools of thoughts. Sahaba, people who saw the Prophet and believed in him as well as died Muslims, learned Islam from him by reading the Quran, understanding its interpretation and applying his Sunnah (says and acts). The prophet was there in case of any clarification is needed for any ambiguous situations.

After the Prophet's death, in the era of Abu Baker, the first successor (Khalifah) of the prophet, the Quran was formally compiled, and in the era of Khalifa Omar bin Abdul Aziz, the Hadith (Sunna) of prophet Muhammed was written in a book by a Muslim scholar called Al Zahri. By the time, Islam spread in many countries, and therefore the Sahaba travelled to different countries around the world to teach people Islam. Islamic Sharia (rules), is used as guidance for all aspects of Muslim life (social, cultural, military, religious, and political) (Johnson and Sergie, 2014). Islamic Sharia is derived from four main sources the Quran, the Sunna, Ijma, and Qiyas.

3.1.2 What is Fatwa?

According to Malik and Mustafa (2011), Fatwa is giving the Islamic rule on a matter that has no clear and straightforward guidance from Quran and Sunnah. Quran and Sunna are the primary sources of Islamic Sharia. However, Muslim scholars use evidence from Quran and Sunna for giving a judgment on particular issues that are not directly stated in Quran and Sunna. They make judgments based on ijtihad which mean effort in Arabic. Ijtihad is efforts by Muslim scholars to produce Fatwa. When Muslim scholars agree on an interpretation of a matter of a particular period, this is referred as Ijma (consensus). It is important to mention that Ijma decision cannot be inconsistent with the Quran or Sunna. Also, Islamic scholars can also use Qiyas, which is reasoning by similarity, to use the rulings of one event and apply them to another as long as both events come under the same principle (Pollard and Samers, 2007).

Generation by generation, Quran and Sunna are preserved and transferred. However, there are different interpretation in Fiqh. Abu Ibrahim (2012) defines Fiqh as understanding the Islamic Shariaa and making rules and judgments from evidence found in Quran and Sunna and from the consensus of Islamic scholars. Muslim scholars use evidence from Quran and Sunna for giving a ruling on a particular issue. For example, the Quran clearly states that alcohol is forbidden because it harms the human body. Under the same principle (Qiyas), and despite that drugs are not directly mentioned in Quran or Sunna, Islamic scholars agree that drugs are forbidden in Islam (Ijma). These are the sources of Islamic Shariaa. They are followed to get answers in the case of enquiring about a matter. In this research case, the Islamic banks finance modes. The Quraan and Sunna clearly prohibit interest. Hence, scholars search for alternative ways for financing that comply with Islamic Shariaa by looking into the Quraan, Sunna, Ijma, and Qiyas.

3.1.3 Why Islamic School of Thoughts may differ from each other?

Previous paragraphs explained how rules and judgments are made in Islamic Shariaa to produce Fatwa. This section goes further by explaining how Islamic schools of thought may differ from each other. In the beginning, I want to emphasise that all Islamic schools of thoughts agree on the basic principles of Shariaa such as forbidden of interest, maysir, pork and alcohol. These principles are directly stated in Quran and Sunna and cannot be ignored. In other words, all Islamic schools of thoughts agree on Islamic Shariaa principles that are clearly stated in Quran and Sunna. However, some differences may occur in matters that are

not stated in these two primary sources. In other words, differences appear in Fiqh, where a different understanding of the Quran and Sunna interpretation can rise in dealing with particular issues in Muslims lives. As a result, the differences in Fiqh led to having different schools of Islamic thoughts. Therefore, Islamic schools of thoughts were founded and named after people that made efforts to interpret issues that are not clearly stated in Quran and Sunna. Different interpretations of matters in various timings and environments resulted in having different Islamic schools of thoughts. However, when it comes to this study, all schools of Islamic thought agree that Islamic banks must follow the basic Islamic principles in their transactions and operations which are forbidden of interest, maysr and dealing with haram, forbade products (i.e. alcohol) because these are clearly stated in Quran and Sunna.

Also, according to the Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI) website, there are many countries around the world either adopt or voluntarily use AAOFI Sharia standards as the basis of internal guidelines in leading Islamic financial institutions. Concerning to this study sample, Islamic banks in Bahrain, Oman, and Pakistan mandatory adopt AAOIFI sharia standards while, Jordan, Kuwait, Saudi Arabia, United Arab Emirates, Qatar, United Kingdom and Egypt Islamic banks voluntarily use AAOFI Sharia standards as the basis of internal guidelines (www.http://aaoifi.com/). Turkey does not follow the AAOIFI Sharia standard. However, every bank in the sample has its own Shariaa board committee to ensure that all financial transactions are compliant with Islamic sharia principles.

In summary, Islamic schools of thoughts originated from the differences of interpretation in Fiqh. However, all Ulama (scholars of the various schools of Islamic law) agree on fundamental principles that differentiate Islamic, or in other words, Shariaa compliant finance from conventional finance. Therefore, having different Islamic schools of thoughts will not affect the study's analysis and results. The general basic Islamic finance principles are : prohibition of Riba (interests), prohibition of Gharar (high uncertainty; i.e. where the outcome is excessive uncertain) in which full information disclosure is required to avoid information asymmetry, maysir (outright gambling), risk sharing for the fund provider and entrepreneur, prohibition of haram deals (religiously forbidden products) and justice where financial transactions should not lead to the exploitation of any party (Becket al., 2013, p.435; Zaher and Hassan, 2001, pp.158-159; Hamid et al., 1993, p.136). These principles are stated in Quran and Sunna, and they are discussed in the following sections.

3.2.1 Riba

Riba is an Arabic word which means increase, expansion, addition or growth (Chapra, 1985). However, not every increase or growth is prohibited in Islam and called Riba. In Islamic Shariaa, Riba is the excess or additional payment by the borrower to the lender along with the principal amount as a condition of the loan or extension of loan's maturity date (Chapra, 1985). Some call it usury; which is exploiting others by charging them high-interest rates on loans. Nevertheless, Riba is applied to a wider range of commercial practices but to make it simple, it is translated as the meaning of interest. There are two forms of Riba in Islam: Riba Al Nisa and Riba Alfadl. The most popular form which is similar to the conventional banks' interest is Riba Al Nisa.

Riba Al Nisa is defined as fixing a positive return in advance for a loan as a reward for deferred payments. In other words, additional payments are considered as a reward for waiting for future loan repayments. This is not permitted in Islamic Shariaa. Waiting does not justify the right for lenders to fix a predetermined positive return on loan. According to Zuhayli (2003), the prohibition of interest in Islam explains that money is used as a medium of exchange and not as a product or commodity. In other words, any premium amount charged for late payments is considered as Riba only when the subject matter is money on both sides. However, in the case of selling a product in exchange for money, the seller can take into consideration other factors including time payments when fixing the price (Usmani, 2002). Therefore, money cannot be loaned or used (i.e. sold or rented) for other than the principal amount. However, it is allowed to share return on principal, positive or negative, depending on the outcome of the business provided that it complies with Islamic Shariaa. A major prospect of Islamic finance that money is considered as a mode of exchange, and it cannot be used to make a profit by itself. In other words, it is not allowed in Islamic Shariaa to make a profit from lending or borrowing money. However, engaging in a contract of trade is permissible in Islam. Where sharing profit and loss is allowed or even mark-up financing with a profit margin. Therefore, charging interest is not compliant with Islamic Shariaa. According to Al-Jarhi (2003), Islamic finance is '…provided in the form of money in return for either equity or rights to share proportionately in future business profits. It is also provided in the form of goods and services delivered in return for commitment to repay their value at a future date'. In other words, Islamic banks offer investments opportunities for their depositors to be partners in investments by sharing the net profit and bearing their share of risk in the investments. They also provide finance to borrowers (entrepreneurs) through

either sharing directly in the net results of their activities or fund their purchases of assets, goods and services on credit (Al- Jarhi, 2003). However, since Islamic finance is based on contract arrangements that comply with Islamic Shariaa, all parts of the contract are obligated to fulfil the contract. Hence, Islamic banks can own equity in the corporations that they finance, sit on the board of directors and even have the right to vote in certain cases. At first glance, this may appear as the similar practice of conventional banks, except that Islamic banks only finance investments that comply with Islamic Shariaa through Islamic financing modes (Musharaka and Mudharaba; these are discussed in section 3.5.1). Moreover, Islamic banks must hold their shares and cannot convert them to cash for a limited period (average five years). Nevertheless, they can sign a diminishing Musharaka contract where they can gradually sell their shares to their partners.

Also, Islamic banks hold a profit and loss sharing relationship (PLS) with their depositors; in contrast to conventional banks where the relationship is based on the interest rate. Both banks share return with their depositors, except that conventional banks share interests on investments while Islamic banks share profits on investments. It is necessary to distinguish that the philosophy and operations are different in both banks. Under conventional banks, the return can be fixed or vary and predetermined while under Islamic banks return is variable and based on profit.

Interest, as previously discussed, is forbidden in Islamic Shariaa and therefore cannot be applied in Islamic banks, but trade is not. Types of financing agreements in Islamic banks are based on trade which is permitted as long as they comply with Islamic Shariaa. On the other hand, unlike Riba Al Nisa, Riba Alfadl is spread in massive areas of business transactions and practices. For additional information about Riba Alfadl see (Chapra, 1985).

3.2.2 Gharar

Gharar is an Arabic word which means extreme uncertainty in a contract that is caused by lack of clarity regarding the subject matter or price (Ayub, 2007). In other words, it is selling a commodity that is not available on hand or selling a commodity that its consequences are not known (Ayub, 2007). It is prohibited in Islamic Shariaa to sell an object while the seller does not yet own the object. For example, a person cannot sell a fish that is still in the water or a bird in the air. Uncertainty is associated with every business and cannot be avoided. To identify the acceptable uncertainty levels, Muslim scholars classify uncertainty (Gharar) into two types: too much and nominal uncertainty (Gharar Kathir and

Gharar Qalil) (Ayub, 2007). They got to a conclusion that transactions that involve extreme uncertainty, in respect of price and subject matter, in a contract would be prohibited. According to Ayub (2007, Islamic Shariaa prohibits selling in the following situations where uncertainty is considered to be excessive:

‘1. Things which, as the object of a legal transaction, do not exist.

2. Things which exist but which are not in possession of the seller or the availability of which may not be expected.

3. Things which are exchanged on the basis of uncertain delivery and payment.’

The first two situations were previously discussed. However, the third situation refers to a situation where a seller sells or exchange goods for uncertain delivery date or payments. According to Islamic Shariaa, this is not allowed since there is excessive uncertainty as mentioned earlier. However, there are some exceptions for Bay Salam (differed delivery contract), where in this contract some conditions are required to be fulfilled, and if so, it is not considered as Gharar. For example, in Bay Salam contract, delivery date and payments will be known at the time of signing the contract resulting in a decrease of the uncertainty level. Therefore, Muslim scholars have exceptions for this type of contracts provided they meet the conditions.

3.2.3 Maisir or Qimar

Another difference that Islamic banks have is not dealing with Maisir or Qimar (gambling). Maisir is another Arabic word that refers to the easy gaining of wealth by chance while Qimar means a game of chance. For example, a person put money in risk against others for the sake of winning all money (gain at the cost of others) or losing it for others. Another example of Qimar is a lottery. Islamic Shariaa prohibits Maisir and Qimar since that they are kinds of Gharar where high-uncertainty appears in them. In addition to the above-forbidden matters in Islamic Shariaa, anything that conflict with Islamic principles is forbidden (Haram) under Islamic finance. For example, it is not allowed to invest in alcohol, pork, and pornography.

In summary, Islamic Shariaa principles distinguish the main differences of Islamic banking and conventional banking. These principles draw border lines for the way of Islamic banking. Restriction of Islamic sharia on investments (forbidden of Riba, Gharar, and Maysir) and applying profit and loss modes of finances suggests that Islamic banks minimise speculations on their investments which leads to lower risks. Moreover, because Islamic banks are supposed to comply with Islamic Shariaa principles, this study expect them to have lower information asymmetry than conventional banks. Further discussion on these matters is discussed in the hypothesis development section.

3.3 Islamic Bank Accounts

Out of curiosity, a question can be asked about what type of deposit accounts Islamic banks have? Despite some differences between schools of Islamic thought, all Islamic banks mainly have common types of accounts: current, savings and investment accounts. These accounts are discussed in the following sections.

3.3.1 Current Account

Current accounts in Islamic banks are similar to their counterparts in conventional banks, where they are also called demand deposit accounts. Islamic current account is defined as an arrangement between the depositors and the Islamic bank which allows the depositors to deposit and withdraw their money at any time and at the same time gives the bank permission to use the depositors' money in their investment activities. In other words, it is an interest-free loan from depositors to the bank with permission to use the deposits in the bank's investments. Nevertheless, the profits and losses generated from the investment will not be shared with the depositors if that current account is used for safe-keeping (Wadiah). However, in return, the bank guarantees the capital for current account depositors (Wadiah) but will not share the profits or losses with them (Arif, p.51, 1988). Banks normally do not charge for providing safe-keeping (Wadiah) services since that they are allowed to use the depositors' funds in their investments. Nevertheless, there is another type of current account where banks do not guarantee the capital called (Amanah). In Amanah account, Islamic banks treat the deposits as trusts and these funds cannot be used in the banks' activities. However, Islamic banks do not guarantee the total refund of the deposits in Amanah accounts in case of any losses occur beyond their control (i.e. financial crisis). Unlike some conventional banks, Islamic banks do not charge their customers for depositing

their money in currents accounts. However, they may charge for other banks services such as ATM cards and bank statements.

3.3.2 Savings Account

An Islamic saving account also operates on a safe-keeping (Wadiah) basis, but the bank may pay the depositors a periodically positive return on its own; depending on its investments' profitability. Both Islamic and conventional banks pay returns for their depositors for the same purpose. Some banks apply this practice to attract and encourage depositors to deposit their money in their banks. However, unlike conventional banks, Islamic banks do not include fixed returns based on interests. Despite that some conventional banks may pay non-fixed interests payments to their depositors without any formal agreement, Islamic banks returns are not based on interests but profit return rate. They are considered as gifts (hiba). Hiba is not considered as interest return since there is no pre-determined agreement between the bank and the depositors and it is not depositors' condition of lending to the bank. Essentially, the aim of distributing returns to depositors of saving accounts in both types of banks is the same, but the difference is in the way of having the return. Islamic banks returns are generated from investments that comply with Islamic Shariaa. On the other hand, conventional banks' returns are based on interest which is forbidden in Islam.

Also, Islamic savings account holders are allowed to withdraw their money whenever they please (Arif, p.51, 1988). Other Islamic banks treat saving accounts as investments accounts but with fewer rules and conditions for withdrawals and minimum balance.

3.3.3 Investment Account

An investment account in Islamic banks is based on an Islamic finance partnership mode such as Mudaraba and Musharaka (Arif, p.51, 1988). In Mudaraba, the depositors (principal) allow the bank (agent/mudharib) to invest their money in permissible Islamic investments. These investments must adhere to the Islamic principles where this is considered as the main difference between them and conventional banks. On the other hand, Musharaka is simply similar to a joint venture where the depositors and the bank are partners in the investment. Islamic banks accept deposits for a fixed or unlimited period with an agreement to share the profit or loss in a particular proportion with the bank (Abdul Gafoor, 1995). There are two investments deposit account. The first is called restricted investment

deposit accounts where depositors authorise the bank to invest the funds in specific projects or sectors for a specific period and to determine the level of risk to be taken. The second type of investments deposit accounts is the unrestricted investments deposits account where depositors give the Islamic bank full authority to invest the funds in any project for any period provided that these investments comply with Islamic Shariaa. In both types of accounts, the Islamic bank acts as an agent for its depositors. Nevertheless, as previously discussed, uncertainty cannot be eliminated, and Muslim scholars classify it into high and low uncertainty (it is acceptable for Islamic banks to invest in low uncertainty projects; (see section 3.2.2). Given this, Islamic banks are obligated to invest in projects that have low uncertainty. Therefore, depositors can select their preference on type of investments in deposit accounts. However, the matter of trust will always occur since a full knowledge about all of the bank's investments would be difficult. Depositors trust that the Islamic banks will invest in projects that have low uncertainty and comply with Islamic Shariaa. Theoretically, investment deposits are not guaranteed. This is because the agreement between the bank and depositors is to share the investments' profit or losses. However, in practice, the returns have always been positive (Arif, p.51, 1988). Investing in relatively risk-free and short-term projects may have been an important factor in getting positive returns. Therefore, it is expected that profits will be very low (Abdul Gafoor, 1995).

3.4 Similarities and Differences between Deposit Accounts in Islamic and Conventional Banks

Both Islamic and conventional banks collect deposits from savers and have similar current accounts. However, there are some significant differences between their deposit accounts. Depositors at conventional banks may have a predetermined rate of return on their term deposits. On the other hand, Islamic bank depositors will have no predetermined or fixed return on their investment accounts deposits. In fact, the return is based on Musharaka and Mudharaba principles where it is variable. Ultimately, the main difference between both types of banks' deposits lies in risk sharing and return distribution. Conventional banks bear the total investment risk and have the total return after paying their depositors their agreed fixed rate. While in Islamic banks investments deposit accounts, the risk and return are shared with depositors (Hanif, p.169, 2011). The Islamic bank allocates all Islamic investments deposits that follow Mudaraba to different of investments pools where the funds will be invested in Sahriaa compliant projects. The Islamic bank bear all management expenses and distributes the net profit between the pools and then among the depositors in each pool. The return for each depositor depends on the outcome of the Islamic

bank's investments. Hence, the bank will announce the ratio of profit instead of having fixed predetermined return. The profit is shared based on the pre-agreed ratios while losses are shared in proportion to respective capital contributions. On the other hand, if the bank participates in the capital of the investment pool at the time of setting the pool, the finance mode would be called Musharaka. Here, the bank will be a partner with other depositors in the investments, and it will serve as a fund manager who is responsible for investing the funds in the investments pool (www.financialislam.com).

It can be noticed that Islamic banks have a similar type of accounts to those in conventional banks, except that in Islamic banks, those accounts must adhere and comply with Islamic principles. Hence, Islamic banks will only offer products that comply with Islamic Shariaa. A Sharia board committee makes sure that all Islamic banks' transactions comply with Islamic principles. Therefore, it is necessary for Islamic banks to adopt different ways of financing that comply with Islamic Shariaa and at the same time compete with their counterparts' conventional banks. The following sections give examples of the Islamic modes of finance.

3.5 Islamic Financing Modes

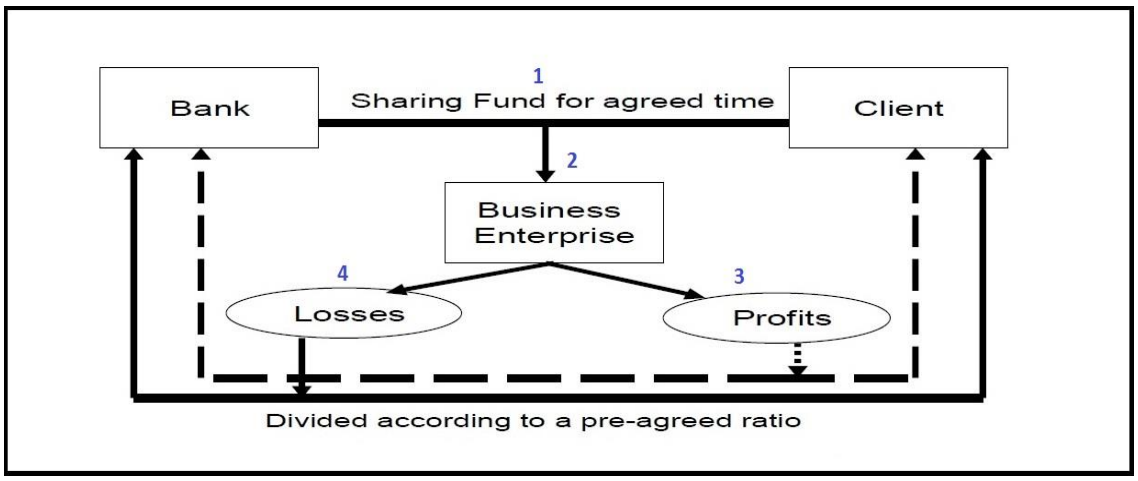
One of the important aspects of Islamic finance is that financial transactions must involve a real good or object and return cannot be claimed based on capital provided only (Ahmed, 2002; p 36). There are different modes of financing in Islamic banks. These modes (instruments) will depend on the type of activity that funds are requested for. The Islamic financing modes can be categorized into two categories: participatory (profit and loss sharing, PLS) such as Musharaka and Mudharaba; and non-participatory (non-profit and loss sharing or trade based) Muajjal (deferred payment), Joalah (service fee), and Qard Al Hasana (charity/beneficence loan) (Khan, 2010). The following sections will highlight these different modes of Islamic finance.

3.5.1 Partnership (Musharaka and Mudaraba)

Musharaka is a participation equity contract (joint venture) where two or more parties can establish a partnership and all contribute capital as well as labour and management. In other words, it is an agreement between the bank and other parties (investors/depositors) to undertake any allowed business by sharing capital contribution, management, profit and losses according to the agreement (Obaidullah, 2005; p.59). The profit is shared according

to the pre-agreed ratios and losses are shared strictly in proportion to respective capital contributions. There are two types of Musharaka agreements. A first type is a permanent contract which can last between parties for a limited or unlimited period of time and ensures all participants an equal share of profit/loss based on pre-agreed terms. Figure 3.1 shows the flow of funds in the Musharaka financing structure.

Figure 3.1 Musharaka Financing Structure (Source: Obaidullah, 2005; Gait and Worthington, 2007)



*Dotted line indicates the flow of funds.

Activity 1:

1: Client and Bank discuss the business plan and jointly contribute to the capital of the venture.

2. Client and Bank jointly set up the business venture and manage its operations, sharing the responsibilities as per the pre-agreed terms. The business generates positive or negative profits.

3. Profits if positive are shared as per a pre-agreed ratio.

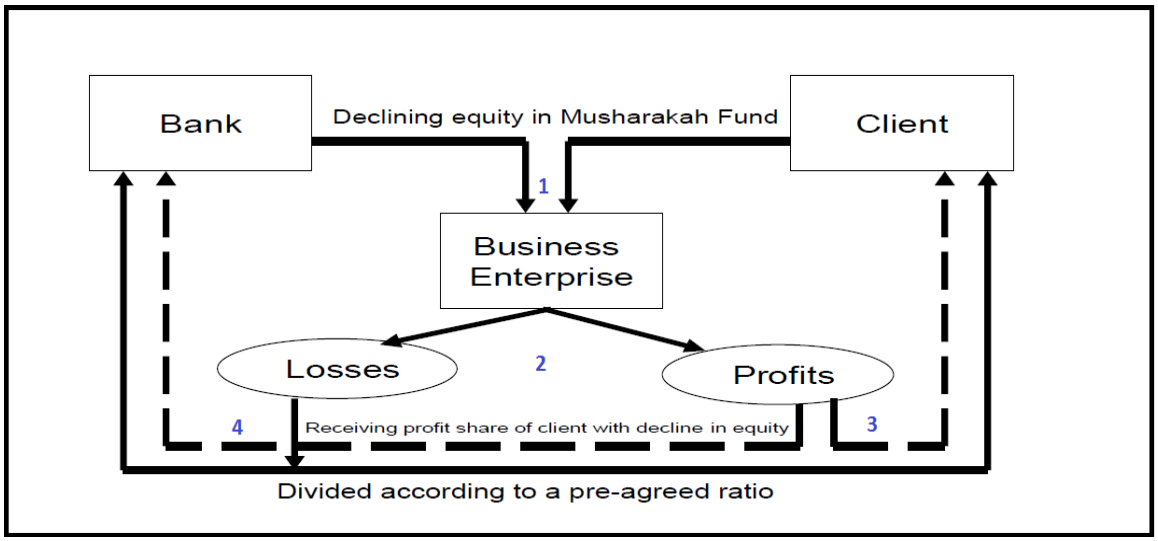
4. Profits if negative are shared in proportion to the capital contribution; effectively bringing down the asset's value while keeping their respective shares in it unchanged.

The second type of Musharaka is called a declining (diminishing) Musharaka contract. The primary (classical) Musharaka involves the bank as a permanent partner. Banks prefer declining Musharaka financing because it allows the bank to reduce its share of equity each year and to receive periodic profits based on the reducing equity balance (Obaidullah, 2005; p.61; Gait and Worthington, 2007; p.16). In other words, the client's share in equity increases over time which will eventually result in complete ownership of the investment. An example of such financing is house financing. In fact, there are three models for Islamic house financing: declining Musharaka (partnership), Murabaha (cost-plus profit) and Ijara (lease). According to each model, the financer charges rent or add profit to the amount that the client (partner) pays back instead of charging interest. In declining Musharaka house financing contract, the client pays a fixed amount of the required house cost, and the bank finances the remaining balance. Both amounts will be joined to purchase the asset (house) under the ownership of the bank. Both, bank and the client, agree to defer the principal payments for a specific period of time where the client purchases the bank's equity in portions over time and also pay rent to the bank for occupying the property. Hence, the initial bank financing is used to acquire a share in the property and not to provide a loan. The client pays periodic payments to acquire the bank's share in the property, and the bank charges the rent for the customer's use of the property. The rent is another agreement between the bank and client which is called Ijara, and it is discussed in detail in section 3.5.3. In other words, the client repays the housing finance by purchasing the bank's share of the property periodically and paying rent for using the asset during the period. Therefore, the relationship between the bank and client is as co-owners of the property and not as a lender-borrower relationship.

Nevertheless, at the time of signing the contract, the bank agrees to transfer the property ownership to the client at the end of the contract period. This is because that the borrower is buying the bank's equity of the house in portions over the duration of the contract. The cost of a share in the property is based on the property's original cost price, not its market value. The contract is obligatory for both contractors. Hence, in the case of the client payment failure, the bank can sell the property to get back its agreed financial investment capital. However, if the real estate market value at the time of selling is higher than the agreed financial contract amount, the additional amount will be passed to the borrower. On the other hand, if the property market value is lower than the initially agreed investment amount, the bank will bear its share of the losses. Interestingly, under declining Musharaka finance, Islamic banks takes their share of losses and give back any excess funds

to the client in case of selling the property as a result of default payments. In contrast, conventional banks finance houses through mortgages. Essentially, the borrower takes a loan from the bank and agrees to pay it back with interest. Initially, the property will be under the borrower's ownership, but it will also be mortgaged for the bank until completing the loan payment. The relationship here is as lender-borrower, and the transaction involves interest which is forbidden in Islamic Shariaa. Under conventional mortgage, if the borrower fails to pay back the debt, he/she can lose the right of owning the property, and the bank can take the issue to court and ask to sell the property to get its debt back. However, if the property selling value is less than the debt amount, the bank can still claim the residual amount from the borrower and will not share the loss.

Figure 3.2 A simple declining Musharaka financing structure. Source: Obaidullah, 2005; Gait and Worthington, 2007).



*Dotted line indicates the flow of funds.

Activity:

1. Client and Bank discuss the business plan and jointly contribute to the capital of the venture.

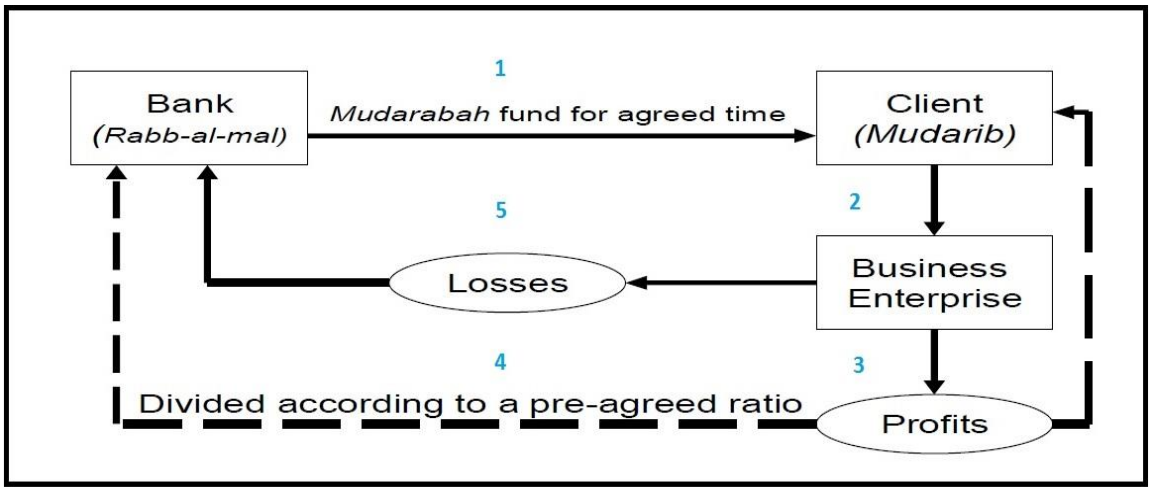
2. Client and Bank jointly set up the business venture and manage its operations, sharing the responsibilities as per the pre-agreed terms. The business generates positive or negative profits.

3. Profits are shared between Client and Bank as per a pre-agreed ratio. The profit share of Client also flows into Bank, towards partial redemption of the latter's capital contribution.

4. Losses are shared between Client and Bank in proportion to their respective capital contributions; effectively bringing down the asset value while keeping their respective shares of it unchanged.

On the other hand, another form of PLS financing modes is Mudaraba. In a Mudaraba contract (capital trust), the bank provides the required total finance for the project, and the client (entrepreneur) shares his/her expertise and labour to manage the investment (Obaidullah, 2005; p.57). Profit from the project is shared according to the pre-agreed ratios, but the bank entirly bears the losses. The client's liability in case of an investment loss will only be limited to his/her time and effort. Nevertheless, an alternative form of Mudaraba can exist when the investor (rab al mal) deposits capital in a bank and the bank act as the entrepreneur (Mudarib) to the investment.

Figure 3.3 The flow of funds in the Mudaraba financing structure. Source: Obaidullah, 2005; Gait and Worthington, 2007).



*Dotted line indicates the flow of funds.

Activity:

1. Bank and Client discuss business plan. Bank provides funds to client towards capital investment.

2. The client sets up the business and manages its operations.

3. The business generates positive or negative profits.

4. Profits are shared between Client and Bank as per a pre-agreed ratio.

5. Losses are absorbed by Bank, effectively bringing down the value of the asset created with its investments.

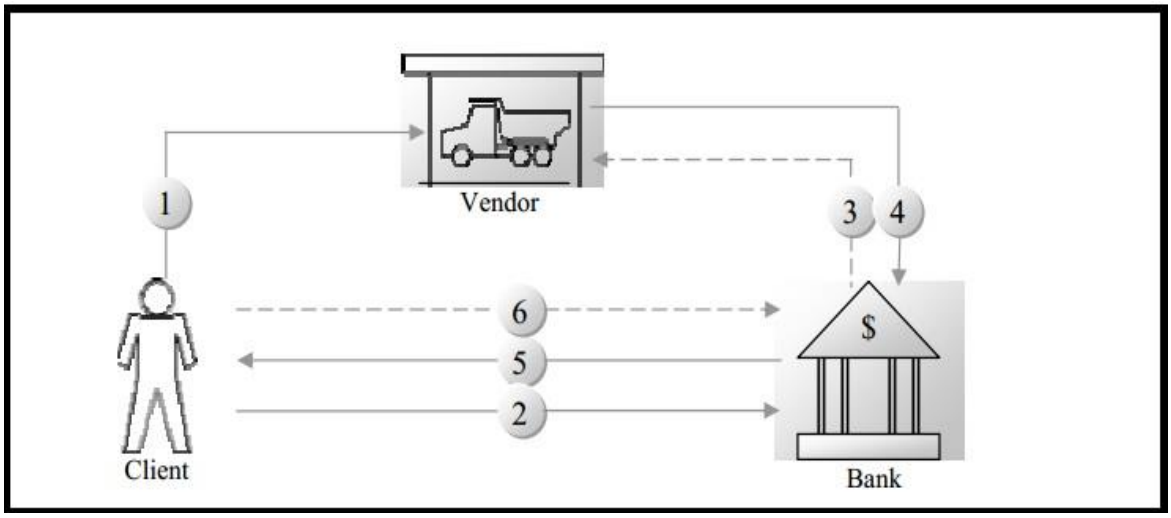
3.5.2 Cost- Plus Sale (Murabaha)/ Deferred Payment (Bai muajjal or Murabaha Mujjal)

Murabaha is an Islamic instrument for banks to buy a specified, known and required object for a client from a third party and to resell it back to him/her with an agreed marginal profit. The client provides the object's specification to the bank and must know the actual cost of it. A prevalent example of Murabaha financing is purchasing a car. For example, a client wants to buy a car and needs Islamic finance to do that, he/she can ask an Islamic bank to buy the car from a car dealer on his/her behalf at a known price and agrees to pay a margin profit for the bank (can be a percentage). There are essential conditions for the Murabaha contract. Both parties (bank and client) must be aware of the actual price of the object; the bank must have ownership of the object at the time of selling it to the customer, and the customer must agree, with the bank, to pay the specified profit margin. However, customers may seek finance from an Islamic bank to purchase an item through Murabaha except that they also ask for deferred payments on the price as instalments. This is permitted in Islamic finance. In Murabaha Mujjal, the price with the profit margin can be paid in instalments. It is agreed among the Ulama (a body of Muslim scholars who are recognized as having specialist knowledge of Islamic sacred law and theology) that increasing the price of an item due to deferral payments is permissible (El-Gamal, 2000). This is because the bank has actual ownership of the item and so accepted some risk. Many people argue that Murabaha is as same as loans in conventional banks. Despite some similarities that may appear, Murabaha is not as loans in conventional banks. In Murabaha contracts, the bank must have the ownership of the asset before selling it to the client. In fact, the fund is directly paid to the supplier, and the bank has an actual ownership the asset. Hence, it is not a loan given to the client where the client goes later on and purchase the asset. Also, as a condition in Murabaha, the actual price of the asset must be known to the bank and client, and both must agree at the time of signing the contract on the profit margin. The asset must not be among things that are prohibited in Islamic Sharia. It can be noticed that an actual trading transaction is happening rather than just providing a loan. Moreover, unlike conventional banks, Islamic

banks applying Murabaha contract do not charge compound interests on late payments where their margin profit is fixed at the time of signing the contract and cannot increase. However, Muslim jurists agreed that banks could charge a late payment penalty fee. This can be calculated as a percentage of the overdue amount but cannot be compounded and must be used for charitable purposes. However, if the client breaches the contract by failing to pay the agreed instalments, the bank can ask for asset liquidation through courts.

In summary, both conventional and Islamic banks provide cost-plus profit financing but in different ways. Conventional banks simply provide a loan and expect the borrower to pay it back with interest. On the other hand, Islamic banks provide Murabaha financing that complies with Islamic Shariaa. It is based on a trading transaction where clients ask the bank to purchase an asset on behalf them at a knowing price and they agree to purchase it back for an agreed and known profit margin. Both types of banks provide deferred payments on their finance, but conventional banks charge penalty and compounded interests on late payments. Islamic banks cannot increase their profit margin but can charge penalty fee on late payments and use it for charity.

Figure 3.4 A simple Murabaha financing structure. Source: Obaidullah (2005)



*Dotted line indicates the flow of funds.

Activity:

1. The client identifies and approaches Vendor or supplier of the commodity that he/she needs and collects all relevant information.

2. The client approaches Bank for Murabaha finance and promises to buy the commodity from the Bank upon resale at the marked-up price.

3. Bank makes payment of the base price to Vendor.

4. Vendor transfers ownership of a commodity to Bank.

5. Bank sells the commodity, transfers ownership to Client at a marked-up price.

6. The client pays the marked-up price in full or in part over a future (known) period(s).

3.5.3 Ijara (Lease)

Ijara is an Arabic word which means lease. In Islam, it is permitted to sell the right to use an object as a lease (Ijara) for a given period and in return for some periodic rental payment as long as it complies with Islamic Shariaa. To lease an object, the Islamic bank must have ownership of it. The simplest way of Ijara can be described as the bank owning an asset and agreeing to lease it to a client for a predetermined rent for a given period. This is the ideal type of Ijara contract, but it is not popular since banks normally do not hold assets for leasing. However, adding a third party (e.g. a vendor) to the process makes it easier for banks to use Ijara is considered as one of the popular financing contracts in Islamic finance. Going back to the example of home finance in a declining Musharaka contract, it was mentioned that the client would pay rent for occupying the house to the bank. The rent paid is an example of an Ijara contract. Murabaha Mujjal and Ijara are considered to be the most popular methods of financing in Islamic banks (Obaidullah, 2005; p. 67). Figure 3.5 shows an example of home financing by declining Musharaka and Ijarah.

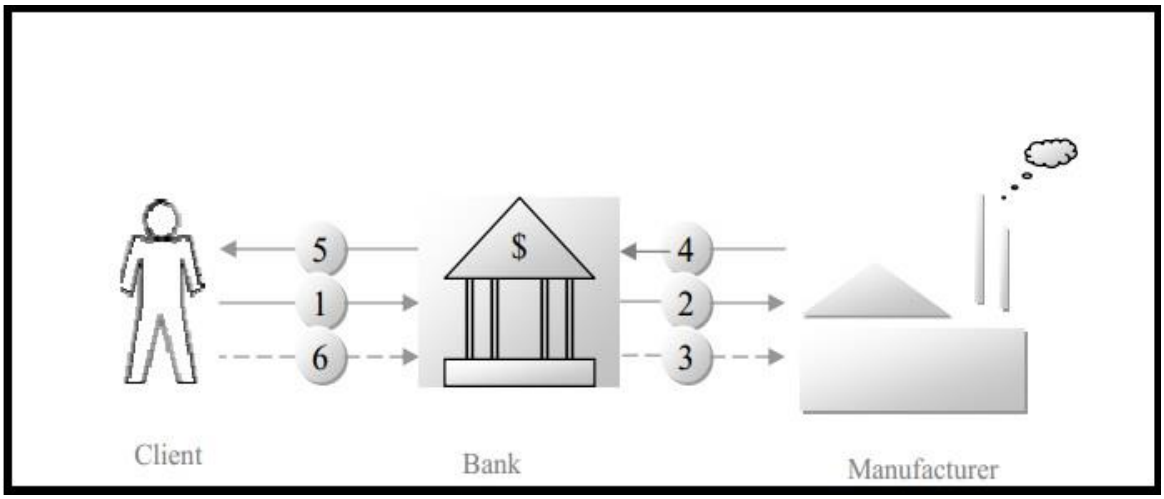
Figure 3.5 Declining Musharaka and Ijara contracts (source: www.meethaq.com)

Essentially, Ijara in Islamic banks and conventional lease contract are the same. However, it can be argued that charging rent in Ijara contract is the same as charging interest on conventional mortgages, but Islamic finance experts explain that the way of making profit underlies the difference between the two financing models. Conventional banks make a profit by charging interest on their loans while Islamic banks make a profit through rent (in Ijara) when the bank own the property. Conventional banks provide loans and wait for the borrower to pay it back with interest. In contrast, in Ijara contracts, the Islamic bank has the asset ownership, and it leases it to a client for a specific agreed period in return for agreed periodic rent payment. At the end of the contract, the client returns the asset to the bank. If the client wants to purchase the asset, he/she has to discuss this with the bank to sign another contract that complies with Islamic Shariaa. However, as previously discussed, in the housing finance example, the client signs two contracts. The declining Musharaka contract and Ijara contract. The first contract determines the periodically client's payments for purchasing the bank's share of the property where at the end of the contract period the property ownership will totally transfer to the client. On the other hand, the second contract states the rent that the client pays to the bank in return for using the property during the contract period.

3.5.4 Bay Salam/Istisna (Deferred Delivery)

Bay Salam/Istisna can be translated as commission on manufacturing. This is a type of deferred delivery purchase and can only be applied to items that can be fully specified in terms of quantity, quality, attributes, etc., while monetary instruments are specifically barred. As mentioned earlier, it is forbidden in Islamic Shariaa to deal with the sale of a non-existing object due to uncertainty (Gharar). However, there are some exceptions to facilitate certain types of business through Bay Salam/Istisna. To make sure the transactions in Bay Salam/Istisna are compliant with Sharia rules, investors and banks are asked to consult an Islamic legal expert along with other lawyers. Examples of such contracts are school buildings, roads, and mosques (Masjid). The price is paid in instalments as the work progresses in manufacturing or building and it is usually lower than the cost of purchasing a finished product (El-Gamal, 2000). Note that these forms of financing are very rarely used. However, it is used more by governments rather than individuals. Figure 3.6 shows an example of Istisna Finance.

Figure 3.6 An example of an Istisna Contract (Source: Obaidullah, 2005)



*Dotted line indicates the flow of funds.

Activity:

1. The client asks Bank to develop, construct or manufacture an asset X with clear specifications.

2. Bank asks Manufacturer to develop, construct or manufacture asset X with the same specifications.

3. Manufacturer develops, constructs or manufactures asset X receives progress payments from Bank as per the agreed terms during the different stages of manufacturing.

4. The manufacturer gives delivery of the asset to Bank.

5. Bank gives delivery of the asset to the client.

6. The client pays in full or in parts over an agreed period of time.

3.5.5 Joalah (service fee), and Qard Al Hasana (charity/beneficence loan)

Joalah is a service fee given in exchange for providing a service or consultancy to another party, while Qard Al Hasna is a zero interest loan granted to the needy or poor people and it is only repaid if they are able. A key issue for the users of Islamic banking is the religious point of view. Islamic banking contracts take into Islamic account restrictions, and these are essential as they differentiate Islamic banking from the conventional banking system (El Gamal, 2000, p.36). Therefore, Islamic banking is considered as an alternative way of banking that offers products which are compliant with Islamic principles (El Gamal, 2006, p.8).

3.5.6 Sukuk (Islamic bonds)

Sukuk (plural) Sakk (singular), is one of the financing instruments that comply with Islamic Shariaa. It is alternatively known as Islamic bonds. Governments, firms, and banks which need to raise capital that does not violate the Islamic Shariaa (forbidden of interests), can use Sukuk. Afshar (2013) summarised the differences between Sukuk and conventional bonds in Table 3.1.

Table 3. 1 Sukuk versus Conventional Bonds, source: Afshar, (2013)

	Sukuk	Conventional Bonds
1	Income is generated from assets	Income is derived from a debt instrument
2	Return is expected	Return is interest and pre-determined
3	Negotiability is restricted to specific types of Sukuk	Negotiable financial paper
4	Sukuk issue is a seller of assets	Bond issuer is a borrower
5	Sukuk holder is an owner of assets	Bond holder is a lender
6	Seller-buyer relationship	Lender-borrower relationship
7	Business risk-return relationship	Issuer guarantees the payment of face value
8	Major risk lies with underlying assets	Major risk is with issuer – credit risk
9	Return is expected from the underlying assets	Interest payment is an obligation
10	Return of investor's capital cannot be guaranteed	Issuer is obligated to return investor's capital (face value)

Sukuk holders have proportional ownership of an existing asset or a pool of diversified assets for a specified period (Afshar, 2013). They are accountable for the risk and return related to the underlined assets. There are two types of Sukuk, asset based and asset-backed. Table 3.2 shows the difference between the two kinds.

Table 3. 2 Asset Based Versus Asset Backed Sukuk: source (Afshar, 2013)

	Asset Based Sukuk	Asset Backed Sukuk
1	No right over asset	Recourse to assets
2	Risk with originator	Risk with assets
3	Assets are used as security interest	Securitization
4	Sukuk holders are creditors	Assets are ownership interest
5	Assets remain on originator's book	Sukuk holders are owners
6	In the case of sales of assets, investors receive their face value. All excess goes to the originator	Financial and legal due diligence are detailed because investors are paid from the asset's cash flow and redemption
7	Recourse to originator	Recourse to assets

In general, these are the main modes of finance in Islamic banks. However, despite the similarities that may appear in the products offered by Islamic and conventional banks, Islamic banks will only provide products that are permissible under Shariaa (Beck et al., 2013, pp.433-434). Note that new modes of finance can be introduced as long as they comply with Islamic Shariaa. Moreover, understanding the different modes of finance in Islamic Banking will help us to understand the different ways that information asymmetry occurs in this system. These are discussed in details in the hypothesis development section.

It is worth to mention that in reality, sometime Islamic finance costs may be higher than conventional finance. The reason behind this is that Islamic banks have more transaction than conventional banks to provide the same goal. (i.e. Islamic housing example).

Additional costs also rise in Islamic banks such as the costs of the Shariah supervisory board. These costs are logically passed on to the customers resulting in having higher financing costs in Islamic banks when compared to conventional banks (Amin, 2011).

Chapter 4: Information Asymmetry in Islamic and Conventional Banks

4.1 Introduction

The issue of information asymmetry has been addressed in different industries including the insurance, automobile, labour and banking industries. The primary purpose of this chapter is to investigate and compare information asymmetry levels between Islamic and conventional banks. The different nature of Islamic banks raises a question as to whether such banks face the same information asymmetry issues as conventional banks. The objective of this study is to find out if there are differences in the severity of information asymmetry level as a function of bank type. The chapter is divided into several sections. Section 4.2 explains the definition of information asymmetry and the ways it occurs in the banking industry. Section 4.3 explores in depth the theoretical literature on information asymmetry. Section 4.4 presents the empirical studies that have been conducted on information asymmetry. Section 4.5 provides an overview of the literature on Islamic banking. These sections will provide a reflective and comprehensive understanding of the information asymmetry issue, which is used to construct the conceptual research framework presented in Section 4.5. Section 4.7 discusses the data and methodology used in the study. Section 4.8 presents the results and analysis of the study. Finally, Section 4.9 provides the chapter's conclusion.

4.2 Information Asymmetry Definition

Information asymmetry is defined as the unequal distribution of material information which could influence the decision-making of parties entering into an agreement, for example, a loan agreement or a decision to investment. For instance, a borrower asks for a loan to start a business and promises the bank to repay it with interest in the future. A situation of information asymmetry exists when the borrower has more and better information about a particular project than the bank. For the loan agreement example, the bank provides loans to borrowers based on their information. The borrower will provide the bank with a business proposal showing its probability of success. However, it is assumed that the borrower will not disclose all of the information about his project because of his need for funding. The project may have very high-risks which may result in failure, but the borrower will not disclose this information to the bank. This results in information being "asymmetric" between the borrower and the bank. If the bank knew that the borrower's project is associated with high-risk, it might not provide the loan to the borrower. Another

example of information asymmetry is in investments. This occurs when a bank (principal) uses an entrepreneur's (borrower) services to manage the principle's investment in return for a share of the profit. However, the agent tends to favour his self-interest more than the bank's interests and hence makes decisions that harm the bank and benefit him. For instance, the agent may have hidden intentions not to declare high profits to reduce the principal's return. These hidden intentions are considered as additional information that the bank does not have. The additional information may influence the principal's decision if it is known to them. Information asymmetry can occur in the banking sector in different situations, including conflict of interest among shareholders, conflict of interest ownership and management, and conflict of interest between the bank and other stakeholders (e.g. creditors, clients). The following sections discuss the theoretical background of information asymmetry.

4.3 Literature on Theoretical Studies

The following sections discuss the early theories of information asymmetry. These theories are used as guides to identify the asymmetric information problem in Islamic and conventional banks. However, the hypothesis development section elaborates the discussion of these theories and relates them to this study.

4.3.1 Agency Theory

As mentioned in the definition, agency arises in situations where two or more people are involved in a relationship, with one party working as an agent on behalf of the other party (principal). It is assumed that both sides are self-interested and are going to do whatever best suits their interests. Jensen and Meckling (1976) explained the agency problem in their paper entitled 'The Theory of Firms'. They developed a theory for the ownership structure of firms by combining elements from the theories of agency, property rights and finance. They define the agency relationship as *"a contract under which one or more persons (the principal(s)) engage another person (the agent) to perform some service on their behalf which involves delegating some decision-making authority to the agent. If both parties to the relationship are utility maximizers, there is good reason to believe that the agent will not always act in the best interests of the principal*." However, the agent should act in the best interest of the principal. Nevertheless, conflicts of interest appear between the principal and agent as a principal-agent problem, or in other words, agency theory.

As previously mentioned in Chapter 3, Islamic banks are financial intermediaries that adhere to Islamic principles. Like conventional banks, customer deposits are a major source of Islamic banks' financial strength and stability as they are used in their financial and investment activities. It is expected that the principal-agent problem occurs in some of the banks' operations. As previously discussed, customers use current, savings and investment accounts to deposit their money in banks. Islamic deposit accounts are arrangements between the depositors and the bank in the way of using the depositors' funds. However, a conflict of interest may arise in such arrangements from the depositor's perspective. For instance, in an investment account, the bank acts as an agent for its depositors to invest their funds in investments that comply with Islamic principles. The bank agrees with its depositors to share the profits and losses from their investments. However, since the bank does not guarantee investment deposits funds, it may invest in high-risk investments which may result in significant losses in case of their failure. Banks may engage in high-risk investments and may have impermissible investments that do not comply with Islamic Shariaa knowing that any losses are shared and distributed among depositors which will eventually lead to the banks holding just a small burden of loss. This conflict of interest between the depositors and the bank is one possible principal-agent problem scenario in Islamic banks. Another possible scenario of a principal-agent issue in Islamic banks may appear from the bank's perspective. For example, Islamic banks have the Mudaraba finance mode in which they provide the total funds for a project and the entrepreneur manages the investment in return for a predetermined profit rate. However, the bank bears the total loss in case of the project's failure. Therefore, in such a situation, an entrepreneur may misuse the bank's funds and invest in high-risk projects knowing that the bank will be liable for the total losses. Moreover, in the case of the success of the project, the entrepreneur may not report the right amount of profits to reduce the bank's share. This conflict of interest is another principal-agent problem in the banking system which results from information asymmetry. Nevertheless, because Islamic banks are supposed to adhere to Islamic Shariaa and because they are assumed to be different in their nature than conventional banks, the information asymmetry problem is investigated in this chapter. The hypothesis development section elaborates these thoughts.

4.3.2 Information Asymmetry Theory

Akerlof, Spence, and Stiglitz are considered to be the pioneers of information asymmetry in financial markets. In 2000, the three scholars received the Nobel Memorial Prize in Economic for their research related to information asymmetry. Akerlof (1970) is considered the first to identify the information asymmetry problem. He explained in his paper entitled 'The market for Lemons' the concepts of adverse selection and moral hazard which appear through the cause of information asymmetry. He gives an example of information asymmetry by describing the used automobile market. In the used car market there are good and bad (lemons) cars. In normal situations, used car sellers know more about their cars than the buyers. Hence, the buyers face difficulties in distinguishing good cars from lemons. The unequal distribution of information among sellers and buyers is called information asymmetry. As a result, if a good car is worth 80,000 pounds and a bad car is worth 30,000 pounds, buyers will be willing to purchase a used car at an average price of 55,000 pounds. This leads good car sellers to be pushed out of the market, with only bad car sellers remaining. This then leads to a crash in the used car market since nobody is willing to buy a lemon (bad cars). Therefore, it is assumed that the car dealer will always have additional information about his products. The same principle can be applied to entrepreneurs and banks. Different forms of information asymmetry can arise in the banking sector (i.e. adverse selection and moral hazard).

Adverse selection occurs when the principal cannot observe the agent's characteristics due to the existence of information asymmetry prior to signing a contract. For example, when they apply for funds, banks face difficulties in distinguishing between good and bad borrowers. This is because all borrowers claim that they have good quality projects. As a result, the bank may select bad borrowers (high default risk with bad investments) that have superior knowledge about their investments than the bank. On the other hand, after the contract between the principal and the agent is signed, moral hazard may occur when the agent behaves in a way that may harm the principal or even when the agent does not comply with the terms of the contract. For example, in an equity partnership, the agent may undervalue the business profits to shrink the principal's profit share and may also use the funds in ways that are unacceptable to the principal (invest in very high-risk projects). Hence, it can be noticed that the principle of information asymmetry that Akerlof discusses occurs also in the banking sector.

The unequal distribution of information among banks and their customers results in information asymmetry. Information asymmetry theory describes the different situations in which information asymmetry may occur; i.e. adverse selection and moral hazard. Thus, the theoretical definitions of information asymmetry can be used to determine such possible situations that may arise in the banking sector. Since Islamic banks operate in the banking industry, they face the same asymmetric information problem. In fact, the equity share financing modes in Islamic banks may result in the attraction of bad borrowers since risk is shared where the theory suggests an abuse of the trust between the bank and client. Therefore, information asymmetry theory gives a guide to the different situations that Islamic banks may face in their transactions.

4.3.3 Signalling and Screening Theories

Spence (1973) continued Akerlof's work in his paper entitled 'Job Market Signalling'. He developed a model for hiring employees which helps to make decisions in an uncertain situation. When hiring an employee, the employer cannot be sure about their productive capabilities. Hence, employees select signals for employers to help them obtain better wages and benefits. On the other hand, Stiglitz (1975) developed the theory of screening using a simple model. He explored whether signalling can be used by employers to screen potential employees and categorize them into groups that reflect their productivity and capabilities (e.g. education). Different individuals will normally have different qualities, and through screening, employers can identify these qualities. Thus, screening, just like signalling, aims to reduce asymmetric information between parties in the market.

These are the early theoretical studies in the area of information asymmetry. The signalling and screening theory is not used in the research hypothesis development chapter, but a brief overview was given as it is considered among the fundamental theories in the information asymmetry field. Nevertheless, during the following years, more research was done on different aspects related to information asymmetry.

4.4 Empirical Studies on Information Asymmetry

Easley and O'Hara (2004) investigated the role of information in affecting a firm's cost of capital by developing an asset-pricing model in which both public and private information affect asset returns. According to the authors, the return on stock determines a firm's cost of capital and their analysis provides a link between a company's information

structure and its cost of capital. Their findings show that investors demand a higher return to hold stocks with greater private information. This suggests a positive relationship between information asymmetry, the cost of capital and risk, where private information increases the risk to uninformed investors, who hold the stocks, as they are not given the opportunity to change their portfolio because of the hidden private information. However, there are some implications for this study such as firms being able to influence their cost of capital by affecting the precision and quantity of information available to investors (e.g. accounting standards and disclosure policies).

On the other hand, Armstrong et al. (2011) examine when information asymmetry among investors affects the cost of capital more than standard risk factors. The authors state that when the market is imperfect (less than perfect competition), there is an information asymmetry effect on the cost of capital. The findings show that information asymmetry affects the cost of capital when the degree of competition is low in the market, while there is no effect noticed on the cost of capital when the level of competition is high. This suggests that firms with high information asymmetry and low competition will have a high cost of capital compared to companies that are competitive and have low information asymmetry. These results are in line with those of O'Hara and Easley (2004). Nevertheless, another possible explanation that may arise is that firms may choose not to reduce their information symmetry because the cost of reducing it is too high and more than the extra cost generated from the cost of capital. Another study by Lambert et al. (2011) analysed the role of information asymmetry in determining the cost of capital for a firm. Their findings are also in line with those of O'Hara and Easley (2004) and Armstrong et al. (2011) as they indicate that there is an interaction between the imperfect competition market and information asymmetry in respect of determining a firm's cost of capital.

According to He et al. (2013), previous literature has focused on the theoretical relation between information asymmetry and a firm's cost of equity capital and the lack of consistency in conclusions drawn (e.g. Easley and O'Hara, 2004; Grossman and Stiglitz, 1980; Leland, 1992; Wang, 1993). However, their study empirically examined the relation between information asymmetry and the cost of equity capital of firms listed on the Australian Securities Exchange. Their results show a significant positive relation between information asymmetry and the cost of equity capital. This is consistent with the hypothesis of Easley and O'Hara (2004) that information asymmetry is positively related to the cost of equity capital.

Another interesting paper by Boyd et al. (1998) investigates the severity of moral hazard problems under the commercial and universal banking system. They found that commercial banks always take action to control the moral hazard problem with borrowers. In contrast, a universal bank (where the bank is assumed to have more control rights because it owns equity in the firm) tends to be less motivated to control the moral hazard problem despite the ease of sharing information related to misallocated funds. In fact, if a bank owns equity in a firm, it may force the firm to misallocate funds by exercising its control rights; this will benefit the bank while harming the firm. In other words, because of the control rights that a universal bank has on a firm, the authors suggest that a universal bank can gain at the expense of its borrowers and deposit insurers, which is a severe moral hazard problem when compared to a commercial bank. These suggestions are in line with the agency problem discussed earlier by Jensen and Meckling (1976).

Cordella and Yeyati (2002) reject the argument that the lender of last resort bailouts (LOLR) approach causes moral hazard. Lender of last resort bailouts occur when a central bank announces and commits to bailing out "*…insolvent institutions in times of adverse macroeconomic conditions beyond the control of bank managers, by increasing the value of the bank charter, creates a risk-reducing 'value effect' that more than offsets the moral hazard component of such a policy"* (Cordella and Yeyati, 2002). Therefore, the bailout policy reduces the bankruptcies and overall bank risk. However, these suggestions contradict another study by Dam and Koetter (2012) in which they tested if the bailout expectation increases moral hazard in the banking industry regarding excessive risk-taking behaviour. The argument here is that when banks are aware that they are in trouble and insolvent, they will be bailed out and saved from bankruptcy. From the authors' preferred approach to estimate bailout expectations, they found that an increase in bailout expectation by two standard deviations results in an increase in predicted distress probabilities by 2.8%, which is considered to be substantial, knowing that the mean distress probability is 8%. These findings suggest that expectation bailout increases moral hazard problems and is not in line with the study by Cordella and Yeyati (2002). In the same context, Wheelock et al. (1995) found that banks which have a voluntary deposit insurance system would have an incentive to increase risk and regulations or supervision do not eliminate this. This finding is in line with the argument that banks that are bailed out are more risk-taking. As a result, there is a high possibility of the occurrence of the moral hazard problem.

It can be noticed that previous studies have investigated the problem of information asymmetry and its relation to various factors such as the cost of equity, market competition and risk-taking behaviour. However, despite the importance of the asymmetric information problem, few studies have highlighted it in the banking industry. In fact, no study has investigated the information asymmetry issue in Islamic banks and compared it with that of conventional banks. As a result, there is a gap in the literature in this specific area. Therefore, to fill this gap and contribute to the Islamic banking literature, this chapter investigates and compares information asymmetry in Islamic and conventional banks.

4.5 Literature Review on Information asymmetry in Islamic Finance (Banking)

Section 4.2 provided a definition of information asymmetry and described how it may occur in conventional banks. This section discusses the different studies that have been conducted on information asymmetry in Islamic banks.

In a perfectly informed market, information about individuals and organisations would be available to everyone. In such a scenario, there would be no fear of risk since the market would capture the true risk and return of investments (Akerlof, 1970). However, such a market does not exist in reality. In fact, asymmetric information always exists in markets. Investors and banks make decisions based on the available information, trying to reduce risk and maximise their expected returns. Thus, asymmetric information has a significant impact on investment decisions. According to Ayub (2007), the unique structure of Islamic banks, which act as universal and investment banks and not purely as financial intermediaries, make them better positioned to deal with the information asymmetry problem compared to conventional banks that operate as pure financial intermediaries.

Despite the increasing amount of research in the Islamic finance literature, there is little research on information asymmetry in Islamic banking. There is a scarcity of Islamic banking literature that highlights and discusses the relationship between information asymmetry and Islamic financial contracts (Shamsuddin and Ismail, 2013). According to Dakhlallah and Miniaoui (2011), Islamic banking faces the principal-agent problem in its financial transactions when a contract is entered into, as *rab al mal* (principal) and the user of the funds is the agent. Hence, a conflict of interest may appear, and some hidden actions can also exist. The following paragraphs discuss the research done on Islamic banking information asymmetry.

Aggrawal and Yousef (2000) studied the Islamic banks' optimal financial instruments in an agency problem contracts environment. They found that most financing instruments in Islamic banks are based on debt (i.e. Murabaha) rather than profit-and-loss sharing (PLS). As previously discussed, Murabaha financing adheres to the Islamic Shariaa and thus does not involve interest. Their model also shows that the usage of debt instruments increases in Islamic banks when an agency problem becomes more severe. They suggest that this happens because of the moral hazard problem. In PLS financial instruments, entrepreneurs have a high probability of divergence of the initial agreement with the bank resulting in the moral hazard problem. For example, at the time of signing the contract, entrepreneurs agree with a bank a specific profit percentage. However, this proportion can be manipulated by the entrepreneurs when reporting an undervalued profit. Therefore, Aggrawal and Yousef suggest that debt financing instruments are better in the case of high information asymmetry. In other words, the authors suggest that PLS financing instruments are associated with high information asymmetry. Therefore, Islamic banks need to use debt financing instruments as the use of mark-up contracts (debt contracts) is a rational response to the information problem. Islamic banks will try to minimise the issue of information asymmetry, and if PLS financial instruments are associated with high information asymmetry levels, these banks will logically go for an alternative way of financing which is in this case debt financial instruments.

Kahn and Mirakhor (1989) supported these suggestions by giving other reasons for the higher demand in debt financing compared to the profit-and-loss sharing financing by looking at the demand and supply side of PLS financing. Among the findings, the authors propose some characteristics that make PLS contracts less popular than debt contracts. First, in PLS contracts, it is not clear whether the investor will reinvest his return in the project. This motivates banks to use debt financing since that return will be reinvested in the bank. It is more beneficial for the bank to reinvest its total return for its future investment activities rather than sharing a portion of the return with outsider investors. Second, under PLS, the investor cannot become the sole owner of the project. In this case, investors may become demotivated to finance their projects using PLS instruments, especially if the investor is convinced and aware that his project is profitable, where he will need to share the return with the bank. Although debt financing will require an additional mark-up to be paid to the bank, using this type of finance gives the investor complete control of his investment and total gain of his project return without the need of sharing it with the bank. These characteristics may be reasons for banks to use more debt financing instruments than PLS instruments. These

findings are supported in a study by Ghannadian and Goswami (2004) in which they theorise that Islamic bank loans have higher moral hazard problems than commercial bank loans as a result of the nature of the former's contracts not being based on interest. They explain that banks are more attracted to investments financed through debt rather than equity. This is because the bank cannot accurately observe the realised returns as the enterprise can understate its return causing the bank to lose its actual return which results in a moral hazard problem. To avoid this issue, banks prefer debt financing. However, in debt finance, where adverse selection may occur, although deep screening and monitoring might reduce the information asymmetry problem, the expenses are expected to be high. Nevertheless, this study has a different view, namely that PLS financing instruments are less popular in Islamic banks because of a lack of understanding of the original concepts and aims behind them. People are familiar with debt finance in conventional banks. Hence, when clients decide to deal with Islamic banks, they will probably use financing instruments that are familiar to them, i.e. conventional banks financing, which would be in this case debt finance instruments. As a result, debt financing is more popular and used more in Islamic banks than PLS finance instruments.

Another viewpoint by Sarker (1999) states that Islamic banks have a greater ability to allocate their funds in a way that reduces risk through sharing the investment's return with the entrepreneur. The author states that although Islamic banking positively benefits from risk sharing, it still faces severe principal –agent problems caused by information asymmetry and costly monitoring. The agency function is associated and governed by the nature of the finance contracts. Therefore, moral hazard and adverse selection are the results of the differences in the interests of the principal and agent. The author also explains the different forms of information asymmetry in Islamic banks. For example, Islamic banks have limitations in terms of proper information about the quality of the borrowers' projects. Borrowers have inside information about their projects and their probability of success that banks will not capture; this means that all potential borrowers who apply for profit-and-loss sharing finance claim that their project is of high quality. Hence, banks face difficulties in distinguishing a good borrower than a bad one, in other words, they face the adverse selection problem. As a result, it is expected that high-risk projects with a low probability of success will always seek profit-and-loss finance to reduce their losses with the bank and benefit from the low cost of capital (Sarker, 2000). In addition, borrowers or entrepreneurs can declare lower profits to reduce the bank's share of the profit. As a result, Islamic banks

will incur more monitoring costs with a view to assure that declared profit is an accurate reflection of business projects (to assure that moral hazard does not exist).

In the same context, Solé (2007) discusses the moral hazard problem in Islamic banks. The author considers that this issue arises from the risk-sharing nature of investment deposits, where the Islamic bank invests in activities that are expected to be profitable by using depositors' funds. The argument here is that Islamic banks can pass a substantial part of the investment losses onto depositors. Therefore, they could be motivated to undertake riskier projects. However, this study suggests that Islamic banks will probably do the opposite. Since Islamic banking is growing and is considerably new to most countries around the world, banks would try to attract depositors and investors, and to do that, they will not undertake projects with high-risks, especially in a competitive market where investors have other banking options. Therefore, they will normally invest in low-risk projects where they can probably almost guarantee a "low" return but no losses for their investors. Investing in many projects with low-risk will eventually generate a good return for the bank. As discussed earlier, uncertainty (*Gharar*) cannot be eliminated, and therefore, it is agreed by *Ulama* (Muslim scholars) to invest in low uncertainty rather than high uncertainty investments (see Section 3.2.2).

Another recent study by Yousfi (2013) applies a simple agency model to answer the question of how two Islamic financing methods (*Musharaka* and *Mudharaba*) can solve information asymmetry problems. Interestingly, the findings show that *Mudharaba* provides powerful incentive schemes to the entrepreneur and allows them to obtain the first best solution. Hence, it can reduce the moral hazard problem. The reason behind this is that the project depends on the entrepreneur's effort to succeed and the Islamic bank is not actively involved in the project. On the other hand, *Musharaka* shows that it cannot solve the moral hazard problem. The explanation of the findings which is given by the author is that in *Mudharaba*, the entrepreneur fears having no payment in case of the project's failure. This will result in an optimum use of funds to make the project succeed, therefore yielding a return. While in *Musharaka*, the project is financed by both parties (bank and entrepreneur), and both of them make non-contractible efforts which diminish their incentives. The key problem with this explanation is that in *Mudharaba*, the entrepreneur will have complete control over the project and can make decisions without going back to the bank which should logically increase information asymmetry since not all information is available to the bank. In contrast, in the case of the *Musharaka* instrument, the opposite should be the case. The

bank will be involved in the project, and this should encourage both parties to share the project's information which will lead to a reduction in the information asymmetry problem. These findings, however, are theoretical and have never been empirically investigated.

Yousifi (2013) also reports that Islamic banks are bearing a higher risk than conventional banks because of the profit-and-loss sharing principle. Unlike conventional banks, Islamic banks do not pay fixed interest rates as a return, but they pay a return based on the proportion of the profits and losses generated by their asset/business where the capital is often provided by them rather than the entrepreneur. However, it is expected that for the nature of PLS, the risk would decrease because the Islamic bank would have the right to participate in the management of the project in which it is investing which will eventually lead to lower information asymmetry. However, additional costs would rise for extensive screening, information gathering, and monitoring to verify the quality of the investment (Greuning and Iqbal, 2008, p.162).

Shamsuddin and Ismail (2013) explain in interesting ways the existence of information asymmetry in the forms of adverse selection and moral hazard in Islamic financial contracts. They state that like in conventional banking, information asymmetry can also exist in Islamic banking even in joint venture and equity contracts. This can appear as a result of conflicts in the goals and behaviours of the principal and agent. For instance, an agent (bank) can take irresponsible decisions using a depositor's money. Therefore, the agent (bank) does not perform their obligations according to the sharia principles stated in the contract. In other words, a moral hazard problem may occur when the bank misuses the depositors' money. On the other hand, in profit-and-loss financing, the borrower may not give full information about the project and expected risks. This may result in the bank selecting risky borrowers (adverse selection). Such decisions can be associated with high-risk projects or even investments that are prohibited in Islam. These conclusions are similar to those stated by Sarker (2000).

Another view proposed by Safieddine (2009), but still under the same umbrella of the agency problem, highlights the uniqueness of the agency problem in the Islamic banking sector from the manager's duty to comply by Shariaa and the separation of cash flow and control rights for a category of investors. The study shows the impact of corporate governance practices in Islamic financial institutions on reducing the agency problem on banking operations and performance on a sample from the Gulf Cooperation Council (GCC).

The results indicate that most Islamic financial institutions in the sample realise the importance of incorporating governance mechanisms to reduce agency issues. The results also reveal that *"the Islamic financial institutions that record higher value for the index of conventional and idiosyncratic governance mechanisms are more profitable and have superior stock performance and higher valuations than those with lower index values"* (Safieddine, 2009).

In summary, as a consequence of information asymmetry, Islamic banks' equity sharing modes of finance *(Musharaka* and *Mudaraba*) are associated with various investment risks which lead to moral hazard and adverse selection (Siddiqui, 2008). Adverse selection can occur in Islamic banking when a bad debtor has more information about his project and expects a future loss without informing the bank about this information. In this case, bad debtors will apply for Islamic finance to take advantage of sharing the loss with the bank. Failure to screen suitable applicants (i.e. customers with a high probability to succeed in their projects) causes banks to face the adverse selection problem. On the other hand, moral hazard can occur when an entrepreneur (borrower) may under-declare or reduce reported profits to minimise profit sharing with the bank (Mils and Presly, 1999; El-Hawary, 2004, p.24-25). In other words, moral hazard can be defined as a hidden action that is motivated by self-interest which is unknown to the bank. Another example of information asymmetry in Islamic banks is when the bank uses the depositor's funds in risky projects (moral hazard) or when a borrower buys a product through *Murabaha* (cost plus mark-up) and fails to pay the bank. To summarise, information asymmetry does appear in Islamic banks under different circumstances. Moreover, various indications of its severity are given, though there is no empirical evidence to support any of them. Tables 4.1, 4.2, and 4.3 show summary of information asymmetry literature.

Table 4.1 A Summary of Information Asymmetry Literature

Author	Research Focus	Main Findings
Cordella and Yeyati (2002)	Investigate if the soft lender of last resort approach induce moral hazard and a higher risk appetite.	A central bank, by announcing and committing ex-ante to bail out insolvent institutions in times of adverse macroeconomic conditions, can create a risk-reducing 'value effect' that outweighs the moral hazard component of the policy, and thus lowers bank risk.
Easley and O'Hara (2004)	Investigate the role of information in affecting a firm's cost of capital.	Investors demand a higher return to hold stocks with greater private information. In equilibrium, the quantity and quality of information affect asset prices. Firms can influence their cost of capital by choosing features like accounting treatments, analyst coverage, and market microstructure
Lambert et al. (2011)	Examines the relation between information differences across investors (i.e., information asymmetry) and the cost of capital.	The capital market's degree of competition plays a critical role for the relation between information asymmetry and the cost of capital.

Table 4. 2 A Summary of Information Asymmetry in Islamic Banking Literature

Author (s)	Research Focus	Main Findings
Aggrawal and Yousef (2000)	Study financial instruments used by Islamic banks.	Most financing instruments used in Islamic banks are based on debt (i.e. Murabaha) because the information asymmetry problem. .
Dakhlallah and Miniaoui (2011)	Introduces the main sources of Islamic finance principles.	Identified the main differences between Islamic and non-Islamic banks. They show how principal-agent problem may occur in Mudaraba contract.
Febianto et al. (2007)	Analyses why Islamic banks are reluctant to indulge in profit and loss sharing instruments.	PLS are less popular in Islamic banking because of their riskiness and uniqueness.
Ghannadian and Goswami (2004)	Examine if Islamic banking help in promoting growth in developing economies.	They suggests that Islamic banks accelerate growth and is a much more suitable system for developing countries going through a growth stage. Nevertheless, they theorise that Islamic banks loans have higher moral hazard problems than conventional banks as a result of their nature of contracts.
Khan and Mirahor (1989)	Study the effects of monetary policy on the macroeconomic variables of an Islamic economy.	There is apparently no fundamental change in the way monetary policy affects economic variables in an Islamic economy. They highlight the different characteristics that make PLS contract less popular than debt contracts in Islamic banks.
Safieddine (2009)	Highlights the variations of agency theory in the unique and complex context of Islamic banks.	Agency structures in the context of Islamic banking might give rise to trade-offs between Sharia compliance and mechanisms protecting investors' rights. Most of the surveyed Islamic banks appear to recognize the value of governance and institute some basic mechanisms.

Table 4. 3 A Summary of Information Asymmetry Empirical Literature

Author (s)	Sample	Period	Data	Research Focus	Methodology	Main Finding
Armstrong et al.(2011)	USA	06/1976-06/2005	Monthly	Examines when information asymmetry among investors affects the cost of capital in excess of standard risk factors.	Quantile regression	There is an incremental effect of information asymmetry (beyond market risk) on the cost of capital when the degree of market competition is low and no effect of information asymmetry on the cost of capital when the degree of market competition is high.
Blaua et al. (20170		01/1996-12/2008	Daily	Explore the effect of opacity on the efficiency of bank stock prices.	Regression	Opacity is positively associated with price delay. Bank stocks have markedly higher delay than similar non-bank stocks.
Chong and Liu (2009)	Malaysia	04/1995 -04/2004	Monthly	Establish whether Islamic banking is really different from conventional banking.	Granger causality test, unit root and cointegration tests	The rapid growth in Islamic banking is largely driven by the Islamic resurgence worldwide rather than by the advantages of the PLS paradigm and that Islamic banks should be subject to regulations similar to those of their western counterparts.

Author (s)	Sample	Period	Data	Research Focus	Methodology	Main Finding
Dam and Koetter (2012)	Germany	1995–2006	Annually	Identify the moral hazard effect of bailout expectations on bank risk.	Structural econometric model	Bailout expectation in banking increases moral hazard.
Flannery et al. (2013)	UAE	1993–2009	Quarterly	Examines bank equity's trading characteristics during ''normal' 'periods and two ''crisis'' periods between 1993 and 2009.	Regression	There is limited (mixed) evidence that banks are unusually opaque during normal periods. However, consistent with theory, crises raise the adverse selection costs of trading bank shares relative to those of nonbank control firms. A bank's balance sheet composition significantly affects its equity opacity
He et al. (2013)	Australia	01/2001 - 12/2008	Monthly	Examines the relation between information asymmetry and the cost of equity.capital	Generalized method of moments (GMM)	There is a significant and positive relation between information asymmetry and ex ante investor's required rate of return. Also, earnings forecast dispersion increases ex ante cost of equity capital, while analyst coverage tends to decrease the return required by investors.

Author (s)	Sample	Period	Data	Research Focus	Methodology	Main Finding
Wheelock et al. (1995)	USA	1910-1928	Annually	Examine the causes of bank failure.	Proportional hazards model developed by Cox (1972)	Weakly capitalized banks, those holding few reserves, and those relying heavily on short-term borrowed funds ex ante, had a higher probability of failure than their more conservatively managed competitor. Also, insurance encourages banks to hold higher-risk portfolios than they otherwise would.

4.6 Hypothesises Development

As previously discussed in earlier sections, Islamic banks are exposed to different forms of information asymmetry (e.g. adverse selection and moral hazard). However, the comparison of the severity level of asymmetric information between Islamic and conventional banks is still unknown. To the best of the author's knowledge, the banking literature does not show any papers that empirically investigate and compare information asymmetry in Islamic and conventional banks. The objective of this section is to demonstrate the theories related to the issue of information asymmetry in Islamic Banking. As a starting point, the first papers on information asymmetry were discussed earlier (Chapter 4). Akelrof was the first to discuss the concepts of adverse selection and moral hazard. Spince and Stigiits followed up and provided models to reduce the information asymmetry effect. This study focuses on the severity of information asymmetry in Islamic banks compared to conventional banks.

4.6.1 Theory of the Firm

In the literature review section, it was discussed how the study by Jensen and Meckling (1976) explains the agency problem and how it may occur between a manager and a firm's shareholders. They argue that the type of firm ownership changes the manager's decision-making behaviour. In equity-based firm ownership, the manager may try to maximise his utility at the expense of other shareholders. The conflict of interest between the manager and other shareholders is a typical agency problem. As a result, additional monitoring costs may occur to prevent such hidden actions at the expense of all shareholders. The manager's hidden action is a form of information asymmetry (moral hazard). Hence, it can be concluded that equity-based firms suffer from information asymmetry more than firms that are owned by one single person.

Profit-and-loss sharing is one of the key pillars of Islamic banking. Islamic banks use profit-loss sharing products (e.g. *Mudharaba and Musharaka*) and non-profit sharing products (e.g. *Murabaha and Ijarah*). However, if the same concept is applied to the banking industry, and based on the modes of finance, it can be understood that banks which have equity-based finance modes will suffer more from information asymmetry. The argument here is that when a bank finances a project through equity-based finance, the entrepreneur (borrower) may have hidden intentions to make decisions, without informing the bank, which conflicts with the bank's interests. According to Dar and Presley (2000) and Aggrawal

and Yousef (2000), a significant percentage of the financing mode in Islamic banks is not PLS instruments. Dar and Presley (2000) argue and give different explanations for the reasons for the lack of PLS financing in Islamic banks. First, the principal-agent problem arises as a result of an entrepreneur's incentive to disclose less profit compared to self-financing full information. This is in line with the argument expressed by Jensen and Meckling (1976). Moreover, the argument is based on the fact that parties in business contracts expect a fair return for their investment, which may be less than their expectations. Moreover, the way of distributing the return for both parties is predetermined at the time of signing the contract. For example, banks may not want to be exposed to high-risk projects if they fear bearing losses. On the other hand, entrepreneurs may shrink the bank's profit share by disclosing less profit believing that their efforts deserve more than the identified profit shares percentages. As a conclusion, it can be understood that both banks and entrepreneurs fear being exploited. Thus, they tend to avoid PLS financing instruments. Dar and Presley also suggested that some Muslim countries lack clear definitions for property rights, which is required for PLS contracts to function efficiently. The majority of Muslim countries apply property rights guides. Nevertheless, few Muslim countries do not have any property rights guides. However, from this study's view of point, this is not a valid reason. Profit-and-loss sharing financing instruments are not limited to Muslim countries only and can be practiced in any country around the world provided they adhere to Islamic Shariaa. Thus, this argument is not valid. Moreover, the authors explain that Islamic banks will invest in less risky projects by not financing through PLS instruments (Musharaka and Mudaraba) since they are considered risky. Another interesting reason given by Dar and Presley (2000) was that shareholders (investors) have restricted roles in management which makes them non-participatory in nature. In other words, they do not participate in decision-making. However, this study suggests that investors will agree on the terms of partnership when signing the contract. Moreover, they can be aware of the nature of their investments by reading the annual reports and apply investment assessments before investing in the project. Hence, the investor can assess the riskiness of the investment and make a decision based on that. The same approach can be applied for depositors when they are considered as investors and the bank acts as an agent. Islamic Shariaa has a restriction on investments in which banks can only invest in projects that adhere to Islamic principles. Among these principles is avoidance of excess uncertainty (see Section 3.2.2 for more detail) and investments must be backed up with the asset. Hence, these principles may reassure investors that the bank will make low-risk and wise investments. Furthermore, banks maintain their reputation for attracting new investors by adhering to Islamic principles.

On the other hand, Febianto and Kasri (2007) state that the high monitoring costs that Islamic banks are burdened with, in addition to the transparency and asymmetric information problem, is another reason for them avoiding PLS financing instruments. Chong and Liu (2009) also support these arguments in their study by investigating the financial instrument used on a sample of Malaysian Islamic banks. They found that only five percent of Islamic financing in Malaysia is based on PLS instruments. Beck et al. (2013) cited an explanation for this phenomenon by stating that it is a reasonable action by Islamic banks to have more non-profit-loss sharing product transactions than profit-loss sharing profit products as a result of the weak contractual framework prevalent in most countries with Islamic banks which normally favour debt than equity finance instruments (Aggarwal and Yousuf, 2000; Khan, 2010).

At first glance, banks that have equity-based finance modes such as Islamic banks will show more information asymmetry than conventional banks because of the following reasons:

1. The conflict of interest between the bank and entrepreneur.

2. Entrepreneurs (borrowers) who have low quality (high-risk) projects will try to finance their projects through PLS to reduce their risk and losses with the bank.

3. Entrepreneurs (borrowers) may be motivated not to disclose the true financial reports to reduce the principal's profit share.

4. High monitoring costs.

However, this study does not agree that Islamic banks suffer more from information asymmetry than their conventional counterparts because they provide equity-based finance. In fact, this study suggests that Islamic banks have less information asymmetry when compared to conventional banks. One of the main reasons for this is that Islamic banks provide equity-sharing finance. Despite the minimal appearance of profit-loss sharing products in Islamic banks due to the information asymmetry problem (El Gamal, 1997, p.8), it is expected that information asymmetry will be lower in Islamic banks. Advocates of Islamic banking probably created this expectation as a result of having equity sharing financing instruments which encourage depositors and investors to monitor the bank's performance and investment activities to ensure that their funds are being invested cautiously

(El-Hawary, 2004, p.24-25). Siddiqui (2008) supports this argument by stating that *"Islamic contracts which are based on equity participation will minimize the adverse selection and moral hazard problems. This is so because under joint ventures and equity participation schemes there is much more disclosure of a company's books and investments."* Al –Jarhi (2002) goes further in describing this argument by explaining *"Equity finance provides the bank with access to information necessary to practice monitoring at all intervals."* Furthermore, since Islamic banks do not offer fixed returns or guarantee the capital of their deposits, bank managers will be less motivated to pursue high-risk projects (Bashir, 1999; p.9). Moreover, banks will pay more attention to monitoring new potential borrowers and investors to distinguish good customers from bad ones. The process of having equity in investments is assumed to generate more information, thus, lowering the asymmetric information between parties; this helps stakeholders to make better decisions (Chong and Liu, 2009, p.127). Moreover, as a result of the risk-sharing concept, Islamic banks seek funds allocation efficiency. Therefore, there are strict procedures in Islamic banks to finance projects based on their expected productivity and returns suggesting that these procedures reduce information asymmetry (Iqbal, 1997). Moreover, the study proposes that although Islamic banks have more debt financing than PLS financing, all of their funding is backed up by assets giving them the additional advantage of lowering information asymmetry and reducing the default risk.

All in all, PLS modes of finance in Islamic banks allow them to be partners in projects with entrepreneurs as the capital providers. Hence, banks can monitor entrepreneurs' activities and be exposed to additional inside project information. On the other hand, depositors can ask for a description of a bank's investments if they deposit their money in investment accounts, knowing that Islamic banks must only invest in projects that comply with Islamic Shariaa. Therefore, it is expected that the PLS finance mode reduces information asymmetry in Islamic banks. In addition to this, there are other reasons that support the study's suggestion that Islamic banks have lower information asymmetry than conventional banks. These include disclosure and Islamic ethics, as well as the restriction of *Shariaa* on Islamic banks' investments.

According to Iqbal (1997), the Islamic financial system attaches great importance to the ethical, social and religious dimensions in addition to economic and financial aspects. In contrast, their counterparts only focus on the economic and financial aspects of transactions. Iqbal also mentioned that to reduce the risk of information asymmetry, Islamic financial

institutions, including Islamic banks, are obligated to disclose information about their contracts. This is supposed to give stakeholders an idea about the banks' activities and to check their compatibility with Shariaa. The Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI) is a non-profit organisation that aims to maintain and promote Sharia standards in the Islamic financial industry. One of the primary objectives that is set out and adopted by AAOIFI is that Islamic financial institutions should disclose all necessary information to their stakeholders, even if such information gives a negative image of the firm (Maali et al., 2006, p.273). A bank's information disclosure is necessary for the stakeholders to help them observe the following: its compliance with Islamic principles, its different investment activities and how its operations affect the welfare of society. Hence, it is important for Islamic banks to communicate these aspects to their stakeholders. Accountability in Islamic banks goes beyond financial aspects into the morality of business behaviour. This is because they have been trusted by shareholders and depositors to manage their funds by Islamic *Shariaa* (Haniffa and Hudaib, 2007, p.100). The government, depositors, investors and community need to make sure that these banks do what they claim. Hence, it is important to communicate information about Islamic banks, especially because their operations should be based on Islamic principles, in which matters of trust and beliefs have their own influence on the stakeholders. Therefore, it is expected that Islamic banks will disclose all relevant information to the different stakeholders. Moreover, trust and sanctity are considered to be two of the central principles of the Islamic financial system. These with right information seeking are supposed to mitigate information asymmetry problem in Islamic banks. Therefore, on this basis, one can expect Islamic banks to have less asymmetric information than commercial banks. However, Haniffa and Hudaib (2007) explore the communication of the ethical identity as opposed to the ideal ethical identity of seven Islamic banks from the Gulf region. Unlike what is expected from Islamic banks, the authors' findings suggest that there is a *"…large disparity between the communicated and ideal ethical identities (for five of the seven banks in the sample used).*" In other words, insufficient information is provided to stakeholders about the banks' activities in terms of their importance according to the Islamic point of view. The authors also suggest the need to improve Islamic banks' communication to avoid confusion since it has a major implication for the banks' image and reputation. This can be seen as an indication of the information asymmetry problem in Islamic banks and in a way suggests that information asymmetry can be high in these types of bank. Nevertheless, Islamic ethics, such as trust and the fulfilment of contracted obligations, in addition to human consciousness and proper information disclosure, in order to maintain a good reputation among society, are

expected to result in a reduced information asymmetry problem in Islamic banks when compared to conventional banks.

Islamic banks are only allowed to invest in permissible investments that do not violate Islamic rules and principles (Shariaa). For example, pork, gambling, and alcohol are forbidden in Islam; hence, Islamic banks are prohibited from dealing in these products. In other words, Islamic banks are limited to only invest in products that comply with Islamic *Shariaa*. As a result, the *Shariaa* restriction tends to increase asset concentration, and thus Islamic banks will not invest in projects that are high-risk. Moreover, because Islamic banking does not deal with great uncertainty, all of their financing transactions are backed up by assets. Hence, Islamic banks communicate their investments to stakeholders to maintain their reputation and to attract new depositors and investors.

Other conventional banks, i.e. universal banks, may have equity stakes in companies. These may appear to be similar to Islamic banks. Nevertheless, it is important to understand that universal banks are not the same as Islamic banks because they do not adhere to the Islamic Shariaa which is considered one of the main differences between Islamic and conventional banks. In fact, their operations involve interest which is forbidden in Islamic Shariaa. Therefore, Islamic banks are not the same as universal banks.

All in all, because of the restriction of Shariaa on Islamic banks' investments, their finance is always backed up by assets and the importance of maintaining their reputation; it is therefore expected that Islamic banks have lower information asymmetry in comparison to conventional banks. Information asymmetry is important for all stakeholders. Failing to acknowledge the issue of information asymmetry can cause bad decisions. Addressing the problem gives investors an opportunity to make better investment decisions in terms of an investment's quality and risks. Investors seek profit in the future; therefore, they want to invest in projects that will generate them future profit.

In summary, this study hypothesises that Islamic banks will show lower information asymmetry than conventional banks because of the following reasons:

1. The equity-based finance mode allows them to access the additional investment information as partners.

2. In the equity-based finance mode, stakeholders pay more attention to monitoring their investments.

3. Islamic banks must disclose all their information to their stakeholders to maintain transparency and creditability. It is assumed that there is trust between the different parties since both sides must adhere to Islamic principles which prohibit dishonesty.

4. All Islamic financial modes must conform to Islamic Shariaa (i.e., invest in low uncertainty investments).

5. Islamic banks' finances are backed up by assets.

4.6.2 Research Hypotheses

To summarise the above, Islamic banks are exposed to various forms of information asymmetry (e.g. adverse selection and moral hazard). However, the degree and level of the asymmetric information in Islamic banks and conventional banks is still unknown. Between advocates and critics of Islamic banks, there are different assumptions, claims, and viewpoints regarding the level of information asymmetry in Islamic banking. An expectation of having lower information asymmetry in Islamic banking is based on the previously mentioned points. Nevertheless, according to the author's current knowledge, there is still no reliable empirical evidence from previous studies that supports these claims and suggestions. Moreover, previous studies in the area of information asymmetry have mainly focused on modelling and theory aspects. There is a lack of empirical research in this area, especially related to Islamic banking. The purpose of this research is to investigate empirically and compare the level of information asymmetry in Islamic and conventional publicly listed banks in several African, Middle Eastern and Asian countries. The study uses a sample that includes the financial crisis period.

During 2007-2008, the market was hit by a global financial crisis. The financial crisis affected the economy, especially the banking industry. The different views of what caused the financial crisis were previously discussed in Section 1.4, however, among them is the information asymmetry between lenders and borrowers. Borrowers normally have additional information about their investments which give them an informational advantage over lenders. The borrowers' superior knowledge leads to an adverse selection situation involving 'lemons' as described in Akerlof (1970). When the lender faces difficulties to distinguish a

good quality borrower (low-risk) from a bad one (high-risk), the 'lemon problem' occurs. As a result, the lender will make loans at interest rates that reflect the average quality of good and bad borrowers. This would cause good quality borrowers to pay high interest rates and at the same time bad quality borrowers to pay lower interest rates. A possible result of this problem is that some of the good quality borrowers may not take loans and hence, banks lose profitable investments. Moreover, Stiglitz and Weiss (1981) show that information asymmetry can lead to credit rationing which results in the rejection of loan applications for some borrowers. For example, if lenders increase the interest rates on their loans, they will attract riskier investment borrowers causing a greater adverse selection problem (Mishkin, 1990).

Another study conducted by Flannery et al. (2013) address the financial crisis and bank opaqueness. They studied the bank's equity trading characteristics during normal periods and two crisis periods for the years 1993 to 2009. Their findings show mixed evidence in which banks are unusually opaque during normal periods. Nevertheless, they report that crises increase the adverse selection costs of trading bank shares compared to non-bank firms. In other words, during crisis periods, banks face greater information asymmetry issues relative to other firms. Moreover, they report that a bank's composition has a significant effect on its equity opacity. However, they could not identify the exact balance sheet category that has the robust effect.

Blau et al. (2017) examined the effect of a bank's opacity on its efficiency stock price for a sample of financial institutions (banks) and a matched sample of non-banks. To find evidence supporting the idea that opacity is positively associated with price delay, the authors applied the measure of price delay devised by Hou and Moskowitz (2005), which captures the inefficiency of stock prices. Their findings show that a bank's stocks show a larger price delay compared to non-bank stocks indicating that the stock prices of banks are less efficient than those of non-banks. Furthermore, they find that a bank's stocks showed larger price delay than that of non-banks during the recent financial crisis period. The authors explain that the higher level of stock delay is impelled, in part, by market-based measures of informational opacity as well as the asset composition of the bank's balance sheet. Overall, their findings suggest that bank opacity reduces the efficiency of financial markets.

Despite the fact that some previous studies have shown mixed results of information asymmetry in the banking industry during normal periods, the unique nature of Islamic banks

suggests that their information asymmetry would be lower than their counterparts during normal periods, i.e. pre-crisis, post-crisis and for the full sample period 2002-2015. Therefore, the study hypotheses are the following:

H_1: Islamic banks have significantly lower information asymmetry than conventional banks for the pre-crisis period (2002-2006).

H_2: Islamic banks have significantly lower information asymmetry than conventional banks for the post-crisis period (2010-2015).

H_3: Islamic banks have significantly lower information asymmetry than conventional banks for the full study sample period (2002-2015).

Moreover, it can be noticed that previous research suggests that there was an increase in the adverse selection problem for banks during the financial crisis period, while there were mixed results during normal periods. In other words, it is expected that the information asymmetry problem increased during the financial crisis. Nevertheless, because of the unique nature of Islamic banks, this study expects that information asymmetry continued to be higher for conventional banks than for Islamic banks during the financial crisis.

As a result, another study hypothesis is added:

H_4: Islamic banks had significantly lower information asymmetry than conventional banks during the crisis period (2007-2009).

This research aims to answer the following question: Do Islamic banks have lower information asymmetry than conventional banks over the different periods studied? The research seeks to fill this gap in the literature by examining and comparing the level of information asymmetry in Islamic and conventional banking using different proxies as measures for information asymmetry. This study will be the first of its kind on Islamic banks and will hopefully contribute to the accounting and finance literature.

4.7 Data and Methodology

4.7.1 Data Sample

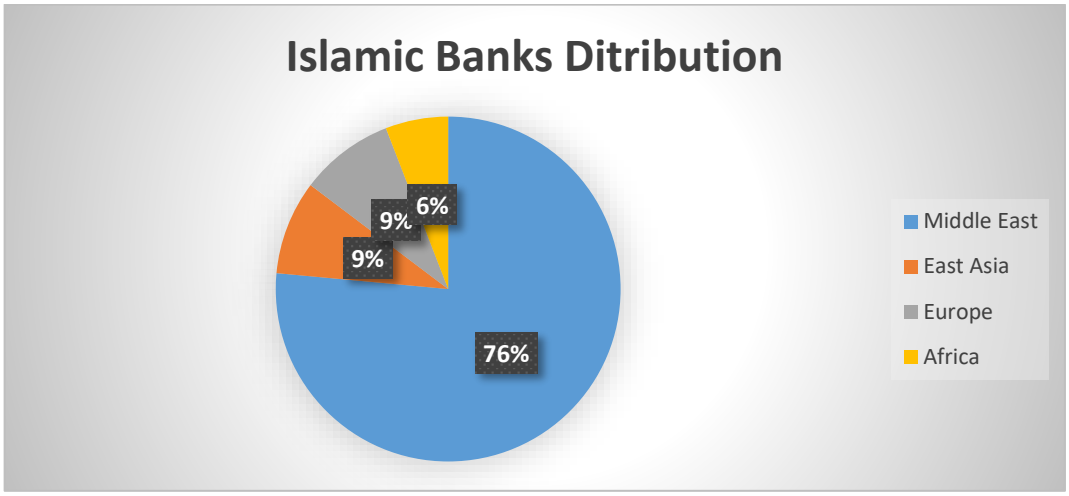
This section discusses the data sample used in the research and the different dependant and independent variables used in the regression analysis.

Table 4.4 presents a summary of the sample banks included in the study. The sample has unbalanced panel data and includes publicly listed banks from thirteen countries from Asia, Europe and Africa over the period between 2002 and 2015. Most of the banks are located in Middle Eastern countries. These countries are considered as developing countries, and there are not many historical data about banks. Hence, the availability of data restricted the period of study to between 2002 and 2015. Datastream was used to retrieve the quarterly data of the banks targeted. The sample includes a total of 211 conventional and Islamic banks. The quarterly stock prices, ask price, bid price, common shareholders, trading volume, intangible assets, total liabilities, total assets, return on equity (ROE), market capitalisation, price earnings ratio, inflation, gross domestic product (GDP) and inflation for the sample are imported from the Datastream database. Islamic banks represent around 16% of the total sample, while commercial banks represent around 84%. It is noticeable that the majority of Islamic banks are concentrated in the Middle Eastern countries (see graph 4.1), while commercial banks are scattered over all countries in the sample (see graph 4.2). One explanation for this is that the sample includes only publicly listed banks. Moreover, people in these countries are generally Muslims which might encourage these banks to start their operations and go public compared to other countries. Moreover, Islamic banking is still rapidly growing and spreading around the world. In addition, some countries meet the criteria of having publicly listed Islamic and conventional banks, but these are not included in the sample for reasons that may affect the analysis results, including the non-availability of data and countries with wars and unstable political circumstances. These countries are Syria, Palestine, Iraq, Iran, Sudan and Bangladesh. Moreover, a bank is included in the sample if it has a minimum of three observations including key variables such as stock price, ask price and bid price. Only countries that have publicly listed Islamic and commercial banks are included in the sample.

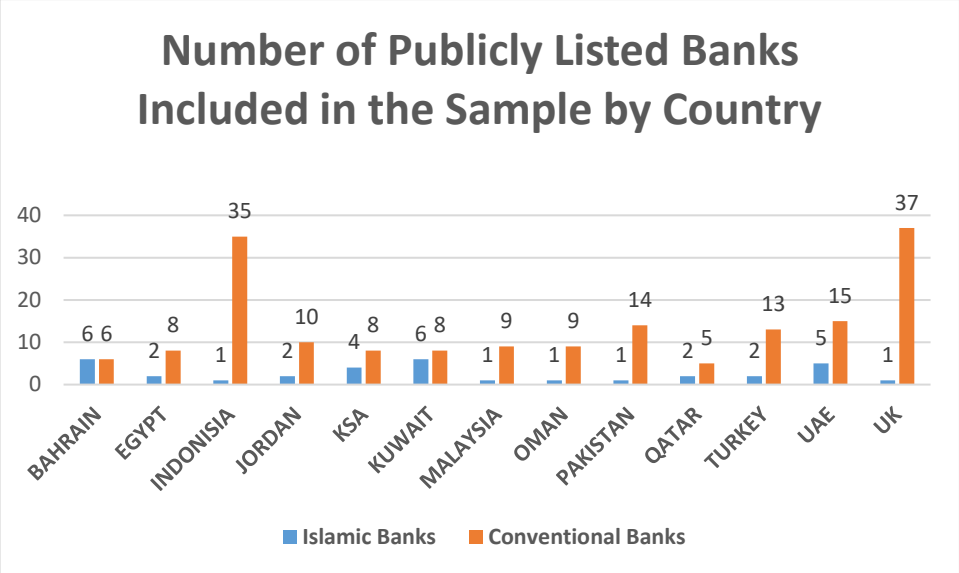
Table 4.4 Summary of numbers of publicly listed banks in each country in the sample

Country	Islamic Banks	Conventional Banks
BAHRAIN	6	6
EGYPT	2	8
INDONISIA	1	35
JORDAN	2	10
KSA	4	8
KUWAIT	6	8
MALAYSIA	1	9
OMAN	1	9
PAKISTAN	1	14
QATAR	2	5
TURKEY	2	13
UAE	5	15
UK	1	37
TOTAL	34	177

Graph 4.1 Publicly Listed Islamic Banks Distribution around the World



Graph 4.2 Number of Publicly Listed Banks Included in the Sample by Country



4.7.2 Information asymmetry (opacity) measures

Considerable attention in the literature has been given to the information asymmetry problem of firms. However, since the asymmetry information level is not directly observable, researchers rely on proxy variables (Clarke and Shastri, 2000, p.1). There are many different proxies used as measures for information asymmetry. According to Clarke and Shastri (2000), measures of information asymmetry can be categorised into three categories: measures based on analyst forecasts, investment opportunity set measures, and market microstructure measures. The following sections describe the different measures of information asymmetry and briefly highlight their merits and shortfalls.

(i) Investment Opportunity Set Measures

Investment opportunities play a significant role in corporate finance. Firms with a high growth opportunity (investment opportunity) tend to have high information asymmetry (Smith and Watts, 1992, p. 272). This argument is based on the assumption that managers are more aware of their companies' financial position and have further knowledge about their investment opportunities. This is a typical information asymmetry situation where one

party will have additional information compared to others. Many studies have used the investment opportunity of firms as a measure of information asymmetry. However, there are no direct methods for outsiders to observe and measure investment opportunities. Hence, researchers rely on proxy variables (Drobetz et al., 2010, p.9). For instance, Adam and Goyal (2007) assessed the performance of several proxy variables for a firm's investment opportunity set. They examined the four most commonly used proxies of investment opportunities established in the literature, which are: (1) the market-to-book assets ratio (MBA ratio); (2) the market-to-book equity ratio (MBE ratio); (3) the earnings-price ratio (EP ratio); and (4) the ratio of capital expenditures over the net book value of plant property and equipment (CAPX/PPE ratio). Their findings show that "*the market-to-book assets ratio has the highest information content with respect to investment opportunities….and the earnings-price ratios are related to investment opportunities, they do not contain information that is not already contained in the market-to-book assets ratio."* Another study by McLaughlin et al. (1998) used the market-to-book ratio and firm size as proxies for information asymmetry measures to analyse the relationship between the level of information asymmetry and changes in operating performance for debt and equity issuers. Their findings show that there is a decline in performance for equity issuers with high information asymmetry while there is no significant post-issue change in performance for equity issuers with a small level of information asymmetry. On the other hand, debt issuers show no significant difference in performance with these measures. In general, firms with large amounts of future growth opportunities are more likely to have greater asymmetric information about their true value (Van Ness, 2001, p.6).

The market-to-book ratio and earning price ratio are considered to be among the best indirect measures of information asymmetry. Nevertheless, they still have some drawbacks (Clarke and Shastri, 2000, p. 8). A criticism for using market-to-book and earnings/price ratios as information asymmetry measures is related to their method of computation. These ratios rely on stock prices for their calculation, where the stock price has a negative relation with financial leverage, and these are sensitive to a firm's capital structure (Gaver and Gaver, 1993, p.132). Moreover, they can be understood as a risk measure or an earnings growth indicator (Penman, 1996, p.235). Moreover, the accounting data required to compute these ratios are available on a quarterly, semi-annually and annually basis which will result in the use of historical data that might be a bit outdated for future investments. This is vital because investment opportunity sets can change dramatically across quarters. Another problem with these measures is that they could also be an indication of monopoly power in

case of having high market-to-book or asset ratios. In other words, because firms have the authority to charge higher prices for goods and services they may show high market-to-book ratios but not because of their growth opportunities (Clarke and Shastri, 2000, p. 8). Furthermore, these ratios are not independent as smaller firms tend to grow faster which will normally result in them having higher growth opportunity ratios.

In summary, previous research has used growth opportunities as a proxy for the information asymmetry measurement. However, this study does not include growth opportunities as a proxy for information asymmetry due to the fact that it has four alternative proxy measures that are widely used in the literature.

(ii) Microstructure Measures

The National Bureau of Economic Research defines a market microstructure as a field of study that is *"devoted to theoretical, empirical, and experimental research on the economics of securities markets, including the role of information in the price discovery process, the definition, measurement, control, and determinants of liquidity and transactions costs, and their implications for the efficiency, welfare, and regulation of alternative trading mechanisms and market structures."*

(NBER Working Group Descriptions, ttp://www.nber.org/workinggroups/groups_desc.html). O'Hara (1995) has provided another definition of market microstructure: "*the study of the process and outcomes of exchanging assets under a specific set of rules.*" Microstructure theory is more focused on investigating specific trading mechanisms and their effects on the formation of price rather than a mechanism of trading. Therefore, the market microstructure is more concerned about the following areas: market structure and design, price formation and price discovery, transaction and timing cost, information and disclosure, and market maker and investor behaviour (Krishnamurti, 2009, p.14). A considerable amount of literature has been published on market microstructure. However, different econometric models are commonly used to measure information asymmetry in the market microstructure literature. Nevertheless, the bid-ask spread has been the centre study in the market microstructure literature (Boujelbene and Besbes, 2012, p. 2). There are three components for the bid-ask spread: an order processing component, an inventory component, and an adverse selection component (Clarke and Shastri, 2000, p. 9). Better informed traders will be rewarded for

their transactions in the adverse selection component of the spread, and hence, there will be an increase in information asymmetry levels.

Bid-ask spread models can be narrowed down to two groups: (1) they are made from the serial covariance properties of the time series of observed transaction prices (e.g. models by Choi, Salandro, and Shastri; 1988, George, Kaul, and Nimalendran, 1991; Stoll, 1989) or (2) they are based on a trade indicator regression model (e.g. models by Lin, Sanger, and Booth, 1995; Huang and Stoll, 1997; Madhavan, Richardson, and Roomans, 1997) (Clarke and Shastri, 2000, p. 9).

Flannery et al. (2002) evaluated bank stock trading behaviour to show that they are unusually difficult to value. The authors used the market microstructure properties of stocks and the ability of analysts to forecast the earnings of firms as proxies for opacity. Their basic conclusion indicates that bank stocks are not unusually opaque.

Using microstructure variables as information asymmetry proxies has advantages. For instance, microstructure variable models do not require long time series of data and their estimation can be around the event of interest. However, O'Hara (1995) reports two drawbacks for these measures. First, they only measure the cost of trading a small number of shares which fails to provide a good indication of the information asymmetry level. Second, different points of estimation for the adverse selection component can be produced when using these models. For example, George, Kaul, and Nimalendran (1991, p. 651) found that the adverse selection component of the spread is between 8 and 13 percent, while Madhavan, Richardson, and Roomans (1997) found that this percentage is approximately 40 percent. Moreover, the spread are misspecified according to Neal and Wheatley (1998) as reported in Clarke and Shastri, (2000, p. 11).

In summary, the bid-ask spread is a microstructure measure that is well-known and regularly used as a proxy for information asymmetry. Accordingly, the bid-ask spread is used to measure information asymmetry in Islamic and conventional banks in this study.

(iii) Analyst Forecasts Measures

Several studies have used analyst forecasts as a proxy to measure information asymmetry. For instance, Krishnaswam and Subramaniam (1999) used the accuracy of analyst earnings forecasts to investigate and explain the role of information asymmetry in

occurring gains before and after an unexpected advantage is achieved. Their findings show that firms with high information asymmetry tend to have unexpected benefits and their information asymmetry decreases significantly after the completion of this benefit. Additional research by Gilson et al. (1997) shows a significant improvement in the ability and accuracy of analysts to forecast earnings after stock breakups. Moreover, Thomas (2000) uses the accuracy of consensus forecasts and the dispersion among forecasts as proxies for asymmetric information to examine the relation between firm diversification and information asymmetry. Their results show that diversified firms do not show higher levels of asymmetric information than focused companies. However, there are other papers which use analyst forecasts to explore different relationships such as their relationship with investor belief (e.g. Abarbanell et al., 1995).

A common criticism of analyst forecast measures is that forecast errors are naturally biased. This is because analysts might over-react to positive information and under-react to negative information, which will obviously result in the misstating of a firm's information asymmetry level. Another criticism of this measure is that it might be correlated with a firm's risk, i.e. firms may have higher forecast error because they are riskier (have more volatile earnings) and not because of they have higher levels if information asymmetry (Clarke and Shastri, 2000, p.6). Despite the importance of analyst forecast measures, this study will not use them because of the unavailability of the data required for these types of measurements.

4.7.3 Construction of Variables

A) Dependent Variables

Following the work of several authors (Leuz and Verrecchia, 2000; Adam and Goyal, 2007; Bharath et al., 2007; Morck et al., 2000), four variables are used in this study as proxies for information asymmetry: the relative bid-ask spread, share turnover ratio, intangibility ratio, and stock price synchronicity (SYNCH). These variables are selected as they are the most commonly used in the literature. Moreover, the data available fits with these variables way of calculations. The following describes each variable used in the study to measure information asymmetry.

(i) Intangibility

The intangibility of a firm's asset is considered to be another common proxy measure of information asymmetry (Bharath et al., 2007). According to Harris and Raviv (1991), information asymmetry should be more severe in firms that have less tangible assets. The intangibility ratio can be computed by dividing the total intangible assets by total assets. A higher ratio reflects a higher information asymmetry. The argument for this is that firms with high intangible assets (i.e. assets with value but not in physical nature such as goodwill and copyrights) are difficult to value and would not normally liquefy if required. Hence, this suggests high-risk in the case that the firm needs quick liquidation. Hence, the intangibility ratio is used as a proxy for the information asymmetry measure. The study uses this measure in addition to the previously selected measure to measure and compare the level of information asymmetry of Islamic and conventional banks.

(ii) Share Turnover Ratio

Share turnover ratio is the quarterly trading volume in shares of a firm divided by its shares outstanding (Chae, 2005, p.1219). Firms with a high share turnover ratio have a low information asymmetry level and vice versa. This is because uninformed traders are less likely to trade in these shares. In other words, informed traders will benefit from their additional information and uninformed traders will lose the opportunity to trade with these shares. However, the trading volume ratio has some drawbacks since it can be influenced by other factors unrelated to information such as portfolio rebalancing, liquidity shocks, end changes in risk preferences (Leuz and Verrecchia, 2000, p. 99). Nevertheless, share turnover ratio has been used in prior studies as a proxy for information asymmetry. For instance, Leuz and Verrecchia (2000) applied this measure, in addition to the bid-ask spread, in their study examining the level of disclosure of Germen companies which switched from the German to an international reporting standard (1AS or U.S. GAAP). In other words, switching to the IAS or U.S. GAAP should increase the disclosure level of Germen firms. The authors' findings are in line with their expectations as they show that German companies which apply international standards are associated with lower bid-ask spreads and higher share turnover when various firm characteristics are controlled. This indicates that German firms that apply international standards reflected lower information levels compared to those firms that apply GAAP standards. The reason as the authors explained is that firms are committed to a higher level of disclosure when switching to international standards. Hence, share turnover ratio is

used as a proxy for information asymmetry measure (dependent variable) to answer the research question.

(iii) Bid-Ask Spread

The bid-ask spread is a common proxy to measure information asymmetry. It addresses the adverse selection problem when trading in firm shares in the existence of an unequal distribution of information among investors (Leuz and Verrecchia, 2000, p. 99). The bid price represents the highest price that a buyer is willing to pay for a security at a specific point in time, whereas the asking price represents the lowest price that a seller is prepared to accept for a security at a specific point in time. The difference between both prices is called the bid-ask spread. Copeland and Galai (1983) assume that the market consists of informed and uninformed (liquidity) traders. This is reasonable since some traders in security markets will possess additional and non-public information about future events that might affect security prices. For instance, mergers and acquisitions might increase information asymmetry levels and therefore affect the stock prices. The bid-ask spread indicates the firm's information asymmetry levels. A high bid-ask spread indicates a high information asymmetry level, while a low bid-ask spread indicates a low information asymmetry level.

The bid-ask spread is computed by applying the following formula:

$$\text{Bid-Ask Spread}_{it} = (\text{Ask Price}_{it} - \text{Bid Price}_{it}) / \{(\text{Ask Price}_{it} + \text{Bid Price}_{it})/2\} \quad \textbf{(2)}$$

Bid-Ask Spread represents the dependent variable of information asymmetry for bank $_i$ at quarter $_t$, where Ask Price $_{it}$ and Bid Price $_{it}$ are the closing ask and bid prices on quarter t, respectively. To answer the research question of whether Islamic banks have lower information asymmetry than conventional banks, the bid-ask spread is used as a proxy for the information asymmetry measure.

(iv) Stock Price Synchronicity (SYNCH)

Stock price synchronicity, defined as the (R^2) from asset pricing regressions, has been used in different studies as a proxy to measure a number of firms' specific information that is impounded into their stock prices (Chan and Hameed, 2006, p. 117). For instance, Morck, Yeung, and Yu (2000) propose that stock price synchronicity (R^2) can be used as a

measure of firm-specific stock price movements from market-wide price movements. Their findings show that stock prices move together more in emerging markets than in developed markets. They explained the low value of (R^2) in their findings as the result of firms' returns capturing more firm-specific information. They reported that this is also an explanation suggested by Roll (1988). Motivated by the findings of Morck et al. (2000), Chan and Hameed (2006) examined the relation between stock return synchronicity and analyst activity in emerging markets using the (R^2) of a market model as a measure of the synchronicity of stock price movements. Among their findings, they show that greater analyst coverage increases stock price synchronicity which is considered as an indication of a high information asymmetry level.

According to Morck et al. (2000), French and Roll (1986) and Roll (1988) both conclude that the variation in U.S. stock prices reflects the "capitalisation of proprietary firm-specific information". This suggests the possibility that low levels of price synchronicity might reflect the incorporation of more firm-specific information into prices.

Despite the acknowledgment of the importance of measuring information asymmetry in the banking sector, there are limited studies which have used stock price synchronicity to measure transparency (information asymmetry) in the banking industry (e.g. Francis et al. (2012) examine what determines bank stock price synchronicity). Following the study of Chan and Hameed (2006) who themselves followed the work of Morck et al. (2000), information asymmetry can be computed using stock price synchronicity which is estimated from a standard market model defined as follows:

$$R_{it} = \alpha_i + \beta_i R_{mt} + \epsilon_{it} \qquad (3)$$

Where R_{it} is the stock return on bank i at quarter t and R_{mt} is the quarterly market return computed based on the domestic market index at quarter t. Given the nature of R^2 between zero and one, a log transformation is applied to equation 4. Thus, synchronicity can be defined as:

$$SYNCH_{it} = \log (R^2 / 1 - R^2_{it}) \qquad (4)$$

From the SYNCH equation 4, a higher R^2 reflects a higher degree of bank stock price synchronicity, i.e. the stock price mainly moves in the same direction as the market index. In other words, there is a low level of information asymmetry. Thus, a lower R^2 will lead to

a lower stock price synchronicity which will, in turn, result in a high information asymmetry level (French and Roll, 1986; Roll, 1988).

B) Control Variables

Previous research shows that information asymmetry is associated with the specific control variable. These are discussed below.

(i) Price

According to Kelly and Ljungqvist (2012), stock price is affected negatively by information asymmetry. The study by Mohammed (2000) is in line with this suggestion and predicts that firms with low stock price have higher relative bid-ask spread (information asymmetry). The logic behind this suggestion is that private information increases the difference between the bid price and ask price (bid-ask spread), which results in increased returns for informed investors and decreased returns for uninformed investors. In other words, the more private information available, the more bid-ask spread (information asymmetry). This study uses the logarithm of the closing price for the quarter as a control price variable.

(ii) Size

The size of firms gives indications about the level of information asymmetry. For example, large firms have a large number of shareholders. However, it is assumed that large firms, on average, disclose more information publicly (Chan and Hameed, 2006; Chung et al., 1995; Atiase, 1985). As a result, the private information of large firms would be very limited, and hence, information asymmetry for large firms would be low. There is expected to be an inverse relationship between firm size and information asymmetry. This study uses the logarithm of the total asset at the end of each quarter as a measure of the size control variable.

(iii) Trading Volume

Roulstone (2003) shows that share turnover ratio, one of the information asymmetry proxies, is positively related to a firm's size. Because large firms provide more details to their stakeholders, there is more trading in their stocks. This is in line with the argument of

size being negatively related to information asymmetry and also leads to a conclusion that firms with high trading volume give indications of having less information asymmetry. Moreover, McInish and Wood proposed (as cited in Chung et al., 1995) that there is a strong inverse relationship between trading volume and bid-ask spread. Therefore, it is expected that firms with high trading volume have lower information asymmetry. Although trading volume was used in previous research as a control variable form information asymmetry, this study does not include it as an independent variable since there is a high correlation between it and size. This high correlation between the control variables may give false results.

(iv) Return on Equity Ratio (ROE)

Return on equity ratio (ROE) shows the ability of a firm to generate profits from its shareholders' investments. It gives investors an indication of how well the company is using its capital to generate profit. It is a profitability ratio. It is expected that firms disclose more information to communicate their good performance to stakeholders (Wallace et al., 1994; Owusu-Ansah, 1998). A higher profitability ratio normally suggests that the firm is doing well. Hence, this additional information leads to a lower information asymmetry. Therefore, there is expected to be a negative relationship between profitability ratio (ROE) and information asymmetry. The logarithm of return on equity for each quarter is used as a measure of the ROE control variable.

(v) Stock Return Volatility

Volatility is a statistical measurement of the degree of fluctuation of a market or security. It refers to the amount of uncertainty or risk about the size of changes in a security's value. This fluctuation and changes in the security value might be a result of the unequal distribution of a firm's information. High volatility indicates a possibility of having a large range of values for security. This means that the price of a security can change dramatically over a short period. In contrast, lower volatility means that a security's value does not fluctuate dramatically, but changes in value at a steady pace over a period.

Wang (1992) presents an equilibrium model of asset pricing under asymmetric information. Their model involves investors who are differently informed about the state of the economy. Among their findings, they illustrate that information asymmetry can increase price volatility. This finding is in line with the study by Krishnaswami et al. (1999) which

suggests that information asymmetry, using residual volatility in a firm's stock returns as a proxy for information asymmetry, stock return volatility of a firm will be high when its managers have a relatively large amount of firm-specific information that is not shared with the market. In such a case, the investors bear some firm-specific uncertainty. In other words, high levels of volatility suggest high levels of information asymmetry and vice versa (Leuz and Verrecchia, 2000, p. 99).

Moreover, Easley and O'Hara (2004), in their theoretical model, confirm that stock return is larger in the case of having more private information (information asymmetry). Researchers interpret this as people with additional information about a stock having a better chance to make an abnormal return than those individuals with no additional information. Furthermore, Levi and Zhang (as cited in Yassin et al., 2015) confirm that an increase in information asymmetry leads to an increase in market return. Hence, it is expected that there is a positive relationship between stock return volatility and information asymmetry. Stock return volatility is computed as the standard deviation of quarterly stock return for each year. Nevertheless, stock return volatility is not used in this study since it has high correlations with other independent variables.

(vi) Leverage

Leverage shows the percentage of total assets that were financed creditors, liabilities and debt. A higher percentage indicates more leverage and more risk, whereas a high percentage means that the firm's assets are mostly financed by creditors or debt (i.e. low finance from owners). Brown and Hillegeist (2007) state that the Pecking Order theory of capital structure suggests that there is an inverse relationship between leverage and information asymmetry. On the other hand, they also report that Boot and Thakor (1993) indicate that there is a positive relationship between leverage and information asymmetry. Nevertheless, if high leverage results in more risk, it is also expected to be associated with high information asymmetry. Hence, it is expected that information asymmetry is positively related to leverage. Leverage is computed as the quarterly ratio of total liabilities to total assets. The logarithm of the leverage ratio is used as a control variable in this study.

(vii) Price Earnings (PE) Ratio

Shastri state (as cited in Martins and Paulo, 2014) that the price earnings ratio can capture the future expectations of shareholders regarding their investments. In other words,

the price earnings ratio indicates the future return of the company. The price earnings ratio is often used by investors to evaluate the stock's fair market value by predicting future earnings per share. When a company has a high PE ratio compared to its peers, its stock price may be overestimated which obviously may be as a result of information asymmetry. Therefore, it is expected that PE ratio would have a positive relationship with information asymmetry measures suggesting that an increase in PE ratio would result in an increase in the information asymmetry level. The price earnings ratio is computed by dividing the market value price per share by the earnings per share. I will use the logarithm of the price earnings ratio as an independent control variable in the regression models.

(viii) Macroeconomic variables

Country-specific variables, i.e. inflation and GDP growth, are included in the sample to control any other factors that are incorporated in the regression. It is expected that inflation would have a positive effect on information asymmetry, so that in situations with high inflation rates, information asymmetry would be high. On the other hand, it is expected that GDP growth would have an adverse relationship with information asymmetry measures.

Quarterly GDP growth is computed for the sample by applying the equation:

$$\text{GDP Growth Rate} = (\text{Year}_i\ Q_n\ \text{GDP} - \text{Year}_i\ Q_{n-1}\ \text{GDP}) / \text{Year}_i\ Q_{n-1}\ \text{GDP} \qquad \textbf{(5)}$$

Country and year dummies are also included into the regression. The natural logarithm is used for all our variables to respond to skewness towards large values.

C) Dummy Variables

The study uses dummy variables that control for countries, years and bank types.

4.7.4 Regression Models

This study investigates if there is a relationship between information asymmetry and independent variables including Islamic banks. The data used in this study is a panel data (i.e. a time-serious data from different countries). Thus, the study uses the Ordinary least squares (OLS) regression and the OLR robust in its analysis to find the relationship between information asymmetry and other independent variables. Dan and Sherlock (2008) define

regression as: ‘a statistical technique to determine the linear relationship between two or more variables’. The regression analysis will show the type of relationship between the dependent and independent variables. The OLS robust regression aims to mitigate the effect of outliers and heteroscedasticity if existed. However, the OLS has assumptions and, to fit the OLS linearity assumption; the study uses the log transformation on its variables. As a result, five regression models are used in this research to answer the question of whether Islamic banks have lower information asymmetry than conventional banks. The left side of the equation presents the dependent variable, proxy measures for information asymmetry, which are Bid-Ask Spread, Share Turnover Ratio, Tangibility Ratio, and Stock Price Synchronicity (SYNCH). While the control variables used in this study are on the right side of the equations which are Price, Size, ROE, Price Earnings Ratio, Leverage, Inflation, GDP growth, Years dummy and Country dummy. These models are described below.

(i) Bid-ask Spread Regression Model

SPREAD *it* = β_0 + β_1 (Islamic Banks) + β_2 (Price it) + β_3 (Size it) + β_4 (ROE it) + β_5 (Price Earnings Ratio it) + β_6 (Leverage it) + β_7 (Inflation it) + β_8 (GDP Growth it) + β_9 (Years Dummies) + β_{10} (Countries Dummies) + ϵ it **(6)**

Where,

SPREAD $_{I\ t}$ = information asymmetry proxy measure defined as the logarithm of the quarterly relative bid-ask spread, defined as the absolute value of the bid-ask spread divided by the average of bid and ask

Islamic Banks = dummy variable equal to 1 if it is Islamic banks, and 0 if otherwise

Price= the logarithm of the quarter stock price of bank i at quarter t

Size =logarithm of total asset of bank i at quarter t

ROE =the logarithm of net income to shareholder equity of bank i at quarter t

Price Earnings Ratio= the logarithm of price earnings ratio of bank i at quarter t

Leverage= logarithm of quarterly ratio of total liabilities to total assets of bank i at quarter t

Inflation= the logarithm of inflation for country i at quarter t

GDP growth= the logarithm of GDP growth for country i at quarter t

Years Dummy= the years used in the sample

Countries Dummy= the countries used in the sample

The other remaining four regression models have the same control variables which are described in the Bid-Ask Spread regression. However, the dependent variable will differ for each equation as follows:

(ii) Share Turnover Ratio Regression

Share Turnover Ratio $it = \beta_0 + \beta_1$ (Islamic Banks) + β_2 (Price it) + β_3 (Size it) + β_4 (ROE it) + β_5 (Price Earnings Ratio it) + β_6 (Leverage it) + β_7 (Inflation it) + β_8 (GDP Growth it) + β_9 (Years Dummies) + β_{10} (Countries Dummies) + ϵ it **(7)**

Where,

Share Turnover Ratio= information asymmetry proxy measure defined as the logarithm of the total number of shares traded at quarter t, divided by the total number of shares outstanding for quarter t.

(iii) Intangibility Ratio Regression

Intangibility Ratio $it = \beta_0 + \beta_1$ (Islamic Banks) + β_2 (Price it) + β_3 (Size it) + β_4 (ROE it) + β_5 (Price Earnings Ratio it) + β_6 (Leverage it) + β_7 (Inflation it) + β_8 (GDP Growth it) + β_9 (Years Dummies) + β_{10} (Countries Dummies) + ϵ it **(8)**

Where, **Intangibility Ratio *it*=** information asymmetry proxy measure defined as the logarithm of total intangible assets to total assets

(iv) Stock Price Synchronicity (SYNCH) Regression

SYNCH *it* = β_0 + β_1 (Islamic Banks) + β_2 (Price it) + β_3 (Size it) + β_4 (ROE it) + β_5 (Price Earnings Ratio it) + β_6 (Leverage it) + β_7 (Inflation it) + β_8 (GDP Growth it) + β_9 (Years Dummies) + β_{10} (Countries Dummies) + ϵ it **(10)**

Where,

Stock Price Synchronicity (SYNCH)= the logarithm of (R^2 / 1- R^2_{it})

Table 4.5 gives a summary of all variable definitions used in the regression models.

Table 4. 5 Variables Definitions

Variable	Definition
Bid-Ask Spread	The logarithm of the quarterly relative bid-ask spread, defined as the absolute value of the bid-ask spread divided by the average of bid and ask
Share Turnover	The logarithm of the quarterly total number of shares traded in a quarter, divided by the total number of shares outstanding for a quarter
Intangibility	the logarithm of total intangible assets to total assets
Stock Price Synchronicity	the logarithm of (R2 / 1- R2it)
Islamic Banks	dummy variable equal to 1 if it is an Islamic bank, and 0 if otherwise
Price	the logarithm of the quarter stock price of firm i in quarter t
Size	logarithm of market capitalisation as end of each quarter t
ROE	The logarithm of net income to shares holder equity
Price Earnings Ratio	the logarithm of price earnings ratio as end of each quarter t
Leverage	the logarithm of quarterly ratio of total liabilities to total assets
Inflation	The logarithm of inflation for country i at quarter t
GDP growth	The logarithm of GDP growth for country i at quarter t
Years Dummy	Years used in the sample
Country Dummy	Countries used in the sample

Table 4.6 shows the expected relationship signs between information asymmetry proxies and other independent variables of the equations 6, 7, 8 and 10.

Table 4. 6 Expected relationship signs between information asymmetry proxies and other independent variables

Variable	Expected sign with Information Asymmetry	Expected sign with Bid Ask Spread	Expected sign with Share Turnover	Expected sign with SYNCH	Expected sign with Intangibility
Price	-	-	+	+	-
Size	-	-	+	+	-
ROE	-	-	+	+	-
Leverage	+	+	-	-	+
PE ratio	+	+	-	-	+
Inflation	+	+	-	-	+
GDP Growth	-	-	+	+	-

4.8 Empirical Results

This section presents the empirical results of the study of information asymmetry regressions.

4.8.1 Descriptive statistics

The sample selected covers the period from 2002 to 2015. Nevertheless, the study compares the results of four different periods which are: the full period (i.e. 2002-2015), pre-crisis period (i.e. 2002-2006), crisis period (i.e. 2007-2009), and post-crisis period (i.e. 2010-2015). To begin with, the study measures information asymmetry for Islamic and conventional banks. A group mean test is conducted for all variables included in the regression to show any significant differences between Islamic and conventional banks.

Table 4.7 presents the descriptive statistics of the information asymmetry variables (Bid-Ask Spread, Share Turnover, SYNCH and Intangibility ratio) along with other variables included in the regression (i.e. Price, Size, Leverage, ROE, PE ratio, Inflation, and GDP growth) for the period from 2002-2015. For each variable, the table shows the number of observations, mean value, standard deviation, minimum value, the maximum value and the t-test difference. The average of Bid-Ask Spread and Share Turnover show a significant difference between Islamic and conventional banks at 1% for the full study period. However, the average Bid-Ask for Islamic banks is higher than for conventional banks suggesting that Islamic banks may have higher Bid-Ask Spread and thus higher information asymmetry

levels. On the other hand, the average Share Turnover ratio for Islamic banks also is greater than their counterparts suggesting that information asymmetry in Islamic banks may be lower than in conventional banks. Moreover, the average of the other two information asymmetry variables (i.e. SYNCH and Intangibility ratio) do not show any significant differences between Islamic and conventional banks at any level for the full study period. As a result, the descriptive statistics show mixed results for the information asymmetry variables. Hence, further regression analysis is needed to find out if there are any differences between Islamic and conventional banks' information asymmetry. In addition, the average difference between Islamic and conventional banks is significantly higher for the leverage and PE ratio, where Islamic banks show a higher average for both variables than conventional banks. Moreover, the remaining variables do not indicate any significant differences between Islamic and conventional banks at any level for the full study period.

Overall, one cannot rely on the descriptive results only to determine whether there is a significant difference in information asymmetry between Islamic and conventional banks. Therefore, further regression analysis is conducted in the following sections to have a clearer picture about information asymmetry in Islamic and conventional banks.

4.8.2 Correlation Matrix

Table 4.8 shows the correlation matrix for the main variables used in the regression. In general, there are no high correlations between the dependent and explanatory variables.

Table 4. 7 Descriptive Statistics for the Full Sample Period (2002-2015)

	All					Islamic					Conventional					
Variable	**Obs**	**Mean**	**Std. Dev.**	**Min**	**Max**	**Obs**	**Mean**	**Std. Dev.**	**Min**	**Max**	**Obs**	**Mean**	**Std. Dev.**	**Min**	**Max**	**t-test diff.**
Information Asymmetry																
Bid Ask Spread	7127	-4.703	1.432	-9.223	0.693	866	-4.438	1.233	-7.859	-0.613	6261	-4.740	1.454	-9.223	0.693	0.302***
Share Turnover	8685	-3.584	2.151	-17.188	1.569	1161	-3.303	1.819	-11.642	1.137	7524	-3.627	2.195	-17.188	1.569	0.324***
Intangibility	4581	-5.739	1.911	-15.482	-0.684	505	-5.915	1.732	-11.557	-2.334	4076	-5.717	1.931	-15.482	-0.684	-0.198
SYNCH	8693	-0.075	2.688	-13.710	12.401	1183	0.019	2.555	-8.304	8.329	7510	-0.089	2.708	-13.710	12.401	0.108
Bank -specific																
Size	8740	15.248	1.913	9.931	21.821	1190	15.201	1.386	11.894	18.248	7550	15.255	1.983	9.931	21.821	-0.0549
Price	8815	0.806	3.292	-7.384	8.887	1239	0.232	1.697	-4.661	6.622	7576	0.900	3.476	-7.384	8.887	-0.668
Leverage	8740	-0.430	0.781	-7.227	0.113	1190	-0.253	0.345	-2.342	-0.002	7550	-0.458	0.826	-7.227	0.113	0.206***
ROE	7789	2.370	0.908	-3.912	5.216	968	2.182	1.194	-2.813	5.216	6821	2.397	0.857	-3.912	4.758	-0.215
PER	7816	2.713	0.900	-2.303	9.380	918	2.797	0.900	0.262	7.068	6898	2.702	0.900	-2.303	9.380	0.0958**
Macroeconomic																
Inflation	8684	2.534	3.528	-5.587	6.121	1197	4.147	1.667	-4.782	6.121	7487	2.276	3.676	-5.587	6.121	1.871***
GDP Growth	4368	-4.152	1.744	-11.483	0.247	568	-4.283	2.108	-11.483	-1.023	3800	-4.132	1.683	-11.483	0.247	-0.151

Table 4. 8 The Correlation Matrix

	Bid Ask Spread	Share Turnover	Intangibility	SYNCH	Price	Size	Leverage	ROE	PER	Inflation	GDP Growth
Bid Ask Spread	1.000										
Share Turnover	-0.464	1.000									
Intangibility	-0.182	0.161	1.000								
SYNCH	-0.042	0.137	0.062	1.000							
Price	-0.516	0.423	0.467	0.050	1.000						
Size	-0.566	0.245	0.156	0.071	0.332	1.000					
Leverage	0.051	-0.046	-0.051	-0.024	-0.172	0.266	1.000				
ROE	-0.128	0.153	-0.063	0.102	0.078	0.130	0.146	1.000			
PER	0.045	-0.057	0.144	-0.049	0.137	-0.140	-0.264	-0.300	1.000		
Inflation	-0.203	0.347	0.281	0.008	0.579	0.191	-0.058	-0.003	0.034	1.000	
GDP Growth	0.148	-0.011	-0.265	0.009	-0.304	-0.175	0.089	-0.002	-0.024	-0.068	1.000

4.8.3 Regression Results

The ordinary least square (OLS) regression and OLS robust regression are used to investigate the level of information asymmetry in Islamic and conventional banks across the countries. The dependent variables for equations 6, 7, 8, and 10 are Bid-Ask Spread, Share Turnover Ratio, Intangibility Ratio and Stock Price Synchronicity (SYNCH), respectively. All dependent variables are estimated separately using ordinary least squares (OLS) and the OLS robust regressions. They are used as proxies for information asymmetry measures.

Table 4.9, 4.10, 4.11, 4.12 and 4.13 present the main empirical results for the pre-crisis period (2002-2006), crisis period (2007-2009), post-crisis period (2010-2015) and for the full sample period (2002-2015), respectively. Furthermore, columns (1) - (2) show the results of using the OLS regression and robust regression, respectively, for Bid-Ask Spread as the dependent variable. Similarly, columns (3) – (4) present the results of applying the OLS regression and robust regression, respectively, for Share Turnover as the dependent variable. Columns (5) – (6) present the results of Stock Price Synchronicity (SYNCH) using the OLS and OLS robust regressions, respectively. Moreover, all dependent variables in all columns are regressed alongside the bank-specific and independent macroeconomic variables (i.e. Islamic bank dummy, Price, Size, Leverage, ROE, PE ratio, Inflation, and GDP growth). In addition, the Country and Year dummy are also used in the regressions as control variables. However, these are not included in the tables. The following sub-sections discuss the results of the regression analysis based on different periods.

(i) Regression Results: Pre-Crisis period (2002-2006)

Table 4.9 shows the regression results for the information asymmetry measures with the bank-specific and macroeconomic variables for the pre-crisis period (2002-2006). The three proxies for information asymmetry measures do not show any significant differences between Islamic and conventional banking systems in the pre-crisis period in the OLS and the OLS robust regressions. Therefore, the H_1 hypothesis is rejected. Nevertheless, in line with the study expectations, size shows a negative and positive relationship with Bid-Ask Spread and Share turnover, respectively, at 1% level for the two regression models. Furthermore, in line with the study expectations, price shows a negative relationship with Bid-Ask Spread at the 5% level. In addition, for the SYNCH regression results, ROE shows a negative relation with SYNCH at the 5% level, which is in opposition to the study expectations.

(ii) Regression Results: Crisis period (2007-2009)

Table 4.10 shows the regression results for the information asymmetry measures with the bank-specific and macroeconomic variables for the financial crisis period (2007-2009). Interestingly, the results from the OLS and OLS robust regressions, except SYNCH robust results, show that Islamic banks have strong and significantly lower information asymmetry levels than conventional banks. The Bid-Ask spread shows a significant value of -0.361 at the 5% and 1% levels for the OLS and OLS robust regression, respectively. In line with the Bid-ask spread results, the share turnover shows a significant value of 0.9 at the 1% level for both OLS and OLS robust regression. Moreover, the SYNCH shows a significant value of 0.536 at the 5% level. These results are consistent with the study hypothesis and suggest that during the financial crisis, Islamic banks had lower information asymmetry levels than their counterparts. Hence, the H_4 hypothesis is accepted. However, the results are not in line with the study by Jensen and Meckling (1976) that suggests that equity sharing increases information asymmetry for firms. Moreover, the price variable continues to show an inverse relationship with Bid-Ask and SYNCH Spread at the 1% level which is in line with the study expectations. Size is also in line with the study expectations as it shows a strong and inverse relationship with information asymmetry measures at the 1% level. Moreover, as expected, leverage shows a negative correlation with SYNCH at the 1% level.

Table 4. 9 Information Asymmetry Regression results for Pre-crises period 2002-2006

VARIABLES	(1) OLS Bid Ask Spread	(2) OLS Robust Bid Ask Spread	(3) OLS Share Turnover	(4) OLS Robust Share Turnover	(5) OLS SYNCH	(6) OLS Robust SYNCH
Islamic Banks	-0.152	-0.152	-0.092	-0.092	-0.148	-0.148
	(0.198)	(0.152)	(0.176)	(0.262)	(0.541)	(0.411)
Price	-0.0927**	-0.0927**	-0.027	-0.027	-0.090	-0.090
	(0.042)	(0.040)	(0.045)	(0.037)	(0.127)	(0.126)
Size	-0.330***	-0.329***	0.068***	0.068***	0.011	0.011
	(0.017)	(0.016)	(0.019)	(0.016)	(0.052)	(0.069)
Leverage	0.0813**	0.08130*	0.207***	0.207***	-0.175	-0.175
	(0.040)	(0.042)	(0.045)	(0.044)	(0.124)	(0.161)
ROE	0.035	0.035	-0.022	-0.022	-0.342**	-0.342**
	(0.053)	(0.048)	(0.054)	(0.056)	(0.151)	(0.148)
PE ratio	-0.035	-0.035	-0.240***	-0.240***	-0.013	-0.013
	(0.062)	(0.059)	(0.059)	(0.067)	(0.169)	(0.152)
Inflation	-3.610**	-3.610***	-1.127	-1.127	-4.223	-4.223
	(1.537)	(1.193)	(1.424)	(1.514)	(4.001)	(3.623)
GDP Growth	-0.003	-0.003	-0.038	-0.038	-0.020	-0.020
	(0.032)	(0.022)	(0.028)	(0.045)	(0.077)	(0.069)
Constant	16.920**	16.920***	2.424	2.424	17.852	17.852
	(7.118)	(5.548)	(6.605)	(7.013)	(18.574)	(16.639)
Observations	643	643	722	722	699	699
R-squared	0.587	0.587	0.318	0.318	0.223	0.223
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes
Country Dummy	Yes	Yes	Yes	Yes	Yes	Yes

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 4. 10 Information Asymmetry Regression results for Crises period 2007-2009

VARIABLES	(1) OLS Bid Ask Spread	(2) OLS Robust Bid Ask Spread	(3) OLS Share Turnover	(4) OLS Robust Share Turnover	(5) OLS SYNCH	(6) OLS Robust SYNCH
Islamic Banks	-0.361**	-0.361***	0.900***	0.900***	0.536**	0.536
	(0.148)	(0.104)	(0.182)	(0.192)	(0.272)	(0.342)
Price	-0.256***	-0.256***	-0.252***	-0.252***	0.321***	0.321***
	(0.066)	(0.069)	(0.082)	(0.092)	(0.122)	(0.111)
Size	-0.270***	-0.270***	0.129***	0.1289***	0.198***	0.198***
	(0.030)	(0.033)	(0.041)	(0.034)	(0.061)	(0.062)
Leverage	0.012	0.012	0.026	0.026	-0.894***	-0.894***
	(0.070)	(0.091)	(0.099)	(0.063)	(0.146)	(0.142)
ROE	0.008	0.008	0.029	0.029	-0.04	-0.04
	(0.047)	(0.043)	(0.066)	(0.060)	(0.098)	(0.092)
PE ratio	0.028	0.028	-0.387***	-0.387***	-0.342***	-0.342***
	-0.062	-0.072	-0.083	-0.085	-0.124	-0.107
Inflation	-1.868	-1.868	3.886	3.886	-6.525	-6.525
	(2.146)	(2.465)	(2.872)	(2.710)	(4.258)	(4.040)
GDP Growth	-0.051	-0.051	0.021	0.021	0.07	0.07
	(0.051)	(0.043)	(0.053)	(0.074)	(0.079)	(0.063)
Constant	10.846	10.846	-27.982*	-27.982*	33.961	33.961
	(12.035)	(13.779)	(16.080)	(15.256)	(23.838)	(22.472)
Observations	431	431	566	566	563	563
R-squared	0.566	0.566	0.497	0.497	0.219	0.219
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes
Country Dummy	Yes	Yes	Yes	Yes	Yes	Yes

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

(iii) Regression Results: Post-Crisis period (2010-2015)

Table 4.11 shows the regression results for the information asymmetry measures with the bank-specific and macroeconomic variables for the post-crisis period (2010-2015). In line with the crisis period results, the three information asymmetry measures for Islamic banks continue to show significantly lower information asymmetry levels than conventional banks at the 1% level. The bid-ask spread shows a value of -0.345 for the OLS and OLS robust regressions. The share turnover also shows the values of 1.371 for the OLS and OLS robust regressions. Moreover, the SYNCH shows a value of 0.866 for the OLS and OLS robust regressions. These results support the study hypothesis as it suggests that Islamic banks have lower information asymmetry than conventional banks for the post-crisis period. Thus, the H_2 hypothesis is accepted. Price also shows a significant negative relationship with Share Turnover at the 5% level. In addition, size continues to show a negative relationship with the information asymmetry measures at the 1% level. Moreover, and in line with the study expectations, leverage shows a significant and negative relationship with Share Turnover and SYNCH at the 1% level. ROE also shows a significant and positive relation with Share Turnover at the 1% level, as expected.

(iv) Regression Results: Full sample period (2002-2015)

Table 4.12 shows the regression results for the information asymmetry measures with the bank-specific and macroeconomic variables for the full sample period (2002-2015). In line with the crisis and post-crisis results, the information asymmetry levels for the full sample period show that Islamic banks have lower information asymmetry levels than conventional banks at the 1% level. The bid-ask spread shows a value of -0.347 for the OLS and OLS robust regressions. The share turnover also shows the values of 1.6 for the OLS and OLS robust regressions. Moreover, the SYNCH shows a value of 0.673 for the OLS and OLS robust regressions. Again, the results support the study hypothesis of Islamic banks having lower information asymmetry than their counterparts for the full sample period. Therefore, the H_3 hypothesis is accepted. However, the price variable continues to show a mixed relationship with information asymmetry measures. For instance, in opposition to the expectation, price shows a significant and negative relationship with Share Turnover ratio at the 5% level. However, in line with the study expectations, it also shows a significant negative and positive relationship with Bid Ask Spread and SYNCH at the 5% level, respectively. Nevertheless, as expected, size shows a negative relationship with the three information asymmetry measures at the 1% level. This indicates that large banks will

normally provide more information than small banks, which will result in lower information asymmetry between the banks and other stakeholders. ROE shows a significant and positive relationship with Share Turnover as expected suggesting that profitability is inversely related to information asymmetry. Moreover, in line with Boot and Thakor (1993), leverage shows a strong and negative relationship with SYNCH at the 1% level, as expected.

4.8.4 Robustness Check

The study uses an additional information asymmetry measure, intangibility, to test the robustness of the results. Intangibility is regressed using OLS and OLS robust regressions along with the bank-specific and microeconomics variables. In addition, the country and year dummies are also used in the regressions as control variables. However, these are not included in the tables. Tables 4.13, 4.14, 4.15, and 4.16 present the empirical results for the pre-crisis period (2002-2006), crisis period (2007-2009), post-crisis period (2010-2015) and full sample period (2002-2015), respectively. Furthermore, columns (1) - (2) show the results of using the OLS regression and robust regression, respectively, for the intangibility ratio as the dependent variable. Overall, the regression results for the intangibility ratio as a measure of information asymmetry for the different periods are consistent with the findings of Islamic banks' information asymmetry levels using Bid-Ask Spread, Share Turnover ratio and SYNCH. The results show a strong and significant relationship between the Islamic dummy variable and intangibility ratio in all periods. These findings suggest that information asymmetry levels are lower in Islamic banks than conventional banks. Hence, the findings confirm the all study hypothesis for the four periods. Moreover, for the full sample period, price variable shows a negative relationship with intangibility ratio at the 5% level which is in line with the study expectations. The size and ROE variable results also show a significant and negative relationship with intangibility ratio at the 1% level, as expected. In addition, the leverage relationship with intangibility ratio is significantly positive, as expected.

Table 4. 11 Information Asymmetry Regression results for Post-Crisis period 2010-2015

	(1) OLS	(2) OLS Robust	(3) OLS	(4) OLS Robust	(5) OLS	(6) OLS Robust
VARIABLES	Bid Ask Spread	Bid Ask Spread	Share Turnover	Share Turnover	SYNCH	SYNCH
Islamic Banks	-0.345***	-0.345***	1.371***	1.371***	0.866***	0.866***
	(-0.068)	(-0.059)	(0.121)	(0.108)	(0.189)	(0.192)
Price	0.034	0.034	-0.128***	-0.128**	0.117	0.117
	(0.026)	(0.029)	(0.048)	(0.053)	(0.075)	(0.071)
Size	-0.385***	-0.385***	0.206***	0.206***	0.168***	0.168***
	(0.016)	(0.018)	(0.030)	(0.026)	(0.048)	(0.047)
Leverage	-0.047	-0.047	-0.195***	-0.195***	-0.538***	-0.538***
	(0.035)	(0.040)	(0.065)	(0.045)	(0.102)	(0.095)
ROE	-0.028	-0.028	0.133***	0.133***	0.109	0.109
	(0.029)	(0.030)	(0.051)	(0.050)	(0.080)	(0.079)
PE ratio	0.077***	0.077**	-0.271***	-0.271***	-0.435***	-0.435***
	(0.030)	(0.032)	(0.054)	(0.065)	(0.083)	(0.078)
Inflation	0.225	0.225	-2.709**	-2.709**	0.733	0.733
	(0.582)	(0.569)	(1.056)	(1.265)	(1.647)	(1.810)
GDP Growth	-0.015	-0.015	-0.003	-0.003	0.009	0.009
	(0.013)	(0.013)	(0.023)	(0.025)	(0.036)	(0.037)
Constant	1.749	1.749	5.806	5.806	-6.456	-6.456
	(3.320)	(3.262)	(6.023)	(7.215)	(9.396)	(10.346)
Observations	2,032	2,032	2,333	2,333	2,338	2,338
R-squared	0.659	0.659	0.396	0.396	0.099	0.099
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes
Country Dummy	Yes	Yes	Yes	Yes	Yes	Yes

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 4. 12 Information Asymmetry Regression results for Full sample period 2002-2015

	(1) OLS	(2) OLS Robust	(3) OLS	(4) OLS Robust	(5) OLS	(6) OLS Robust
VARIABLES	Bid Ask Spread	Bid Ask Spread	Share Turnover	Share Turnover	SYNCH	SYNCH
Islamic Banks	-0.347***	-0.347***	1.1596***	1.1596***	0.673***	0.673***
	(0.060)	(0.051)	(0.092)	(0.090)	(0.153)	(0.160)
Price	-0.053**	-0.053**	-0.089***	-0.089**	0.118**	0.118**
	(0.021)	(0.023)	(0.034)	(0.038)	(0.056)	(0.055)
Size	-0.331***	-0.331***	0.138***	0.138***	0.110***	0.110***
	(0.011)	(0.012)	(0.019)	(0.015)	(0.032)	(0.034)
Leverage	0.025	0.025	-0.041	-0.041	-0.571***	-0.571***
	(0.025)	(0.028)	(0.042)	(0.030)	(0.069)	(0.072)
ROE	-0.007	-0.007	0.098***	0.098***	-0.05	-0.05
	(0.021)	(0.022)	(0.034)	(0.032)	(0.056)	(0.054)
PE ratio	0.072***	0.072***	-0.290**	-0.290***	-0.371***	-0.371***
	(0.025)	(0.026)	(0.039)	(0.047)	(0.064)	(0.061)
Inflation	1.326***	1.326***	-2.035***	-2.035***	0.17	0.17
	(0.302)	(0.330)	(0.440)	(0.478)	(0.730)	(0.761)
GDP Growth	-0.017	-0.017	-0.009	-0.009	0.007	0.007
	(0.012)	(0.012)	(0.018)	(0.021)	(0.029)	(0.030)
Constant	-4.187**	-4.187**	3.449	3.449	0.773	0.773
	(1.680)	(1.836)	(2.453)	(2.658)	(4.070)	(4.264)
Observations	3,106	3,106	3,621	3,621	3,600	3,600
R-squared	0.607	0.607	0.477	0.477	0.134	0.134
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes
Country Dummy	Yes	Yes	Yes	Yes	Yes	Yes

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 4. 13 Robust Regression Pre-Crisis period 2002-2006

VARIABLES	(1) OLS Intangibility	(2) OLS Robust Intangibility
Islamic Banks	-3.151***	-3.151***
	(0.480)	(0.457)
Price	0.087	0.087
	(0.086)	(0.084)
Size	-0.082**	-0.082***
	(0.032)	(0.028)
Leverage	1.022***	1.022***
	(0.207)	(0.155)
ROE	-0.699***	-0.699***
	(0.143)	(0.126)
PE ratio	0.341***	0.341**
	(0.130)	(0.142)
Inflation	-13.442***	-13.442***
	(2.631)	(3.029)
GDP Growth	0.087	0.087
	(0.082)	(0.086)
Constant	57.891***	57.891***
	(12.107)	(13.903)
Observations	332	332
R-squared	0.612	0.612
Year Dummy	Yes	Yes
Country Dummy	Yes	Yes

Table 4. 14 Robust Regression Crisis period 2007-2009

VARIABLES	(1) OLS Intangibility	(2) OLS Robust Intangibility
Islamic Banks	-1.124***	-1.124***
	(0.247)	(0.217)
Price	-0.079	-0.079
	(0.103)	(0.104)
Size	-0.057	-0.057
	(0.049)	(0.045)
Leverage	0.304	0.304
	(0.299)	(0.330)
ROE	-0.052	-0.052
	(0.083)	(0.094)
PE ratio	0.253**	0.253
	(0.125)	(0.159)
Inflation	3.592	3.592
	(3.538)	(3.455)
GDP Growth	-0.003	-0.003
	(0.092)	(0.083)
Constant	-23.102	-23.102
	(19.817)	(19.112)
Observations	347	347
R-squared	0.515	0.515
Year Dummy	Yes	Yes
Country Dummy	Yes	Yes

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 4. 15 Robust Regression Post-Crisis period 2010-2015

VARIABLES	(1) OLS Intangibility	(2) OLS Robust Intangibility
Islamic Banks	-0.808***	-0.808***
	(0.152)	(0.108)
Price	0.183***	0.183***
	(0.054)	(0.062)
Size	-0.056*	-0.056*
	(0.031)	(0.032)
Leverage	0.239	0.239
	(0.175)	(0.308)
ROE	-0.198***	-0.198***
	(0.068)	(0.075)
PE ratio	0.029	0.029
	(0.069)	(0.077)
Inflation	1.319	1.319
	(1.071)	(1.130)
GDP Growth	-0.002	-0.002
	(0.027)	(0.026)
Constant	-10.094*	-10.094
	(6.117)	(6.428)
Observations	-0.152	-0.108
R-squared	0.183***	0.183***
Year Dummy	Yes	Yes
Country Dummy	Yes	Yes

Table 4. 16 Robust Regression Full sample period 2002-2015

VARIABLES	(1) OLS Intangibility	(2) OLS Robust Intangibility
Islamic Banks	-0.969***	-0.969***
	(0.124)	(0.101)
Price	0.104**	0.104**
	(0.041)	(0.044)
Size	-0.071***	-0.071***
	(0.021)	(0.019)
Leverage	0.371***	0.371**
	(0.123)	(0.165)
ROE	-0.161***	-0.161***
	(0.049)	(0.056)
PE ratio	0.057	0.057
	(0.054)	(0.061)
Inflation	0.873*	0.873
	(0.479)	(0.534)
GDP Growth	0.007	0.007
	(0.024)	(0.023)
Constant	-6.268**	-6.268**
	(2.670)	(2.899)
Observations	2,052	2,052
R-squared	0.450	.450
Year Dummy	Yes	Yes
Country Dummy	Yes	Yes

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

4.9 Conclusion

In conclusion, this chapter investigated and compared the level of information asymmetry for the four study periods. The results support all four study hypotheses. Table 4.17 shows a summary of the main findings. For the pre-crisis period, the OLS and random effect regressions show no significant differences between information asymmetry in the Islamic and conventional banks. However, the robustness check supports the study hypothesis for the same period. Moreover, in support of the study hypothesis, for the crisis, post-crisis and full sample periods, information asymmetry measures (i.e. Bid-Ask Spread, Share Turnover ratio and SYNCH) show that Islamic banks have lower information asymmetry than their conventional counterparts. In addition, the robustness check indicates that the intangibility ratio measure for Islamic banks is lower than for conventional banks for the periods studied. These findings support the regression results of Bid-Ask Spread, Share Turnover ratio and SYNCH. Therefore, the findings and robustness check support the study hypotheses and indicate that Islamic banks have significantly lower information asymmetry levels than conventional banks for the tested periods.

Table 4. 17 A summary of main findings from information asymmetry regressions.

Research Question	Hypothesis	Accept/Reject	Main Findings
Did Islamic banks have significantly lower information asymmetry than conventional banks?	H1: Islamic banks have significantly lower information asymmetry than conventional banks for the pre-crisis period (2002-2006).	Accept	There is no significant differences in bid-ask-spread, share turnover, and SYNCH measures between Islamic and conventional banks.
			The intangibility ratio shows a significant and negative relation with Islamic banks at 1% level.
			Size shows a significant and negative relationship with information asymmetry measures (i.e. bid-ask-spread and share turnover) at 1% level.
			Price shows a significant and negative relationship with bid-ask-spread at 1% level.
			ROE shows a significant and negative relationship with SYNCH at 1% level.
	H2: Islamic banks have significantly lower information asymmetry than conventional banks for the post-crisis period (2010-2015).	Accept	The bid-ask-spread shows a significant and negative relationship with Islamic banks at 1% level.
			The share-turnover ratio shows a significant and positive relationship with Islamic banks at 1% level.
			The SYNCH shows a significant and positive relationship with Islamic banks at 1% level.
			The intangibility ratio shows a significant and negative relation with Islamic banks at 1% level.
			Price shows a significant and negative relationship with all information asymmetry measures at level 1%.
			Leverage shows a significant and negative relationship with share turnover and SYNCH at 1% level.

Research Question	Hypothesis	Accept/Reject	Main Findings
			ROE shows a significant and positive relationship with share turnover at 1% level.
Did Islamic banks have significantly lower information asymmetry than conventional banks?	H3: Islamic banks have significantly lower information asymmetry than conventional banks for the full sample period (2002-2015).	Accept	The bid-ask-spread shows a significant and negative relationship with Islamic banks at 1% level.
			The share-turnover ratio shows a significant and positive relationship with Islamic banks at 1% level.
			The SYNCH shows a significant and positive relationship with Islamic banks at 1% level.
			The intangibility ratio shows a significant and negative relation with Islamic banks at 1% level.
			Price shows mixed results.
			Size shows a significant and negative relationship with information asymmetry measures at 1% level.
			ROE shows a significant and positive relationship with share turnover at 1% level.
			Leverage shows a significant and negative relationship with share turnover and SYNCH at 1% level.
	H4: Islamic banks have significantly lower information asymmetry than conventional banks for the crisis period (2008-2009).	Accept	The bid-ask-spread shows a significant and negative relationship with Islamic banks at 5% and 1% levels for OLS and OLS robust regressions respectively.
			The share-turnover ratio shows a significant and positive relationship with Islamic banks at 1% level.
			The SYNCH shows a significant and positive relationship with Islamic banks at 5% level.
			The intangibility ratio shows a significant and negative relation with Islamic banks at 1% level.

Research Question	Hypothesis	Accept/Reject	Main Findings
			Price shows a significant and negative relationship with bid-ask-spread and SYNCH at 1% level.
			Size shows a significant and negative relationship with information asymmetry measures at 1% level.
			Leverage shows a significant and negative relationship with SYNCH at 1% level.

Chapter 5: Credit Risk in Islamic and Conventional Banks

5.1 Introduction

This chapter investigates and compares credit risk between Islamic and conventional banks. It aims to provide a detailed discussion on how risk exists in Islamic banks in comparison to conventional banks. It is obvious that risk occurs in both Islamic banks and conventional banks. However, because Islamic banks are different in their nature, this chapter explains risk differences between Islamic and conventional banks. The chapter also offers a review of the theoretical and empirical studies on Islamic banks' credit risk. Specifically, the chapter seeks to build a hypothesis, and investigates and compares the severity of credit risk in Islamic banks as compared to conventional banks. The chapter is divided into the following sections. Section 5.2 discusses the existence of risk in Islamic and conventional banks. Sections 5.3 and 5.4 provide a review of the literature on credit risk in Islamic banking. Section 5.5 shows the chapter hypothesis development. Section 5.6 shows the data and methodology, while Section 5.7 and 5.8 show the results and analysis, and conclusion respectively.

5.2.1 Risk in Islamic and Conventional Banks

The global financial crisis of 2007-2008 raised many concerns about the understanding of the role of risk and its effects on the banking sector. In fact, risk misevaluation of certain financial instruments is considered to be one of the major causes of the recent sub-prime financial crisis (Azmat et al., 2014). Risk is defined in many ways in the literature. However, all definitions basically agree that risk exists in a situation where two or more outcomes are possible (Elgariei, 2003). For example, money lent to an entrepreneur may not be repaid as a result of a business' failure. As a part of the banking sector, Islamic banking also faces risks. Hence, many scholars study risk in Islamic banking. Different types of risk exist in banking activities that cannot be avoided. The three major risks in the banking sector are credit, market, and operational risk. Other risks that are also important in the banking industry are liquidity risk, business risk, and reputational risk.

Managers try to manage these risks at acceptable levels to achieve optimal profitability (Greuning and Iqbal, 2009). Hence, it is essential to identify and monitor risk exposure to minimise its effect on a bank's profitability. After identifying and analysing risk, banks set strategies to mitigate the overall risk position. Risk mitigation techniques include

risk avoidance, risk acceptance, risk transfer, and risk absorption (Salem, 2013, p.98-110). Risk avoidance involves completely avoiding activity that poses a potential risk. This is not always practical. To get potential gains, a bank would have to face a certain level of risk. Unlike risk avoidance, risk acceptance or risk retention involves accepting that risk is a part of investments. On the other hand, risk transfer involves transferring the financial risk to a third party entity (i.e. insurance company). For example, insuring a car transfers the financial risk of the car in the case of an accident. Another example of risk transfer is banks taking collateral and guarantees on their loans. With this practice, they reduce the risk of the borrower defaulting on payments. The fourth risk mitigation technique is risk absorption where the bank or finance company absorbs the risk through having loan loss reserves and capital allocation accounts. The bank uses this technique when the cost of reducing the risk may not be as effective as having it in the first place

5.2.2 How does credit risk occur in Islamic financing modes?

Islamic banks have different financing modes that adhere to Islamic principles. These are *Mudaraba, Musharaka, Istisna, Salam* and *Ijara*. Similar to conventional banks, Islamic banks are exposed to credit risk. However, credit risk is associated with these financial modes in various ways depending on the nature of the financial product (Kabir et al., 2015, p.329). The following describes credit risk in different Islamic financing products.

In Mudarabah contracts (profit sharing), a principal-agent relationship is involved between the bank (capital provider) and borrower (Mudarib). For example, the Islamic bank agrees to finance a project with a pre-agreed profit sharing arrangement. However, the project is managed by the borrower (Mudarib) and the bank is not involved in the decision-making process. As a result, the borrower can take very risky investment decisions which affect the success of the project. Islamic banks provide the finance to the entrepreneurs as a principal who provides capital and expects a future share of profits of the project if it is successful. On the other hand, conventional banks give loans to entrepreneurs and expect them to pay the total loan with interest regardless of the success or failure of the project. They also take collateral just in case the entrepreneur fails to repay the loan. Collateral reduces the credit risk. Hence, in the event of a firm's bankruptcy, the bank would be able to reduce its losses from selling the firm's collateral. Therefore, it is suggested that Islamic banks are exposed to high levels of credit risk in a high information asymmetry environment (Kabir et al., 2015, p.329). Another form of credit risk in the Mudaraba contract may occur

when the project generates profit, but the entrepreneurs hide it or do not give the exact amount to minimise the bank's share of the profit.

Musharaka (profit-and-loss sharing) is another Islamic finance contract that is similar to a joint venture partnership. In this type of contract, banks and other partners provide capital for an investment and share profit-and-loss upon a pre-agreed ratio. For example, a bank finances a partner to purchase a house by applying a Musharakah contract. In such a contract, both the bank and partner have an equity ownership of the house based on their participation in the capital. They also agree that the partner will purchase the bank's equity by paying the bank instalments for a given period. If the partner fails to pay the instalments as previously agreed, the bank can implement the liquidation of the asset (in this case the house) to cover its financing debt. However, when selling the asset, the bank's invested equity may be lower than its actual debt which results in a loss for the bank. However, in conventional banks, loans are taken for different purposes and are not required to be backed up with assets. Therefore, because of the information asymmetry problem and the nature of Islamic banks, it is suggested that Islamic banks are exposed to a high level of credit risk, where they normally enter into contracts that involve an equity share (Kabir et al., 2015, p.329).

According to Kabir et al. (2015, p.330), Murabaha (sale of goods with mark-up) is considered the most popular Islamic financing product (nearly 70-80% of all Islamic bank transactions). In a Murabaha contract, the buyer (borrower) provides the bank with information about his purchase requirements. Then the bank purchases the product and sells it back to the buyer (borrower) with a margin of profit. When the buyer fails to pay his obligation to the bank at the time of product delivery, the bank faces a credit risk.

Another popular Islamic financing product is the Ijara (leasing). Islamic banks face credit risk when the lessee fails to pay the rent when it is due. However, Ijara contracts are considered to have a lower credit risk than other Islamic financial contracts where most of the time the lessee pays their rent obligations (Kabir et al., 2015, p.330).

The last two Islamic financing products are the Salam (forward sale) and Istisna (order to manufacture). Despite the lower popularity of the usage of these types of contracts in Islamic banks and the different opinions of scholars about whether they adhere to Islamic principles or not, these financing contracts face a credit risk also. In a Salam contract, the buyer makes a full payment of a product to the seller on the day of the contract while the

seller delivers the products later. Normally, the bank is involved in two Salam contracts at the same time, the first with the seller and the second with the buyer, though both contracts are independent. Hence, it acts as an intermediary between seller and buyer. Credit risk arises in the event of a failure to deliver the product at a specific time. A credit risk may also arise because of price fluctuations which result in seller default to deliver the product. As a result, the bank purchases the product from another source which may be at a higher price to deliver the product to the buyer at the agreed date. Similarly, Istisna is a forward sale financing contract used in Islamic banks. However, unlike Salam, Istisna is mostly used in manufacturing products. A credit risk also arises in the case of a bank defaulting on delivering the product on the agreed date to the buyer due to late delivery from the manufacturer. Again, the bank here may go and buy the product from another source with a higher price to fulfil their obligation to the buyer. Moreover, a credit risk may arise if the bank sells the product to the purchaser in instalments where the buyer may default on paying the instalments on the agreed dates which result in a loss receivables for the bank (Kabir et al., 2015, p.330).

It is noticeable that both Islamic and conventional banks face similar risks. Hence, the risk similarities may appear because of the similarities of banking operations and types of financing. Nevertheless, the main difference between the two banks is that Islamic banks are based on Islamic Shariaa. On the other hand, conventional banks are based on interest which is forbidden in Islamic Shariaa. Nevertheless, this section provides the way of risks appearance in Islamic financing modes which may be in some financial product similar to their occurrence in conventional banks.

5.2.3 Indications of Credit Risk in the Balance Sheets of Islamic and Conventional Banks

The standard form of a conventional bank balance sheet is shown in Table 5.1. The asset side of a conventional bank's balance sheet shows loans and advances to customers, cash and cash balances with other banks, investments in associates, subsidiaries and joint ventures, and financial assets held for trading. The liability side shows, in addition to the equity capital, customer deposits, obligations due to banks and other financial institutions, other liabilities and sundry creditors.

Table 5. 1 Conventional bank balance sheet sample (source: Greuning and Iqbal, 2009)

Assets	**Liabilities**
Loans and advances to customers	Customers' deposits
Cash and cash balances with other banks	Due to banks and other financial institutions
Investments in associates, subsidiaries, and joint ventures	Other liabilities
Financial assets held for trading	Sundry creditors
Cash and cash balances with the central bank	Equity and reserves

From a risk point of view, Greuning and Iqbal (2009) state that the balance sheets of conventional banks show a possibility for an asset-liability mismatch in which deposits are considered as pre-determined liabilities regardless of the outcome from the fund used on the asset side. In other words, whenever banks accept deposits they become immediately obligated to their depositors despite any performed outcomes. In addition, short-term liabilities normally finance medium to long-term assets which exposes the bank to maturity mismatch risk. This may result in discouraging banks from investing in long-term non-liquid projects. An increase in short-term deposits could expose the bank to greater self-funding risk which would affect other banks' funding activities.

On the other hand, on the liabilities side of the balance sheets of Islamic banks, in addition to the equity capital, demand deposits, investment accounts and special investment accounts are shown. Unlike conventional banks' investments accounts, Islamic banks' investments accounts are not considered as direct liabilities since depositors are treated as partners, with no reserves being required from the bank. However, demand deposits (*Amanah*) require a 100 percent reserve since the bank is totally liable to return them to depositors when they are claimed. On the asset side of the balance sheet, Islamic banks show

different financing assets (*Murabaha, salam, ijara, istisna*), investment assets (*mudaraba, musharaka*), free-based services (juala) and non-banking assets (property). Table 5.2 shows the standard form of an Islamic bank balance sheet.

Table 5. 2 Islamic bank balance sheet sample (source: Greuning and Iqbal, 2009)

Assets	**Liabilities**
Cash balances	Demand deposits (amanah)
Financing assets (murabaha, salam, ijara, istisna)	Investment accounts (mudaraba)
Investment assets (mudaraba, musharaka)	Special investment accounts (mudaraba, musharaka)
Fee-based services (ju'ala, kafala, and so forth)	Reserves
Non-banking assets (property)	Equity capital

The nature of Islamic financial instruments differs from conventional banking instruments. Hence, the balance sheet risk profile is also different for both banks. For example, since the depositors' return in Islamic banks is linked to returns on bank assets, the asset-liabilities mismatch issue disappears. As previously mentioned, since Islamic banks treat investment account depositors as partners, these deposits are not considered as direct liability for the bank. The Islamic bank agrees with the investment account depositors that their deposits cannot be withdrawn for a period of investment. On the other hand, for the other type of account (demand deposits), depositors can demand their money whenever they require it. Hence the bank must hold 100 percent reserves of these deposits to prevent any shortage in case of an excess of short-term withdrawal demands. However, other issues are introduced such as estimation and accrual of ex-post returns and the treatment of intra-period withdrawal of deposits (Greuning and Iqbal, 2009). Moreover, the nature of the assets in Islamic and conventional banks are different. Unlike conventional banks, where investments are usually more concentrated on a fixed income with low credit risk debt securities, Islamic

financial instruments are mainly concentrated on asset-based investments which are backed up by real assets that have credit risk. Therefore, Islamic banks' lending capacity is linked to the availability of real assets in the economy. An exception with the *Istsnaa* financing instrument can be made when assets are under construction. Another Islamic banking feature that reduces risk and enhances stability is that due to Islamic Shariaa, Islamic banks cannot issue debt to finance their assets which result in not having financial leverage. This results in better asset monitoring as well as to the obligor.

5.2.4 Islamic Banks' Unique types of Risks

As previously mentioned, Islamic and conventional banks have similar functions but different operational aspects. Both banks are financial intermediaries, but they differ from each other in the way they operate. Conventional bank operations are based on interest rates, and although they may also have equity finance, their operations are not based on Islamic principles. Islamic bank operations are supposed to be based on Islamic Shariaa principles. Nevertheless, both banks face similar types of risks in their operations such as credit, market, and operational risks. However, Islamic banks face unique types of risks because of their unique operational model that is rooted in Shariaa principles. For example, the home financing of Islamic banks face an additional two risks when compared to conventional banks which are equity risk and Shariaa risk. Equity risk is tied up with the ownership of the house as a partner. The bank owns the house as a partner with the client. The house ownership is accompanied by the risk of client default equity purchase payments (i.e. the client agrees with the bank at the time of signing the contract to purchase the bank's equity shares through instalments). On the other hand, DeLorenzo defines Shariaa risk as *"the possibility that a financial service or product is not or will not be in compliance with established Shari'ah principles and standards."* In other words, Shariaa risk is about Islamic banks making sure that their financing operations comply with the Islamic Shariaa principles.

Other unique risks are related to Islamic banks, for example, commodity price risk, mark-up risk, the rate of return risk, and equity investment risk. Commodity risk rises as a result of lending facilities and must be backed up with physical assets. In a financial contract, for example, an Ijarah (lease) contract, the price of the asset may decline over time (Salem, 2013, p.46). In other words, when the asset becomes old, its rental price may decrease as people normally tend to rent new assets (i.e. car, flat and machines). In addition, the supply of the asset may exceed the demand resulting in a drop in rental prices.

Salem (2013, p. 47) cites the Islamic Financial Services Board (IFSB) equity investment risk as "the risk arising from entering into a partnership for the purpose of undertaking or participating in a particular financing or general business activity as described in the contract, and in which the provider of finance shares in the business risk." Equity investment risk is concerned with the capital loss which may lead to a distortion of a bank's profit since it is represented in different types of risk (i.e. credit, market and liquidity risk). On the other hand, the mark-up is fixed for the duration of the Murabaha contract. Therefore, mark-up rates cannot be adjusted in the case of benchmark rate changes. Thus, Islamic banks face the mark-up risk caused by the movement of the market interest rate (Ahmed and Khan, 2007, p.145).

Another type of risk that is unique in Islamic banks is the rate of return risk. This is related to the rate of return provided to depositors in Islamic banks who can be disappointed if it is lower than the market benchmark. It is argued that conventional banks face similar risk called business risk. However, in general, conventional banks set a predetermined rate of return to their depositors based on the market rates. In contrast, Islamic banks distribute profits to their depositors according to the bank's profit and deposit holders account share of investment. Thus, the rate of return in Islamic banks can differ from the market rate of return. Although there are unique types of risks in Islamic banking, this study focuses on credit risk.

5.3 Theoretical Literature Review

5.3.1 Agency Problem

According to Eisenhardt (1989), the risk-sharing literature extended agency theory by including the agency problem that takes place between parties who have different goals and divisions of labour. Specifically, an agency theory situation can be described as the presence of an agency relationship among various parties, in which one party (the principal) delegates work to another (the agent) who performs the work. Agency theory tries to describe this relationship in terms of contracts between parties (Jensen and Meckling, 1976). Furthermore, the theory highlights two main problems that can occur in an agency relationship. The first issue that may arise is when there is a conflict in goals between the principal and agent and the high costs of monitoring the agent's actions to verify that they are in line with their best interests. The second problem may arise as a result of risk-sharing when the principal and agent have different attitudes toward risk (Eisenhardt, 1989). As a

result of having different risk preferences, the principal and agent may prefer different actions. Therefore, an agency problem may appear in contracts between banks and other stakeholders.

As previously discussed in Section 4.3.1, Islamic banks face the principal-agent problem. Borrowers have more information about their projects than banks. Therefore, an asymmetric problem arises between banks and borrowers. In such a situation, the bank cannot identify a good borrower (low-risk default) from a bad one (high-risk default). This can lead the bank to face the credit risk problem. In Islamic banking, the equity share financing modes are exposed to this agency problem. Using the same example mentioned in Section 4.3.1, Islamic banks have the Mudaraba finance mode in which the bank provides the total funds for the project and the entrepreneur manages the investment in return for a predetermined profit rate. However, the bank bears the total loss in case of the project's failure. Therefore, in such a situation, an entrepreneur may misuse the bank's funds and invest in high-risk projects knowing that the bank will be in the title of the total losses. This exposes the bank to credit risk.

5.3.2 Game Theory and Portfolio Theory

Von Neumann, Morgenstern and Nash are considered the pioneers of game theory. Von Neumann and Morgenstern wrote the basic concepts of game theory in their book "The Theory of Games and Economic Behaviour" in 1944. According to Turocy and Stengel (2001), game theory is defined as a formal study of conflict and cooperation. Its theoretical concepts apply whenever the actions of several agents are correlated. It is the science of strategy that helps decision-making in interactive environments. Hence, it can be seen that it is in line with the agency problem in terms of risk. In such circumstances, there are various different attitudes towards risk for the principal and agent; game theory explains the different preferences of risks. The theory categorises the investors' risk preferences into three types 1) risk-averse, 2) risk lover and 3) risk neutral. Risk-averse investors will select the asset with a lower level of risk when they are given a choice between two assets with equal rates of return. On the other hand, risk lover investors will choose the asset with a higher level of risk when they are given a choice between two assets with equal rates of return. Moreover, risk neutral investors would not mind selecting any investment when they are given a choice between two assets with equal rates of return (El Massah and Al-Sayed, 2013). That said, in the banking industry, the behaviour of individuals changes with their risk preference type

and depending on whether they are investors or depositors. For example, if individuals are risk-averse, and they would like to deposit their money in a bank, they will probably choose conventional banks for a fixed rate of return rather than Islamic banks that share profit-and-losses/risks. On the other hand, if individuals want to make an investment in a project, they would like to minimise their risk and therefore go and apply for finance from Islamic banks that have products that share profit-and-loss/ risks. Therefore, it can be argued that Islamic banks would attract risk lover investors and hence, they may face higher credit risk than their conventional counterparts.

5.4 Review of Empirical Studies

The following is a review of research conducted on credit risk in the banking sector.

Historically, credit risk is considered to be the most important type of risk in banks as it is the main reason for bank failures (Elgari, 2003, p.9; Salem, 2013, p.34). Credit risk is defined as the inability of a borrower to meet contracted obligations. In other words, the borrower's failure to repay a loan back to the lender on the agreed terms and in the agreed time. Failing to pay the creditor will result in a loss, and hence, it becomes a risk for the bank (credit risk). Similar to conventional banks, Islamic banks face credit risk in profit-and-loss sharing modes of financing (Mudaraba and Musharakah). The credit risk would be the failure of the entrepreneur to pay the bank's share of the profit (Siddiqui, 2008, p.685). This type of credit risk is related to the equity sharing where profit-and-losses should be shared with the bank. Therefore, the problem is heightened because of the information asymmetry problem between the lender (bank), as to its future intentions regarding the crystallisation of profit sharing, and the borrower (client/ entrepreneur). The entrepreneur may have additional information about his project's probability of success which is not shared with the bank. Despite the bank's valuation of potential investments, there will always be some additional hidden information that is unknown. In contrast, conventional banks provide loans to borrowers who are obligated to pay them back with interest. Hence, conventional banks do not face this type of profit sharing risk with their borrowers since the relationship between them is based on loans and interests. On the other hand, in the mark-up financing mode (Murabaha), credit risk also may appear as a result of the partner purchasing the bank's equity share of the asset.

Cihak and Hesse (2008) empirically analysed a cross-country of Islamic banks' impact on financial stability. Applying a z-score as a measure of stability to a sample of 77

Islamic banks and 397 commercial banks from 20 countries covering the period of 1993-2004, the authors found that small commercial banks tend to be financially weaker than small Islamic banks. In other words, small Islamic banks are more stable than small commercial banks. On the other hand, large commercial banks show more stability compared to large Islamic banks. In addition, small Islamic banks show more financial stability than large Islamic banks. One explanation of these results is that small Islamic banks will normally invest in low-risk investments while large Islamic banks will deal more with profit-and-loss sharing. The authors also gave another interesting and possible explanation, namely that when Islamic banks grow, it becomes more challenging and complex to monitor their various profit-and-loss contracts, which results in an increased information asymmetry problem (adverse selection and moral hazard). However, this explanation is not in line with other studies that show that a bank's size is negatively related to information asymmetry.

Liao et al. (2009) empirically investigated the effects of agency and information asymmetry issues embedded in structural form credit models on bank credit risk evaluation. Using data from American banks in their study for the period from 2001 to 2005, the authors found deviations in the credit risk evaluation of structural form models from agency ratings related to the agency problem and information asymmetry. The deviations are believed to be caused by five independent factors that should be incorporated into risk credit modelling. These are "management-equity agency effect-free cash flow, debt-equity agency effect, information asymmetry, debt-equity agency effect-reverse wealth transfer and management-equity agency effect cost- efficiency" (Liao et al., 2009, p. 1529).

According to Abedifar et al. (2013), despite the assumption of there being higher credit risk in Islamic banks, because of their financial complexity and limitations, investment and risk management activities, small Islamic banks' credit risk is lower and more stable than conventional banks especially in countries that have a Muslim population. These findings are in line with those of Cihak and Hesse (2008). In a more recent study that is also in line with that of Abedifar et al. (2012), Baele et al. (2014) investigated and compared the default rate on conventional and Islamic loans in Pakistan using monthly data from April 2006 to December 2008. Interestingly, their findings show a significant difference in the Islamic and conventional default rate. The findings indicate that Islamic banks have a lower default rate than conventional banks by almost the half. The authors explained that these findings could be as a result of the influence of religion on people. For example, in Islam, people should be honest and fulfil all of their commitments. Therefore, by applying the

teachings of Islam, people will fulfil their obligations to others. In fact, people, specifically Muslims, use Islamic banking services as an alternative to conventional banks because they believe that these banks adhere to Islamic principles. They fear disobeying Islamic Shariaa. They want to make sure that they follow God's commands. However, although Islamic banks claim that they adhere to Islamic Shariaa, this cannot be totally guaranteed. This is because of the different human interpretations as to what may or may not adhere to the Islamic Shariaa or even to the proper implementation to the Islamic Shariaa. Nevertheless, people still use Islamic banking services mainly because one of the Shariaa committee responsibilities is to make sure that Islamic bank transactions comply with Islamic Shariaa. As a result, for Muslims, they will be convinced that the committee observes and approves only transactions that comply with Islamic Shariaa. Even if the committee was wrong in a matter, the person would not be accountable for it while the Shariaa committee would. Thus, from a religious perspective, it can be viewed that people transfer their guilt to the bank in the case of any breach of Islamic principles. Therefore, this study also agrees that there is an influence of religion that makes credit risk less in Islamic banks than in their counterparts.

According to Al-Wesabi and Ahmed (2013), it is not known how Islamic banks drive credit risk. Hence, they investigated the different factors that affect credit risk in Islamic banks in a sample of 25 Gulf Cooperation Council countries for the period 2006 to 2013 using potential internal and external factors that were previously used in studies of credit risk in conventional banks. They use the natural log of total assets, management efficiency, regulatory capital, the proportion of loan to deposit, risky assets (i.e. real estate assets in GCC countries according to published reports) and loan loss provision as independent internal variables. On the other hand, they also use the gross domestic product, inflation rate, and London inter-banks offered rate as external independent variables. Using non-performing loans as a credit risk proxy, they found that credit risk is negatively related to income. Moreover, consistent with the findings in other countries regarding bank behaviour, leverage and liquidity are also relevant variables for credit risk. In summary, the results illustrate that credit risk in Islamic banks is determined by the same common factors affecting conventional banks such as liquidity, management quality, risky assets in portfolios and GDP. Hence, it is expected that these factors will have the same effect in this study analysis.

Azmat et al. (2014) evaluated the credit risk of Islamic bonds (*Sukuk*) taking into consideration the unique differences in the risk and returns on Islamic bonds and

conventional bonds. Unlike conventional bonds, Islamic bonds do not assure payment of the principal but offer a return based on the issuer's performance. According to the authors, conventional credit risk models took decades to reach their current form. This did not happen to Islamic finance, and hence, it still uses conventional credit risk models in evaluating credit risk which is probably inappropriate as Islamic finance has several unique features. For example, Islamic joint venture bonds have clear links to equity, but conventional banks' risk models are designed to capture the risk of debt. Therefore, using conventional credit risk models may give biased results since they do not recognize the special features of Islamic bonds. The authors focused on credit risk structural models which compare the firm's value with its debts. Using conventional risk models on a sample of 52 Malaysian Islamic bond issuers for the period of 2002 to 2010, the authors found that Islamic bonds have higher credit risk than conventional bonds. One major problem that the authors highlight is that conventional credit risk models focus on the issuer's ability to return the principal. It does not take into consideration any additional positive returns that Islamic bonds may generate. In other words, when Islamic bonds are evaluated by applying the conventional credit risk models, they are mispriced because of their unique features which are ignored and not captured. Hence, assessing Islamic bonds like equity investments rather than debt investments would probably give better results than evaluating them as conventional bonds.

Another study by Saeed and Izzeldin (2014) examined the relationship between efficiency and default risk in Islamic banks and conventional banks. The Stochastic Frontier Approach and distance to default (Merton's model) were used to measure efficiency and default risk respectively and a VAR approach was applied to model and to quantify the dynamic interaction between the risk and effectiveness of Islamic and conventional banks from a sample containing Gulf Cooperation Countries (GCC) and three non-GCC countries over the period 2002–2010. Their findings show that conventional banks in the GCC have a positive relationship between profit efficiency and default in which a decrease in default risk is associated with lower efficiency levels. Moreover, with the single exception of Islamic banks, profit efficiency to default risk causality was found to be inversely related. Moreover, unlike for conventional banks, Islamic banks did not show any trade-off between efficiency and risk suggesting that this is a possible early warning of Islamic banks' instability. The absence can be attributed to the preference of investment in Islamic banks using investment accounts based on profit sharing rather than debt which are held by conventional banks.

Kabir et al. (2015) used both market-based, Merton's distance-to-default (DD) model, and accounting-based, Z-score and nonperforming loan (NPL) ratio, credit measures to evaluate and compare credit risk in a sample of 13 Islamic and 156 commercial banks across 12 countries over the period 2000 to 2012. They found different results when using the accounting and market-based measures. When applying the accounting based credit risk measures, Islamic banks showed higher credit risk than their counterparts. Conversely, Islamic banks showed a lower credit risk than commercial banks once market-based measures were implemented. This finding is in line with a study by Abdul-Majid et al. (2011) in which they find that commercial banks with an Islamic finance window in Malaysia have lower credit risk than banks without an Islamic financing window. Therefore, selecting the way to measure credit risk is vital to compute the level of credit risk. Hence, both policy makers and regulators are advised to employ both sets of measures in both Islamic and commercial systems to compute credit risk.

Another study by Misman et al. (2015) examined the determinants of credit risk in Malaysian Islamic banks. Covering the period from 1995 to 2013, the authors used yearly bank data to investigate empirical evidence on credit risk determinants in Malaysian Islamic banks. Their results show that there are few bank-specific variables which significantly influence credit risk. For instance, in the case of any drop in the quality of financing, the banks tend to allocate higher loss provisions and thus an increase in the credit risk level. Another recent study by Haryono et al. (2016) investigated the factors that affect credit risk in Indonesian Islamic banks. Covering the period from 2002 to 2014, and using a sample of fully fledged Islamic banks and Islamic business units (windows) in conventional banks, the authors found that non-performing finance (credit risk) is affected strongly by the GDP growth rate and unemployment rate. GDP growth showed a negative relationship with credit risk which indicates that in the case of an increase in GDP growth, there will be a decrease in credit risk rates. According to the authors, the result is consistent with previous research done on GDP growth and credit risk (i.e. Bikker and Hu, 2001; Salas and Saurina, 2002; Jimenez and Saurina, 2006; Das and Ghosh, 2007; Boudriga et al., 2009; Thiagarajan et al., 2011; Castro, 2012). One possible explanation is that an increase in the GDP growth rate indicates an increase in the standard of living of people which results in lowering their default rate on loan payments. On the other hand, based on the life-cycle theory, it is expected that the unemployment rate shows a positive relationship with credit risk. However, the results contradict this assumption and show a negative relationship with credit risk.

Furthermore, a bank's diversification (bank-specific variable) shows a positive relationship with credit risk although its direction is not as predicted by life-cycle theory.

On the other hand, there are studies which try to empirically investigate the relationship between credit risk and information asymmetry in the banking sector. For example, Vallascas and Keasey (2013) analysed the effect of information asymmetry on the default risk of conventional banks operating in Europe. Their sample includes 175 commercial banks and bank holding companies selected from 17 European countries covering the period from 1993 to 2011. The authors find a positive relationship between information asymmetry and default risk. This indicates that a higher information asymmetry level increases a bank's default risk. This finding is in line with previous studies on the relationship between information asymmetry and default risk.

In recent studies, the effect of the financial crisis on Islamic credit risk has been investigated. For instance, Bourkhis and Nabi (2013) investigated the effect of the financial crisis on the soundness of Islamic banks and conventional banks. After applying the Z-score as a measure of a bank's stability, and using a sample of 34 Islamic Banks and 34 conventional banks from 16 countries, the authors' regression findings showed that there are no significant differences between Islamic and conventional banks regarding the effect of the financial crisis on banking soundness.

Another study by Ouerghi (2014) used the equality mean test to investigate and compare the performance of Islamic and conventional banks during the global crisis (2007-2008) and after the crisis (2009-2010) in terms of profitability, liquidity, efficiency, capital adequacy and leverage. The author uses Z-scores to study the stability of both systems during the financial crisis period. The study results showed that Islamic banks were less profitable, less efficient and more disposed to credit risk than conventional banks during and post-crisis period. Small banks also were shown to be better managed than large banks. Furthermore, in line with a study by Cihak and Hesse (2008), the results indicate that Islamic banks are less financially stable (more credit risk) than conventional banks and large Islamic banks perform better than large conventional banks.

In the same context, Ferhi and Chkoundali (2015) investigated and compared credit risk and the efficiency of Islamic and conventional banks in 28 countries during the financial crisis. By applying the generalised method of moments (GMM) on a sample of 99 Islamic banks and 110 conventional banks covering the period 1999-2010, the authors measured the

relationship of credit risk and capital efficiency between the two banking systems. Their findings show that credit risk in conventional banks is higher than that of the Islamic ones. Nevertheless, the authors did not deny the impact of the financial crisis on Islamic banks as they found no differences in credit risk between the two banking systems in the year 2010.

In a recent study, Trad et al. (2017) examined the stability of Islamic and conventional banks during the financial crisis and whether Islamic banks are an alternative to conventional banks. The authors selected a sample of 77 Islamic banks and 101 conventional banks from 13 countries covering the period 2006–2013. They use return on asset (ROA) and return on equity (ROE) as profitability measures. For insolvency risk, they use Z-scores. Their GMM regression results showed that after the financial crisis, Islamic banks remained more stable and more profitable than conventional banks. Moreover, size shows a negative relationship with stability for Islamic banks.

In summary, this section highlighted some studies of risk in the Islamic banking literature. Risk exists in Islamic banking in many forms. Different studies highlighted this issue by applying different approaches to measure risk in Islamic banks and compare it with commercial banks. It can be noticed that the type of data used will affect the result of credit risk measure (i.e. market-based or accounting based). Previous studies show mixed findings of whether Islamic banks have higher or lower credit risk compared to commercial banks. This is because of the unique nature of Islamic banking and the different approaches used for measuring credit risk. However, the risk is important to an investor's decision-making process. An incorrect evaluation of risk may result in significant effects including "mispricing, bubbles and inefficient distribution of financials resources" (Azmat et al., 2014, p.131). Identifying risk and trying to manage it helps investors to minimize its effects on their decisions. Therefore, it is necessary to measure risk and try to minimize and control it since it cannot be eliminated. Moreover, there is a limited number of studies on the effect of the financial crisis on credit risk in Islamic banks compared to conventional banks. This chapter aims to add to the Islamic banking literature by empirically investigating and comparing credit risk in Islamic and conventional banks for the pre-crisis, crisis, post-crisis and the full sample study periods. This study uses only publicly listed banks around the world with more recent and updated data (i.e. up to the year 2015). It aims to investigate the consistency of the results for the four periods based on the proposed argument. Table 5.3 shows a summary of credit risk prior studies.

Table 5. 3A summary of credit risk prior studies.

Author (s)	Country (ies)	Period	Data Type	Research Focus	Methodology	Main Finding
Abdul-Majid et al (2010)	10 countries	1996-2002	Yearly bank-level accounting data	Returns to scale and efficiency	Parametric output distance function	Islamic banks are found to have moderately higher returns to scale than conventional banks but appear less efficient due to *Sharia* compliance. Country effects have a significant impact on efficiency difference.
Abdul-Majid et al. (2011 a,b)	Malaysia	1995-2007	Bank level data	Efficiency and productivity	Stochastic Frontier Analysis	Islamic banks and Islamic window banks are less cost efficient than their conventional counterparts.
Abedifar et al (2013)	24 OIC member countries	1999-2009	Yearly bank-level accounting data	Credit risk, insolvency risk, interest rate risk and possibility of extracting religious rent	Regression-random effects	Islamic banks that are small, leveraged and based in countries with predominantly Muslim populations have lower credit risk than conventional banks. Small Islamic banks appear more stable than similar sized conventional banks. During the recent crisis, however, large Islamic exhibit lower stability than large conventional banks. Implicit interest income and expense, as well as credit risk of Islamic banks are less responsive to domestic interest rates. Islamic banks do not seem to charge special rents to their clients for offering *Sharia* compliant financial products.

Author (s)	Country (ies)	Period	Data Type	Research Focus	Methodology	Main Finding
Al-Jarrah and Molyneux (2005)	Bahrain, Egypt, Jordan and Saudi Arabia	1992-2000	Yearly bank-level accounting data	Cost and profit efficiency	Stochastic Frontier Analysis	Islamic banks are found to be the most cost and profit efficient banks compared to conventional commercial and investment banks.
Al-Wesabi and Ahmed (2013)	Gulf Cooperation Council	2006-2013	Yearly bank-level accounting data	Factors that influence credit risk	Regression	Credit risk is negatively related to income. Also, leverage and liquidity are relevant to credit risk.
Azmat et al. (2014)	Malaysia	2002-2010	Bank-level accounting and market data	Credit risk of Islamic bonds	Conventional models (Merton, first passage, and Credit Grades	Islamic bonds have higher credit risk than conventional bonds.
Bader et al. (2008)	21 OIC countries	1995-2005	Yearly bank-level accounting data	Cost, revenue and profit efficiency	Data Evolvement Analysis	No significant difference between cost, revenue and profit efficiency of conventional versus Islamic banks. Note this study uses the same sample as Mohamed et al (2008).
Baele, Farooq and Ongena (2014)	Pakistan	2006:04-2008:12	150,000 Monthly business loans	Loan default rate	Hazard function	Default rate of Islamic loans is less than half the default rate of conventional loans. Islamic loans are less likely to default during Ramadan.

Author (s)	Country (ies)	Period	Data Type	Research Focus	Methodology	Main Finding
Bashir (1999)	Sudan	1979-1993	Yearly bank-level accounting data	Asset size and bank performance	Regression-OLS	Larger banks are more profitable yet have higher leverage.
Beck, Demirguc-Kunt and Merrouche (2013)	141 countries (including 22 OIC member countries)	1995-2007	Yearly bank-level accounting data	Efficiency, asset quality, stability and business orientation	Regression-OLS Fixed effects, Robust	Few significant differences are found between Islamic and conventional banks.
Bourkhis and Nabi (2013)	16 Countries	1998-2009	Yearly accounting data	The financial crisis effect on the soundness of Islamic banks.	Random-effects (GLS regression)	There are no significant differences between Islamic and conventional banks regarding the effect of the financial crisis on the banking soundness.
Cihak and Hesse (2008)	20 OIC member countries	1993-2004	Yearly bank-level accounting data	Insolvency risk	Regression-OLS and Robust	Small Islamic banks are more stable than small conventional banks; however, large Islamic banks are less stable than their conventional counterparts.
El-Gamal and Inanoglu (2002)	Turkey	1990-2000	Yearly bank-level accounting data	Production technology	Stochastic Frontier Analysis	Islamic banks have a similar production technology to conventional commercial banks.

Author (s)	Country (ies)	Period	Data Type	Research Focus	Methodology	Main Finding
Ferhi and Chkoundali (2015)	28 countries	1999-2010	Yearly accounting data	Credit risk and the efficiency of the Islamic and conventional banks	Generalized method of moments (GMM)	Most of conventional banks have a higher credit risk than the Islamic ones.
Haryono et al. (2016)	Indonesia	2002-2014	Yearly bank data	Factors that affect credit risk in Indonesian Islamic banks.	Regression - Arellano-Bond GMM	Credit risk in negatively related to GDP growth.
Kabir et al. (2015)	12 Countries	2000-2012	Market based and accounting based data	Credit risk in Islamic and conventional banks.	Regression	Islamic banks show higher credit risk than conventional banks when applying accounting based measures. However, they show a lower credit risk when using market-based measures.
Liao et al. (2009)	USA	2001-2005	Yearly bank-level accounting and market data	Information asymmetry and agency problem effects on Credit risk models	Four structural form models assess the credit risk of USA banks	Agency problem and information asymmetry significantly cause deviations in the credit risk evaluation of structural form models from agency ratings.

Author (s)	Country (ies)	Period	Data Type	Research Focus	Methodology	Main Finding
Majid et al (2003)	Malaysia	1993-2000	Yearly bank-level accounting data	Cost efficiency	Stochastic Frontier Analysis	No statistically significant difference in the level of efficiency between Islamic and conventional banks and no evidence to suggest that ownership influence cost efficiency.
Misman et al. (2015)	Malaysia	1995-2013	Yearly bank data	Credit risk	Regression-fixed effect model	Financing quality and capital ratio suggest that any deterioration in financing quality forces the banks to allocate higher loss provisions, and consequently increase the implied credit risk level.
Mohamed et al. (2008)	21 Organization of Islamic Conference (OIC) countries	1990-2005	Yearly bank-level accounting data	Cost and profit efficiency	Stochastic Frontier Analysis	No significant difference between cost and profit efficiency of conventional versus Islamic banks, irrespective of size, age and geographical location. Islamic banks based in the Middle East and Turkey are more cost efficient than their African counterparts.
Ouerghi (2014)	Bahrain, Kuwait, Qatar, Saudi Arabia, UAE and Malaysia	2007-2010	Yearly accounting data	The performance of Islamic and conventional banks during the financial crisis.	Equality mean test and Random-Effect GLS regression	Islamic banks are less profitable, less efficient and more disposed to credit risk than conventional banks during the post-crisis period.

Author (s)	Country (ies)	Period	Data Type	Research Focus	Methodology	Main Finding
Rashwan (2010)	15 countries	2007-2009	Bank level data	Profitability and efficiency over the banking crisis	Multivariate analysis of variance (MANOVA)	Islamic banks are more profitable and efficient than traditional banks for the pre-crisis period but the opposite is the case post-crisis period.
Saeed and Izzeldin (2014)	Bahrain, Bangladesh, Indonesia, Kuwait, Pakistan, Qatar, Saudi Arabia and UAE	2002-2010	Yearly bank-level accounting data	Profit efficiency and default risk	Stochastic Frontier Analysis and distance to default (Merton) model	Profit efficiency is inversely related to default risk for Islamic banks, whereas for conventional banks it is positively linked.
Samad (1999)	Malaysia	1992-1996	Yearly bank-level accounting data	Cost efficiency	Descriptive statistics and ANOVA	Islamic banks are more efficient than their conventional counterparts.
Trad et al. (2017)	MENA	2006-2013	Yearly accounting data	The effects of the global financial crisis on theperformance of both Islamic banks and conventional banks in the MENA region.	Generalized method of moments (GMM)	Islamic banks remain more stable and more profitable than conventional banks after the financial crisis.

Author (s)	Country (ies)	Period	Data Type	Research Focus	Methodology	Main Finding
Vallascas and Keasey (2013)	17 European countries	1993-2011	Yearly accounting and market information	The impact of information asymmetry on bank default risk in Europe	Regression	In the presence of a higher degree of information asymmetry, the default risk of banks increases.

5.5 Hypothesis development

The future is uncertain. Hence, most decisions that involve the future would also involve risk. For example, an investor faces the risk of failure when he decides to invest in a project. Therefore, evaluating and having an investment risk assessment would strengthen the investor's decision capability (i.e. if the investor should proceed with a certain investment or not). Similar to other industries, banks in the banking sector face risks. Like their conventional counterparts, Islamic banks are subject to market risk, credit risk and operational risk. This study investigates and compares credit risk in the Islamic and conventional banking systems. According to agency theory, attitudes towards risks may differ between the principal and agent (Eisenhardt, 1989). In fact, one of the main fundamental differences in the Islamic banking (finance) model that it is based on profit-and-loss/risk sharing. Unlike conventional banks, Islamic banks provide products that are share profit-and-loss (i.e. Musharakah and Mudarabah) and comply with Islamic Shariaa. Therefore, according to the agency theory, Islamic banks may face more credit risk than conventional banks because of their products' nature and because they share risk with their stakeholders. Moreover, game theory indicates that there are different preferences for an individual's investment risk (i.e. risk-averse, risk lover, and risk-neutral). Therefore, Islamic banks may attract risk lover creditors (investors) because of the nature of some products which share risk, where high-risk investors (entrepreneurs) will reduce the total risk by sharing it with banks. On the other hand, entrepreneurs in conventional banks will bear the total risk of paying the loan and interest regardless of the success or failure of the project. Hence, risk lover entrepreneurs would choose Islamic banks for financing to reduce the total project risk by sharing it with the bank. Nevertheless, if the project succeeds and makes profits, the entrepreneur would have a lower return as the project's profit is shared with the Islamic bank upon a pre-agreed percentage.

Moreover, conventional non-profit-and-loss sharing financial products are considered less risky for the bank where the borrower is in the title of the full risk. Therefore, it is suggested that Islamic banks will face high credit risk compared to conventional banks.

Nevertheless, there are some reasons that suggest that Islamic banks would have lower credit risk compared to conventional banks. In fact, the nature of some of the Islamic bank's products (i.e. Musharaka and Mudaraba) support this suggestion. For example, Čihák and Hesse (2008) state "Islamic banks are able to pass through a negative shock on the asset

side (e.g., a Musharaka loss) to the investment depositors (a Mudaraba arrangement). The risk-sharing arrangements on the deposit side provide another layer of protection to the bank, in addition to its book capital." Islamic banks act as agents when they take deposits and as the principal when they finance through profit-and-loss sharing contracts. However, Islamic banks do not give fixed rates of return to their depositors, which reflects their management which does not finance risky projects (Bashir, 1999). Moreover, because Islamic banks share risk with their investors (depositors), their depositors will monitor their bank's management, and consequently, the bank will monitor its entrepreneurs. Such monitoring processes may be costly but would reduce the credit risk. Moreover, despite Islamic banks utilising the profit-and-loss/risk-sharing model, the majority of their financing transactions are debt based products that comply with Islamic Shariaa, for example, Murabaha. One of the reasons for customers wanting to deal with Islamic banks is religion as they operate according to Islamic Shariaa. Thus, principles such as trust and honesty are considered to exist between the bank and customers. These reasons suggest that Islamic banks would face similar or even lower credit risk than conventional banks. Therefore, the study hypotheses are:

H_1: Islamic banks have significantly lower credit risk than conventional banks for the pre-crisis period (2002-2006)

H_2: Islamic banks have significantly lower credit risk than conventional banks for the post-crisis period (2010-2015)

H_3: Islamic banks have significantly lower credit risk than conventional banks for the full study sample period (2002-2015).

As previously discussed in Section 1.3, during 2007-2008, the global financial crisis hit the global economy. Banks as financial intermediaries play a major role in the financial system and economy of the world (Mileris, 2015). The excessive lending of banks was among the primary reasons for the financial crisis. Banks provided loans to individuals that had high-risk defaults for high interest rates aiming to generate high returns. However, when these people failed to repay the loans taken with interest, banks faced a credit risk. Therefore, it is important for banks to have good quality borrowers (low-risk); this can be done by applying a proper credit risk assessment on applicants. Banks face a severe credit risk when a small number of important borrowers default on their loan repayments. As a result, banks will have big losses that might lead them to insolvency (Mileris, 2015). Consequently, their profitability may be decreased due to the uncollected amounts owed by their clients.

Therefore, during the financial crisis period, banks faced high credit risk problems. Due to the different nature of credit risk in Islamic and conventional banks the following hypothesis can be postulated:

H_4: Islamic banks have significantly lower credit risk than conventional banks for the crisis period (2007-2009).

5.6 Data and Methodology

This section discusses the data sample used in the research and the different dependant and independent variables used in the regression analysis. Table 5.4 presents a summary of the banks included in the study. The sample has unbalanced panel data and includes publicly listed banks from thirteen countries from Asia, Europe and Africa over the period between 2002 and 2015. The data are retrieved from the same countries that are used in the information asymmetry chapter. However, the number of Islamic and conventional banks may vary in some countries. This variation is attributed to the availability of annual data. The study uses annual data for the period between 2002 and 2015. Moreover, all variables are retrieved using the Datastream data base (i.e. size, ROA, loan to asset ratio, the cost to income ratio, asset growth, gross domestic product (GDP) and inflation). The sample includes a total of 225 Islamic and conventional banks.

Table 5.4 A summary of numbers of publicly listed banks in each country in the sample

Country	Islamic Banks	Conventional Banks
BAHRAIN	**6**	**10**
EGYPT	**2**	**9**
INDONISIA	**1**	**37**
JORDAN	**2**	**11**
KSA	**4**	**7**
KUWAIT	**6**	**10**
MALAYSIA	**1**	**9**
OMAN	**1**	**7**
PAKISTAN	**1**	**13**
QATAR	**2**	**5**
TURKEY	**2**	**14**
UAE	**6**	**17**
UK	**1**	**41**
TOTAL	**35**	**190**

According to Kabir et al. (2015), several credit risk measurement techniques have been developed in the last two decades. They state that these measurements are mainly categorised into three broad categories: accounting based, market-based, and external rating agencies (Altman and Saunders, 1997). Credit risk Z-score and non-performing loans (NPL) analysis are accounting based measures that are regularly used in the literature (Kabir et al., 2015; Rajihi and Hassairi, 2013). However, the market-based credit risk measures are considered more sophisticated risk measurement methods. These include Merton's probability of default, value at risk (VaR), and credit metrics measures (Kabir et al., 2015). Moreover, external rating agencies such as Standard and Poor's and Moody's are also used as credit risk measures. They rate the creditworthiness of issuers of debt obligations (i.e. countries and companies) and of debt instruments. Higher credit rating results in lower borrowing costs because the borrower is believed to carry less risk of default. This study uses Z-score and non-performing loans (NPL) analysis as accounting-based measures of credit risk in Islamic and conventional banks. These measures are discussed in the following sections.

5.6.1 Dependent Variables

This chapter uses two main dependent variables as proxies of credit risk, namely: Z-score and non-performing loan (NPL). The following subsections explain these variables.

(i)The Z-score measure

The Z-score is considered to be a popular insolvency and credit risk accounting measure (e.g. Boyd and Runkle, 1993; Čihák, 2007; Laeven and Levine, 2009; Beck, 2013). This is because the Z-score is inversely related to the probability of a bank's insolvency, i.e., the probability that the bank's assets value becomes lower than its debt value (Čihák, 2007, p. 9; Čihák and Hesse, 2010, p. 99). Moreover, a Z-score can be applied as a measure of insolvency and credit risk on different groups of institutions, which may differ in ownership or method of operation, to compare their financial stability (Čihák, 2007, p.9). For example, Hesse and Čihák (2007) analyse the financial stability of commercial, cooperative, and savings banks by applying the Z-score.

The Z-score can be defined as the probability of a bank failure (Berger et al., 2008, p. 11). It represents the bank's insolvency risk (credit risk), where the bank's losses exceed its equity forcing it to default (Laeven and Levine, 2009, p. 262).

The Z-score can be computed by applying the following formula:

Z-score= (ROA+ E/A) / SD of ROA **(11)**

Where ROA= return on assets (i.e. net profit divided by total assets), E/A= Total equity divided by total assets, and SD of ROA = Standard deviation of ROA.

As previously mentioned, the Z-score is inversely related to the probability of a bank's insolvency and credit risk (the probability of default). Roy (1952) explains that it measures the distance from insolvency (as cited in Laeven and Levine, 2009, p. 262). Hence, a higher Z-score implies a lower probability of insolvency. In other words, a higher Z-score indicates that the bank is more stable (Čihák and Hesse, 2010, p. 99; Laeven and Levine, 2009, p. 262). Hence, the Z-score "…*increases with higher profitability and capitalization levels, and decreases with unstable earnings reflected by a higher standard deviation of return on assets*" (Berger et al., 2008, p. 8).

Despite the popularity of the Z-score as a measure of credit risk and insolvency, it still has its drawbacks. For example, its computation is purely based on accounting data and the quality of data may differ from one country to another based on their accounting regulations (Beck et al., 2009). Thus, the accounting reports would be only as good as the accounting and auditing framework. For example, Z-scores can give an over-estimated positive assessment of a firm's stability if the firm manipulates its reported data. Moreover, accounting data is historical data which might not totally capture a bank's ongoing condition which may result in an incorrect measure of credit risk.

(ii) Non-performing loan (NPL)

The non-performing loan (NPL) ratio is another measure of credit risk that is used in the literature (Kabir et al., 2015, p.335). It is difficult to be manipulated by management since it is a direct measurement of bank solvency. However, Kabir et al. (2015) highlighted a drawback of the non-performing loan ratio, namely that different countries may have different criteria in classifying NPL. Nevertheless, several studies have used it as a proxy for credit risk in banking (e.g. Berger and DeYoung, 1997; Ahmad and Ariff, 2007; Das and Ghosh, 2007; Jiménez et al., 2010; Fiordelisi et al., 2011; Kabir et al., 2015). The non-performing loan (NPL) ratio is computed by dividing the non-performing loan by the total

loan. A high non-performing loan ratio indicates an increased probability of bank insolvency.

5.6.2 Independent Variables

This chapter uses bank specific and country specific variables as independent variables in the regression equation as follows:

A) Bank-specific Variables

(i) Bank Size

According to Abedifar et al. (2012), large banks might be riskier than small banks because "they may try and exploit Too-Big-To-Fail safety net subsidies." However, previous studies have identified that bank size has a significant impact on different risk attributes in which larger banks can spread risk through their branch network, experience and skill (e.g. Čihák and Hesse, 2010; Abedifar et al., 2013; Bourkhis and Nabi, 2013; Kabir et al., 2015). Therefore, one can expect to have a negative relation between credit risk and the size of a bank. This chapter uses the logarithm of a total asset as a proxy for the size of a bank.

(ii) Return on Asset (ROA)

Return-on-asset (ROA) is a profitability ratio that measures banks' performance. It is defined as the ratio of net income to the total asset. Return-on-asset reflects 'the bank's ability to generate income from non-traditional services' (Bashir, 2003, p.39). Furthermore, return-on-asset ratio shows the bank's efficiency in managing its asset to produce a profit during a specific period. A higher ratio indicates a better management ability on bank's assets to produce a profit (Bashir, 2003, p.39; Siddiqui, 2008, p.690). Therefore, it is expected that return on asset will have an inverse relationship with credit risk where an increase in ROA suggests a better management on asset to produce a profit.

(iii) Cost Inefficiency (Cost to Income Ratio)

Kabir et al. (2015), Abedifar et al. (2012) and Kwan and Eisenbeis (1997) showed that inefficiency (cost to income ratio) increases bank risk. Abedifar et al. (2012) further explain that under the moral hazard situation, banks that are poorly managed have greater incentives to take a higher risk where their total operating cost exceeds their total operating income. In other words, there is a positive relation between inefficiency and credit risk where a higher ratio indicates that management is inefficient in monitoring and capturing the risk. Accordingly, one can expect to have a positive relation between credit risk and cost inefficiency. The cost to income ratio is computed by dividing the total operating cost by the total operating income.

(iv) Loan to Asset Ratio

Loan to asset ratio is another determinant of credit risk that is used in the regression equation by Kabir et al. (2015) and Bourkhis and Nabi (2013). The ratio measures the total loans outstanding as a percentage of total assets. Kabir et al. (2015) and Bourkhis and Nabi (2013) find that the loan to asset ratio is negatively related to credit risk. In fact, Kabir et al. (2015) show that Z-score and non-performing loans (NPL) are positively and negatively related to the loan to asset ratio respectively suggesting that an increase in the loan to asset ratio lowers credit risk. Having a higher ratio indicates a greater risk for a bank to defaults. Therefore, it is expected that the loan to asset ratio will have a negative relation with credit risk.

(v) Asset Growth

The empirical literature shows a negative relationship between bank credit risk and asset growth (i.e. Cyree et al., 2000; Agung et al., 2001). This suggests that high credit risk would be reflected in low asset growth (quality). Therefore, this study expects that there is a negative relationship between credit risk measures and asset growth.

B) Macroeconomic Variables

This chapter uses macroeconomic variables to control for cross country variation in gross domestic product (GDP) growth and change in inflation. According to Kabir et al. (2015), the GDP growth rate and inflation rate should have a negative and positive relationship with credit risk, respectively. Furthermore, high completion in the market would increase credit risk while good country governance would lower it.

In addition to the above key variables of interest, and to identify the impact of bank type on the credit risk measures, the regression includes a dummy variable that takes the value of 1 if the bank in question is an Islamic bank, and 0 otherwise (i.e., if it is a conventional bank). For example, if Islamic banks are relatively riskier than conventional banks, the dummy variable would have a negative sign in the regression explaining the Z-score. Year and country dummies are also included in the regression

In general, the OLS regression determines the linear relationship between two or more variables. However, the study uses a sample that includes banks from different countries for different years. Therefore, the random effect regression allows generalising the interpretation of the result beyond the sample used in the model. On the other hand, the OLS robust regression aims to mitigate the effect of outliers and heteroscedasticity if existed. The study uses the pooled ordinary least square (OLS), the random effect regression, and the OLS robust regressions, the study to regress credit risk measures with all other independent variables by applying the following regression equation:

$$\text{Credit risk } it = \beta_0 + \beta_1 (\text{Islamic Banks}) + \beta_2 (\text{Size it}) + \beta_3 (\text{ROA it}) + \beta_4 (\text{Cost to income ratio it}) + \beta_5 (\text{Loan to Asset}) + \beta_6 (\text{Asset Growth it}) + \beta_7 (\text{Inflation it}) + \beta_8 (\text{GDP Growth it}) + \beta_9 (\text{Years Dummies}) + \beta_{10} (\text{Countries Dummies}) + \epsilon \text{ it} \quad \textbf{(12)}$$

Where,

Credit risk= credit risk proxy measure defined as the logarithm of the Z-score and logarithm of NPL of bank i at time t

Islamic Banks = dummy variable equal to 1 if it is an Islamic bank, and 0 if otherwise

Size= logarithm of total asset of bank i at time t

ROA= logarithm of return on asset of bank at time t

Cost to income ratio= logarithm of total cost to total income ratio of bank i at time t

Loan to asset= the logarithm of total loan to total asset ratio of bank i at time t

Asset growth = the logarithm of asset growth of bank i at time t

GDP Growth= the logarithm of GDP growth for country i at time t

Inflation =logarithm of inflation for country i at time t

Year Dummies = the years used in the sample

Country Dummies = the countries used in the sample

Є= Error

Table 5.5 shows the expected relationship signs between credit risk proxies and other independent variables of equation 12.

Table 5. 5 the expected relationship signs between credit proxies and other independent variables of the equation 12

Variable	Expected effect on credit risk	Expected sign with Z-score	Expected sign with NPL
Size	Negative	+	-
ROA	Negative	+	-
Cost inefficiency	Positive	-	+
Loan to Total Asset ratio	Negative	+	-
Asset Growth	Negative	+	-
GDP Growth	Negative	+	-
Inflation	Positive	-	+

5.7 Empirical results

5.7.1 Descriptive statistics

The sample selected covers the period from 2002 to 2015. Nevertheless, the study compares the results of four different periods: the full period (i.e. 2002-2015), pre-crisis period (i.e.2002-2006), crisis period (i.e. 2007-2009), and post-crisis period (i.e. 2010-2015). As a starting point, the study measures credit risk for Islamic and conventional banks. A group mean test is conducted to all variables included in the regression to show any significant differences between Islamic and conventional banks.

Table 5.6 presents the descriptive statistics of the credit risk variable (Z-score and NPL), along with other variables included in the regression (i.e. Size, Loan to Asset ratio, Cost to income ratio, Asset Growth, GDP growth, and Inflation change) for the period from 2002-2015. For each variable, the table shows the number of observations, mean value, standard deviation, minimum value, the maximum value and the t-test difference. Interestingly, the average credit risk variables (i.e. Z-score and NPL) do not show any significant differences between Islamic and conventional banks at any level for the full study period. Nevertheless, the comparison of Z-score means shows that Islamic banks have slightly higher Z-scores than conventional banks. On the other hand, the average size of Islamic and conventional banks shows a significant difference at the 1% level, where conventional banks show a higher mean value compared to Islamic banks, suggesting that the average size of conventional banks is greater than that of their conventional counterparts. The average higher cost to income ratio in conventional banks suggests a higher cost inefficiency, however, the difference is not statically significant. In addition, ROA in conventional banks is significantly higher than Islamic banks at the 1% level. Both means of loan to total asset ratio and asset growth are higher in Islamic banks and statically significant at the 1% level.

Overall, there is no significant differences in the mean group value of credit risk measures between the Islamic and conventional banks. However, the Z-score of conventional banks is higher than for Islamic banks. Moreover, NPL is almost the same in both types of banks. Nevertheless, it cannot be concluded that credit risk is significantly higher or lower for either type of bank based on the descriptive statistics only. Therefore, further regression analysis is conducted in the following sections to have a clearer picture about credit risk in Islamic and conventional banks.

Table 5. 6 Descriptive Statistics for the Full Sample Period (2002-2015)

	All Banks					Islamic					Conventional					
Variable	**Obs**	**Mean**	**Std. Dev.**	**Min**	**Max**	**Obs**	**Mean**	**Std. Dev.**	**Min**	**Max**	**Obs**	**Mean**	**Std. Dev.**	**Min**	**Max**	**T-test diff.**
Credit Risk																
Z-score	1302	-52.6	169.8	-2911.1	805.0	126	-32.33	98.36	-920.32	30.04	1176	-54.72	175.62	-2911.08	805.04	22.39
NPL	1859	-3.4	1.1	-8.0	0.4	263	-3.27	1.33	-7.97	-0.05	1596	-3.37	1.10	-7.88	0.38	0.0993
Bank -specific																
ROA	2070	0.7	1.0	-3.9	3.8	226	0.45	1.11	-3.91	2.91	1844	0.70	0.99	-3.91	3.77	-0.257***
Size	2607	16.6	3.6	10.7	27.5	356	15.25	1.61	11.85	22.69	2251	16.83	3.83	10.71	27.53	-1.579***
Loan to Total Asset ratio	2133	-2.3	3.7	-15.7	0.2	325	-0.66	1.35	-9.97	0.17	1808	-2.55	3.92	-15.68	0.23	1.886***
Cost to income ratio	2365	1.1	1.2	-4.6	7.8	304	1.05	1.09	-2.40	5.29	2061	1.12	1.24	-4.55	7.75	-0.0652
Asset Growth	2066	-1.9	1.1	-9.6	3.7	290	-1.61	1.18	-6.62	1.82	1776	-1.90	1.13	-9.61	3.65	0.295***
Macroeconomic																
GDP Growth	911	-2.0	1.3	-7.5	2.2	139	-1.67	1.25	-4.72	1.97	772	-2.00	1.33	-7.46	2.22	0.335**
Inflation	2577	2.4	3.7	-5.6	6.1	335	4.06	1.91	-4.98	6.11	2242	2.12	3.79	-5.57	6.11	1.941***

Table 5.7 shows the correlation matrix for the main variables used in the regression. In general, there are no high correlations between the dependent and explanatory variables. In contrast to expectations, size (log total asset) has a positive relation with Z-score. However, it also has a negative relation with NPL. Moreover, the cost to income ratio shows a positive relation with credit risk measures as expected. Loan to asset ratio shows a positive relation with Z-score as expected. However, it also shows a positive relation with NPL which is unexpected.

Table 5. 7 The Correlation Matrix

	Z-score	NPL	Size	ROA	Loan to Total Asset ratio	Cost to income ratio	Asset Growth	GDP Growth	Inflation
Z-score	1								
NPL	0.014	1							
Size	-0.251	-0.295	1						
ROA	0.101	-0.102	-0.002	1					
Loan to Total Asset ratio	0.199	0.24	-0.829	0.018	1				
Cost to income ratio	-0.095	0.162	0.002	-0.624	-0.165	1			
Asset Growth	0.006	-0.119	-0.04	0.108	-0.024	-0.021	1		
GDP Growth	0.204	0.032	-0.184	0.280	0.122	0.05	-0.045	1	
Inflation	0.127	0.061	-0.593	0.069	0.860	-0.222	-0.049	0.158	1

5.7.2 Regression Results

The ordinary least square (OLS) regression, OLS robust and random effect regression are used to compare the level of credit risk between Islamic and conventional banking systems. Table 5.8, 5.9, 5.10, and 5.11 present the main empirical results for the pre-crisis period (2002-2006), crisis period (2007-2009), post-crisis period (2010-2015) and for the full sample period (2002-2015), respectively. Furthermore, columns (1) - (3) show the results of using the OLS regression, robust regression and the random effect regression, respectively, for Z-score as the dependent variable. Similarly, columns (4) – (6) present the results of applying the OLS regression, robust regression and the random effect regression, respectively, for NPL as the dependent variable. Moreover, all dependent variables in all columns are regressed alongside the bank-specific and independent macroeconomic variables (i.e. Islamic bank dummy, Size, ROA, Loan to Asset ratio, Cost to income ratio, Asset Growth, GDP growth, and Inflation). Country and year dummies are also used in the regressions as control variables. However, these are not included in the tables. The following sub-sections discuss the results of the regression analysis based on different periods.

(i) Regression Results: Pre-Crisis period (2002-2006)

Table 5.8 shows the regression results for the credit risk measures with the bank-specific and macroeconomic variables for the pre-crisis period (2002-2006). Contrary to the study hypothesis, the results show that Islamic banks face higher credit risk. However, the estimated coefficient for the Islamic dummy for both credit risk measures, Z-score and NPL, does not show any significant differences for the pre-crisis period in the OLS and random effect regressions. Therefore, the H_1 hypothesis is rejected. Interestingly, among the bank-specific variables, size (log total asset) shows a significant and negative relationship with the Z-score in the OLS and random effect regressions at the 5% level. This is inconsistent with the literature in which size showed a significant positive relationship with Z-score (e.g. Čihák and Hesse, 2010; Abedifar et al., 2013; Bourkhis and Nabi, 2013; Kabir et al., 2015). One possible explanation may be that when banks are large, they become more complex. Thus, complexity and difficulties in monitoring a bank's transactions may result in additional risk. Nevertheless, unlike in the study by Kabir et al. (2015), ROA shows a positive and significant relationship with NPL in the OLS regression. However, the same variable does not demonstrate any significant relationship with the Z-score. Moreover, the loan to asset ratio shows a significant and negative relationship with NPL for the random effect

regression. However, the other bank-specific and macroeconomic variables do not show any significant relationship with credit risk measures for the same period.

(ii) Regression Results: Crisis period (2007-2009)

Table 5.9 shows the regression results for the credit risk measures with the bank-specific and macroeconomic variables for the financial crisis period (2007-2009). The results from the OLS and random effect regressions show that Islamic banks have Z-score values of -100.361 and -156.549, respectively, which are significantly lower than conventional banks at the 5% and 10% level respectively. The results indicate that Islamic banks had higher credit risk than their counterparts in the crisis period. Moreover, NPL is greater for Islamic banks indicating that they are riskier than conventional banks. However, the NPL relationship is insignificant. Moreover, there is a significant negative relationship between Z-score and loan to asset ratio in the OLS regression model. On the other hand, the cost to income ratio shows a significant and positive relationship with a value of 0.348 in the random effect regression model at the 5% level with NPL. This result is in line with the study expectations.

Table 5. 8 Credit Risk Regression Results for Pre-Crisis Period 2002-2006

VARIABLES	(1) OLS Z-Score	(2) OLS Robust Z-Score	(3) Random Effect Z-Score	(4) OLS NPL	(5) OLS Robust NPL	(6) Random Effect NPL
Islamic Banks	-0.647	-0.647	-0.647	0.189	0.189	-0.042
	(65.771)	(18.062)	(65.771)	(0.376)	(0.413)	(0.598)
Size	-18.136**	-18.136	-18.136**	0.048	0.048	-0.051
	(8.411)	(13.575)	(8.411)	(0.084)	(0.072)	(0.131)
ROA	16.403	16.403	16.403	0.562*	0.562*	-0.211
	(25.035)	(21.974)	(25.035)	(0.315)	(0.300)	(0.217)
Loan to Asset ratio	2.658	2.658	2.658	-0.492	-0.492	-1.355**
	(40.066)	(23.819)	(40.066)	(0.901)	(1.279)	(0.615)
Cost to Income ratio	-4.83	-4.83	-4.83	0.018	0.018	-0.075
	(19.493)	(22.539)	(19.493)	(0.154)	(0.111)	(0.162)
Asset Growth	-4.077	-4.077	-4.077	-0.03	-0.03	-0.08
	(20.939)	(31.518)	(20.939)	(0.165)	(0.169)	(0.055)
GDP Growth	16.466	16.466	16.466	0.194	0.194	0.054
	(19.085)	(13.011)	(19.085)	(0.122)	(0.130)	(0.043)
Inflation	-705.074	-705.074	-705.074	9.174**	9.174	7.753***
	(945.263)	(678.180)	(945.263)	(4.365)	(5.915)	(2.530)
Constant	1040.206	1040.206	1040.206	-56.371**	-56.371*	-46.119***
	(1166.102)	(859.547)	(1166.102)	(24.479)	(33.584)	(14.272)
Observations	46	46	46	70	70	70
R-squared	0.37	0.37		0.304	0.304	
Number of Banks			34			40
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes
Country Dummy	Yes	Yes	Yes	Yes	Yes	Yes

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 5. 9 Credit Risk Regression Results for Crisis Period 2007-2009

	(1)	(2)	(3)	(4)	(5)	(6)
	OLS	OLS Robust	Random Effect	OLS	OLS Robust	Random Effect
VARIABLES	Z-Score	Z-Score	Z-Score	NPL	NPL	NPL
Islamic Banks	-100.361**	-100.361	-156.549***	-0.048	-0.048	-0.014
	(40.790)	(74.834)	(56.026)	(0.326)	(0.245)	(0.425)
Size	-3.243	-3.243	-0.707	0.044	0.044	-0.014
	(8.817)	(6.960)	(11.436)	(0.074)	(0.083)	(0.098)
ROA	0.222	0.222	5.908	-0.012	-0.012	0.021
	(21.254)	(34.036)	(15.028)	(0.229)	(0.181)	(0.142)
Loan to Asset ratio	-65.111**	-65.111*	-26.35	0.333	0.333	0.565
	(28.089)	(36.808)	(29.554)	(0.429)	(0.254)	(0.473)
Cost to Income ratio	-5.275	-5.275	-13.194	-0.002	-0.002	0.348**
	(21.311)	(31.935)	(15.338)	(0.237)	(0.261)	(0.161)
Asset Growth	-13.446	-13.446	-4.014	-0.08	-0.08	0.022
	(10.091)	(9.872)	(5.694)	(0.092)	(0.074)	(0.056)
GDP Growth	35.341***	35.341	5.09	-0.016	-0.016	0.039
	(11.599)	(21.317)	(4.873)	(0.094)	(0.077)	(0.041)
Inflation	330.49	330.49	172.076	-0.158	-0.158	-0.409
	(347.966)	(241.140)	(140.618)	(3.224)	(2.075)	(1.374)
Constant	-1713.065	-1713.065	-929.365	-4.328	-4.328	-1.742
	(1920.068)	(1278.437)	(789.691)	(17.703)	(11.142)	(7.575)
Observations	75	75	75	68	68	68
R-squared	0.452	0.452		0.451	0.451	
Number of Banks			52			44
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes
Country Dummy	Yes	Yes	Yes	Yes	Yes	Yes

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

(iii) Regression Results: Post-Crisis period (2010-2015)

Table 5.10 shows the regression results for the credit risk measures with the bank-specific and macroeconomic variables for the post- crisis period (2010-2015). Similar to the pre-crisis period, the Z-score does not show any significant relationship with Islamic banks suggesting that credit risk in Islamic banks and conventional banks did not differ in this period. However, the NPL measure shows a significant and lower credit risk in Islamic banks than in their counter parts with values of -0.592 and -0.483 for the OLS and random effect regressions at the 5% and 10% level, respectively. This suggests that the credit risk for Islamic banks for this period is less than conventional banks. Size (log total asset) also shows a significant and positive relationship with NPL in the OLS and the random effect regression models with values of 0.178 and 0.165 at the 5% and 10% level, respectively, which is not in line with the literature. GDP growth also shows a negative and significant relationship with NPL in the random effect regression.

(iv) Regression Results: Full sample period (2002-2015)

Table 5.11 shows the regression results for the credit risk measures with the bank-specific and macroeconomic variables for the post-crisis period (2002-2015). Interestingly, the table shows a significance relationship for only one credit risk measure. For instance, the Z-score shows a significant and negative relationship with a value of -36.655 at the 10% level with the Islamic bank dummy, suggesting that Islamic banks have higher credit risk than conventional banks. On the other hand, NPL does not show any significant results with the Islamic bank dummy, which neither confirms nor rejects the Z-score results. Moreover, the Z-score still shows a negative and significant relation with bank size which is not in line with the literature. Inflation also shows a significant and positive relationship with NPL for this period with a value of 1.92 and 1.227 in the OLS and random effect regressions, respectively, at the 5% level.

The different results obtained may be because of the existing sample data which contains missing data, outliers, and non-normality assumptions of OLS estimations in multiple regression that violate the assumptions of OLS estimation in multiple regression (Schumacker et al., 2002, p.13). Hence, the following section uses the OLS robust regression to solve the mentioned issues.

5.7.3 Robustness Check

For each table, column (2) and (3) present the OLS robust regression model for the credit risk measures. The credit risk measures do not show any significant differences between Islamic and conventional banks during the pre-crisis, crisis, post-crisis and full sample periods. This suggests that credit risk does not significantly differ between Islamic banks and conventional banks for the periods in the study. The robustness check rejects all four study hypotheses, and this suggests that there is no significant difference in credit risk between the two banking systems. In addition, the relationship between size and Z-score for the full sample period remains negatively significant with a value of -11.832 at the 5% level. This contradicts the literature indicating that large banks would have more credit risk and supports the suggestion that large banks may exploit Too-Big-To-Fail safety net subsidies. In addition, the GDP growth relationship with Z-score is as expected as there is a positive and significant relation with a value of 20.75 at the 1% level. Inflation also shows a significant and positive relationship with NPL with a value of 1.92 at the 1% level for the full sample period. However, the remaining bank-specific and macroeconomic variables do not show any significant relations with credit risk measures for the full sample period.

Table 5. 10 Credit Risk Regression Results for Post-Crisis Period 2010-2015

	(1)	(2)	(3)	(4)	(5)	(6)
	OLS	OLS Robust	Random Effect	OLS	OLS Robust	Random Effect
VARIABLES	Z-Score	Z-Score	Z-Score	NPL	NPL	NPL
Islamic Banks	-19.575	-19.575	-19.542	-0.592**	-0.592	-0.483*
	(28.783)	(24.767)	(30.042)	(0.273)	(0.361)	(0.292)
Size	-10.966	-10.966	-10.166	0.178**	0.178**	0.165*
	(6.715)	(6.702)	(7.258)	(0.076)	(0.084)	(0.086)
ROA	-26.544	-26.544	-29.173	-0.168	-0.168	-0.31
	(26.011)	(17.769)	(26.943)	(0.274)	(0.259)	(0.251)
Loan to Asset ratio	1.714	1.714	-0.807	-0.115	-0.115	0.03
	(16.206)	(12.405)	(17.831)	(0.582)	(0.940)	(0.556)
Cost to Income ratio	-22.796	-22.796	-24.351	0.161	0.161	0.014
	(20.274)	(17.160)	(20.909)	(0.200)	(0.181)	(0.171)
Asset Growth	2.306	2.306	0.062	0.034	0.034	0.004
	(10.172)	(6.467)	(9.785)	(0.096)	(0.085)	(0.073)
GDP Growth	8.999	8.999	10.396	-0.082	-0.082	-0.156*
	(11.811)	(15.995)	(11.450)	(0.114)	(0.094)	(0.084)
Inflation	106.119	106.119	55.265	3.533	3.533	3.146
	(343.859)	(329.084)	(332.834)	(3.036)	(2.607)	(2.397)
Constant	-379.454	-379.454	-103.286	-25.429	-25.429*	-23.151*
	(1959.940)	(1910.640)	(1900.280)	(17.269)	(14.903)	(13.785)
Observations	116	116	116	115	115	115
R-squared	0.23	0.23		0.499	0.499	
Number of Banks			83			78
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes
Country Dummy	Yes	Yes	Yes	Yes	Yes	Yes

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 5. 11 Credit Risk Regression Results for Full Sample Period 2002-2015

	(1)	(2)	(3)	(4)	(5)	(6)
	OLS	OLS Robust	Random Effect	OLS	OLS Robust	Random Effect
VARIABLES	Z-Score	Z-Score	Z-Score	NPL	NPL	NPL
Islamic Banks	-36.655*	-36.655	-36.655*	-0.153	-0.153	-0.041
	(21.027)	(30.596)	(21.027)	(0.176)	(0.197)	(0.242)
Size	-11.832***	-11.832**	-11.832***	0.067	0.067	0.076
	(4.290)	(4.748)	(4.290)	(0.042)	(0.046)	(0.062)
ROA	-3.77	-3.77	-3.77	-0.04	-0.04	-0.233*
	(12.404)	(11.910)	(12.404)	(0.126)	(0.114)	(0.126)
Loan to Asset ratio	-6.83	-6.83	-6.83	0.000	0.000	-0.174
	(12.220)	(9.171)	(12.220)	(0.280)	(0.308)	(0.260)
Cost to Income ratio	-13.447	-13.447	-13.447	0.04	0.04	0.002
	(10.580)	(11.459)	(10.580)	(0.100)	(0.075)	(0.100)
Asset Growth	-2.342	-2.342	-2.342	-0.062	-0.062	-0.021
	(6.148)	(3.672)	(6.148)	(0.056)	(0.046)	(0.045)
GDP Growth	20.750***	20.750*	20.750***	0.022	0.022	0.008
	(6.843)	(10.683)	(6.843)	(0.059)	(0.054)	(0.043)
Inflation	-81.192	-81.192	-81.192	1.920**	1.920***	1.227**
	(89.718)	(99.848)	(89.718)	(0.803)	(0.640)	(0.598)
Constant	652.56	652.56	652.56	-15.19453***	-15.195***	-11.214***
	(490.937)	(552.608)	(490.937)	(4.401)	(3.681)	(3.308)
Observations	237	237	237	253	253	253
R-squared	0.221	0.221		0.373	0.373	
Number of Banks			116			107
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes
Country Dummy	Yes	Yes	Yes	Yes	Yes	Yes

Standard errors in parentheses*** p<0.01, ** p<0.05, * p<0.1

5.8 Conclusion

This chapter aimed to investigate and compare credit risk in Islamic and conventional banks for the pre-crisis, crisis, post-crisis, and full study sample periods. Using OLS and random effect regressions for the different periods, the results show mixed results. A further robust test was conducted and the results show that there are no significant differences between Islamic and conventional banks in terms of their credit risk for all periods investigated in the study. This suggests that despite the different nature of both banks, their credit risk for the study periods was not different. These findings are in contrast to the four study hypotheses which suggest that Islamic banks have significantly lower credit risk than conventional banks for the various periods used in the study. In other words, both Islamic and conventional banks had the same levels of credit risk during the various sample periods. Thus, all four proposed hypotheses are rejected. Table 5.12 shows a summary of main findings for the robust regression results. These results contradict some of the findings of Kabir et al. (2015) as they found that Z-score is significantly negatively related to Islamic banks. They also found that NPL ratio presents similar results to the Z-score suggesting that when using theses proxies as credit risk variables, Islamic banks show a higher credit risk than conventional banks. Nevertheless, the results are in line with those in a study by Kabir et al. (2015) in which they found that credit risk had no interaction with Islamic banks during the financial crisis period. The found that at the early stages, there was a limited number of Islamic bank practitioners and regulators. The insignificant differences in credit risk for Islamic and conventional banks can be attributed to the increased awareness of risk management in Islamic banks. The increasing history period of applying such a system has increased the ability to understand it more and accordingly increase in managerial skills and investments strategy. According to Moody's, the improvement in risk management and asset quality has reduced the cost of risk in Islamic banks. Moreover, the diversification of Islamic banks' investment towards other sectors other than real estate and lending has helped to spread risk and thus reduce it ("Moody's: GCC Islamic Banks More Profitable Than Conventional Peers For Second Year Running In 2017"). On the other hand, some of the control variables used in the regression show a significant impact on credit risk for the full period. In contrast to what was found by Kabir et al. (2015), size (i.e. log total assets) is strongly negatively correlated to Z-score. This is inconsistent with the hypothesis as well as previous findings, suggesting that larger banks would face higher credit risk. A possible reason behind this is that larger banks are more complex and it would be costly and difficult to monitor all of their activities. However, unlike in Kabir et al. (2015), this study does not show any significant

relation between size and NPL ratio. Moreover, loan to asset ratio did not show any significant correlation with credit risk measures for the full period of study. Moreover, GDP growth shows a positive impact on Z-score. On the other hand, inflation shows a strong and positive relationship with NPL ratio.

Table 5. 12 A summary of the main findings of the robust regression results

Research Question	Hypothesis	Accept/Reject	Main Findings
Did Islamic banks have significantly lower credit risk than conventional banks?	H_1: Islamic banks have significantly lower credit risk than conventional banks for the pre-crisis period (2002-2006)	Reject	Credit risk measures (i.e.-score and NPL) do not show any significant differences between Islamic and conventional banks.
			ROA shows a significant and positive relationship with NPL at 10% level.
	H2: Islamic banks have significantly lower credit risk than conventional banks for the post-crisis period (2010-2015)	Reject	Credit risk measures (i.e.-score and NPL) do not show any significant differences between Islamic and conventional banks.
			Size shows a significant and positive relationship with NPL at 5% level.
	H3: Islamic banks have significantly lower credit risk than conventional banks for the full sample period (2002-2015)	Reject	Credit risk measures (i.e.-score and NPL) do not show any significant differences between Islamic and conventional banks.
			Size shows a significant and negative relationship with Z-score at 5% level.
			GDP growth shows a significant and positive relationship with Z-score at 1% level.
			Inflation shows a significant and positive relationship with NPL at 1% level.
	H4: Islamic banks have significantly lower credit risk than conventional banks for the crisis period (2007-2009)	Reject	Credit risk measures (i.e.-score and NPL) do not show any significant differences between Islamic and conventional banks.
			Loan to asset ratio shows a significant and negative relationship with Z-score at 10% level.

Chapter 6: Profitability of Islamic and Conventional Banks

6.1 Introduction

Conventional banks provide their products in conventional ways. However, the practices of conventional bank do not adhere to Islamic principles. Hence, the Islamic banking system came as an alternative financial system that adheres to Islamic principles. As a result, in recent years, Islamic banks have grown and spread widely around the world. The increasing demand for such a banking system that complies with Islamic principles has made the banking industry more competitive. This alternative banking system attracts depositors, investors, clients (borrowers) and any parties who are interested in having financial transactions that adhere to Islamic principles. Therefore, the conventional banks' market share may decrease with the expansion of Islamic banks.

Nevertheless, banks do not provide their services for free. Their main objective is to make a profit. However, since Islamic banks differ in their nature compared to conventional banks, a question that can be asked is the following: Is the profitability of Islamic banks higher than that for conventional banks? This study aims to answer this by investigating and comparing Islamic and conventional banks' profitability for the four following periods: the pre-financial crisis, financial crisis and the post-financial crisis periods. The study sample period is from 2002-2015. The chapter is divided into several sections as follows. Section 6.2 provides a review of Islamic and conventional banking profitability. Section 6.3 presents the study's hypothesis. Section 6.4 discusses the data and methodology used in the study. Section 6.5 and 6.6 provide the study results and analysis and the robustness check respectively. Finally Section 6.7 provides the study conclusion.

6.2 Literature Review on Performance of Islamic versus Conventional banks

Measuring and comparing Islamic and conventional banks' performance is the point of departure for many empirical studies in the Islamic banking literature. The curiosity of understanding and observing the difference, empirically rather than theoretically, has motivated many researchers to study and try to identify any differences that may appear in the Islamic and conventional banking systems.

6.2.1 Theoretical Literature on Performance

(i) Economic Theory of Profit Maximisation

According to Hasan (2008), the Islamic economic model is similar to capitalism, except in issues that contradict Islamic values such as exploitation of human beings, the dominance of monopoly power, persistent poverty, corruption and other harmful social practices. Unlike capitalism, the Islamic economic model does not promote individualism at the expense of society. The basic difference between the capitalist and Islamic economy is that in capitalism, profit and private ownership have unlimited power to make economic decisions. Hence, unlike Islamic economic thought, capitalism is not controlled by divine commands ('Capitalist vs Islamic Economy - Islamicbanker.Com'). Therefore, in capitalism, monopoly, gambling and corruption may arise, and as a result, wealth may be concentrated in the hands of a few people. Nevertheless, profit is considered as a source of capital formation and growth by the capitalist and Islamic economic models (Hasan, 2008, p.1). Both Islamic and conventional banks consider profitability as an important tool for performance improvements. It gives an evaluation of a bank's operations and management which help in future planning. This would increase a bank's survival chances in competitive markets (Chowdhury, 2015, p.1).

According to economic theory, a firm's managers aim to maximise profits. Conventional banks adhere to the theory of profit maximisation as their main objective. On the other hand, Islamic banks do not entirely share this view. Islamic banks have two main objectives: profit maximisation/ utility and society (i.e. welfare in this world) and maximisation of success in the world hereafter (i.e. achievement of Paradise) (Samad, 2008). The first objective can be achieved by maximising profits and the public good while the second objective can be achieved by implementing and adhering to Islamic Shariaa. The behaviour of Islamic banks is guided by Islamic values and ethics such as integrity, transparency and justice. Firms should not only be profit-oriented but also aim to promote Islamic principles and values. Moreover, they should protect the needs of society as a whole without undermining their commercial viability (Adelabu et al., 2011).

6.2.2 Empirical Studies on Performance in Islamic and Conventional Banks

According to Abedifar et al. (2015), early empirical studies on comparing the performance of Islamic and conventional banks focused on only one country. For instance, Bashir (1999) focused on two Islamic banks in Sudan. By using ordinary least square regression, he found that larger Islamic banks are highly leveraged and more profitable. These findings have a limitation in that the study only focused on two Islamic banks meaning that the conclusions cannot be generalised. Other early studies focused on one country and used different approaches in their analysis such as those by Samad (1999) and Majid et al. (2003) in Malaysia and El Gamal and Inanoglu (2002) in Turkey. For example, Abdus Samad (2004) studied the performance of Islamic and conventional banks' performance in Bahrain for the period 1991-2001, in terms of their profitability, liquidity risk and credit risk and by applying the Student's *t*-test (equality of mean test) to financial ratios. The findings show no major difference in both banks' performance in terms of their profitability and liquidity. Nevertheless, the study also showed that Islamic banks have a higher liquidity ratio compared to conventional banks. This is due to Islamic banks' investment restrictions imposed by Islamic Shariaa. For instance, unlike conventional banks, all of the Islamic bank's investments are backed by assets which will be easily liquidated when needed. Islamic banks also tend to be more conservative and invest in low-risk and short-term investments to avoid loss, maintain their reputation and attract new customers. Another study by Hassan and Bashir (2003) examined Islamic banks' performance indicators. In line with the study by Abdus Samad (2004), Hassan and Bashir (2003) reported that Islamic banks tend to have more short-term trade financing. As a result, Islamic banks' loans have lower risk than conventional banks. However, more recent studies tend to have a wider selection of countries in their samples and have focused on a cross-country sample to generalise their findings and conclusions. For instance, Al-Jarrah and Molyneux (2005) and Mohammad et al. (2008) used stochastic frontier analysis to measure cost and profit efficiency. Al-Jarrah and Molyneux include Bahrain, Egypt, Jordan and Saudi Arabia in their sample while Mohammad et al. (2008) include 21 Organisation of Islamic Conference countries. Nevertheless, both studies came up with different findings. The first study found that Islamic banks are more cost and profit efficient compared to conventional banks. On the other hand, the second study found no significant difference between Islamic and conventional banks in their cost and profit efficiency. The differences between the two studies are attributed to different sample size, period and countries investigated. Bader et al.

(2008) also found no significant differences in Islamic and conventional banks' cost and profit efficiency.

Another study by Abdul-Majid et al. (2010) on a sample of 10 countries using the parametric output distance function found that Islamic banks moderate higher returns to scale than conventional banks. They also report that Islamic banks tend to show lower efficiency levels than conventional banks. Interestingly, Rashwan (2010) reported two different findings in a study of the efficiency and profitability of Islamic and conventional banks in the pre-financial crisis and post-financial crisis periods for 15 countries. The reported results suggest that Islamic banks were more efficient and profitable than conventional banks during the 2007 pre-crisis period. On the other hand, after the post-crisis period from 2009, conventional banks showed more efficiency and profitably than Islamic banks. One possible explanation for these results is the delayed effect of the crisis on the economy of countries where Islamic bank investments are based. Another possible reason suggested by the author is that Islamic banks have higher reserves compared to conventional banks.

A more comprehensive and recent study on the performance of Islamic and commercial banks is by Beck et al. (2013). They included banks from 141 countries in their sample covering the period from 1995 to 2009. By applying ordinary least square, fixed effects and robust regression in their analysis, they found few significant differences between Islamic and commercial banks. For instance, their findings show that Islamic banks are less cost-effective, but have a higher intermediation ratio, higher asset quality and are better capitalized.

The performance of Islamic banks and conventional banks during the global financial crisis has been examined by Hasan and Dridi (2010). They used Islamic and conventional bank-level data from Bahrain, Jordan, Kuwait, Malaysia, Qatar, Saudi Arabia, Turkey, and the UAE. Their database includes 90 and 30 conventional and Islamic banks respectively. The authors examine the impact of the crisis on four key factors which are profitability, credit and asset growth, and external ratings by applying OLS regression analysis. Their findings show that during the financial crisis, Islamic banks performed differently than conventional banks. They suggest that the Islamic banks' business model and adherence to *Shariah* principles helped in containing the adverse impact of profitability in 2008. In other words, because of the Islamic principles that the Islamic banks must follow,

Islamic banks were not engaged in conventional financing instruments which were used by conventional banks that caused the global financial crisis. However, Islamic banks show a similar average profitability to that of conventional banks during the pre and post-crisis period (2008-2009) indicating that Islamic banks' profitability in 2008 was not due to a strategy of greater risk taking. Other factors might contribute to these findings such as bank size, diversification, economies of scale, and stronger reputation. Islamic banks also showed higher credit and asset growth compared to conventional banks during the crisis. This suggests that the Islamic market share was growing. Islamic banks' risk re-assessment by external rating agencies was also better than or similar to that of conventional banks. This is attributed to higher solvency ratio. However, in the same context, Parashar and Venkatesh (2010) examined the performance of Islamic and conventional banks during the financial crisis. They use different financial ratios to compare performance such as capital adequacy ratio, cost/income ratio, return on average asset (ROAA), return on average equity (ROAE), liquid assets/total assets ratio and equity/total assets ratio. Their findings show that Islamic banks suffered more than conventional banks during the financial crisis in terms of capital adequacy and leverage but over the entire four-year period they performed better than conventional banks. Similarly, Usman and Khan (2012) conducted a comparative analysis regarding the profitability and liquidity of Islamic and conventional banks. Their study used two Islamic banks and two conventional banks in Pakistan for the period 2007-2009. Their results show a higher profitability and growth rate for Islamic banks compared to conventional banks. Islamic banks also showed higher liquidity ratio compared to conventional banks. Some points can be criticized in the findings of Parashar and Venkatesh (2010) and Usman and Khan (2012). For instance, the sample size in both studies was relatively small (6 Islamic banks and 6 conventional banks in the former and 2 Islamic and 2 conventional banks in the latter). Moreover, when compared to the methodology employed by Hasan and Dridi (2010), Parashar and Venkatesh, and Usman and Khan applied a simple different ratio comparison without having a proper regression analysis. Usman and Khan also used banks from one country only, i.e. Pakistan. Hence, their findings cannot be generalized.

Al-Tamimi (2010) investigated the different factors that may influence Islamic banks' performance and compared them with conventional banks in the United Arab Emirates for the period 1996-2008. The author used return on asset (ROA) and returns on equity (ROE) as dependent variables and proxies for banks' performance as independent variables. He regressed the dependent variable on independent variables for Islamic and

conventional banks, i.e. financial development indicator (not included in Islamic banks because of the multicollinearity problem), liquidity, concentration, cost, and branch number. The results show no significant relationship between bank performance and ROA and ROE. However, the Islamic banks' regression results show a negative sign on ROA and ROE. The author attributes this to the Islamic business model which is based on Islamic Shariah. This contradicts the findings collected by Hasan and Dridi (2010) as they suggest that Islamic Sharia helped in reducing the global financial crisis' impact on profitability. Nevertheless, cost and branch number show a positive impact on Islamic banks' performance, while liquidity and concentration show a positive impact on conventional banks' performance.

Youssef and Samir (2015) conducted a comparative study on the financial performance of Islamic and conventional banks in Egypt for the period 2010-2013. To assess the profitability of the sample banks they used two proxies as dependent variables, i.e. return on asset (ROA) and return on equity (ROE). They also used five independent variables in the regression: capital adequacy (equity/total assets), asset quality (loans loss reserves/total loans), management quality (loans/deposits), liquidity (net loans/assets) and bank size (total assets). In line with Al-Tamimi (2010), their findings show no significant differences between return on assets and return on equity in Islamic and conventional banks. However, conventional banks show better risk management where their capital adequacy is dominated. On the other hand, Islamic banks show a better loan management in terms of their loan loss. The authors explain that this is expected because of the profit-and-loss sharing instruments in Islamic banks where profit-and-losses are shared with clients. A penetrating critique can be raised at this point. Despite the fact that Islamic banks have profit-and-loss sharing instruments, their debt instruments, for example, mark-up financing, are more used when compared to the profit-and-loss instruments. Thus, it is not logical to attribute the better loan management to profit-and-loss financing only. For example, another factor may also contribute to having a positive loan management, such as Islamic banks' finance being backed by assets. On the other hand, conventional banks show better performance in management quality and liquidity.

A recent study by Ramlan and Adnan (2015) analysed and compared the performance of Islamic and conventional banks in Malaysia. They applied three tests in their methodology: t-test, regression, and correlation analysis. They found that Islamic banks are more profitable than conventional banks in the t-test analysis, but they reported no significant results for regression and correlation analysis. Also, regression and correlation

analysis show no significant influence on ROA (a profitability measure) with other independent variables for conventional banks. For Islamic banks, both dependent variables (ROA and ROE) are significantly influenced by the independent variable total equity to total asset. The latter finding is in line with the findings of a study by Hasan and Dridi (2010). However, the study has a limitation regarding bank coverage from a single country, i.e. Malaysia.

Amba and Almukharreq (2013) used a sample of 27 Islamic banks and 65 conventional banks from the GCC to investigate the impact of the financial crisis on the performance of both Islamic and conventional banks covering the period 2006-2009. They use three ratios to measure profitability, i.e. return on assets (ROA), return on equity (ROE) and net interest margin (NIM). Their results show that both types of banks were affected by financial crisis. However, during the financial crisis, Islamic banks showed more profitability than conventional banks, though this is not statistically significant. Moreover, Islamic banks had better capital structures than conventional banks during the financial crisis. Nevertheless, conventional banks outperformed Islamic banks in terms of liquidity and liability ratios.

Kouser and Saba (2012) evaluated the financial performance of Islamic, mixed, and conventional banks in Pakistan for the period 2006-2009. They used capital adequacy, asset quality, management capability, earnings, and liquidity ratios (CAMEL model). Their findings are in line with those of Hasan and Dridi (2010) in which Islamic banks show better capital adequacy, asset management, and management competency when compared to conventional banks and the Islamic windows of conventional banks. However, the study period is short and only banks from one country are used in the sample. In addition, the study has a simple financial ratio comparison.

Elsiefy (2013) conducted another study that used financial ratio in its analysis. Elsiefy examined the performance of Islamic and conventional banks in Qatar for the period 2006-2010. The author used different ratios to evaluate the banks' performance, i.e. profitability, asset quality, efficiency, liquidity, and risk and solvency ratios. The findings indicate that profitability in conventional banks showed more sustainable rates than in Islamic banks in the pre and post-financial crisis periods and conventional banks were more liquid than Islamic banks. However, the results indicate that Islamic banks are more efficient in utilising assets.

Fayed (2013) analysed the Egyptian Islamic and conventional banking performance for the period 2008-2010. The study sample included 6 conventional banks and 3 Islamic banks. Different ratios were used to measure profitability, liquidity and credit risk. In addition, a model known as the "bank-o-meter" was used to gauge solvency. Interestingly, the findings indicate that conventional banks outperformed Islamic banks in terms of profitability, liquidity, credit risk management as well as solvency. These results contradict those of Hasan and Dridi (2010), Ramlan and Adnan (20), and Kouser and Saba (2012).

Overall, despite the majority of studies on Islamic and conventional banks' performance focusing on efficiency, most provide different results. However, more studies show no significant differences between Islamic and conventional banks in terms of cost and profit efficiency. On the other hand, a study by Nayyar (1993) found a positive relationship between information asymmetry and performance effects in diversified service firms. This suggested that diversified service firms associated with high information asymmetry show significant performance effects. Nevertheless, the author used data from questionnaires to measure information asymmetry. This may have led to subjective and biased results since personal opinions may differ among people based on their experiences and motivations. However, these results indicate that there is a relationship between the performance of diversified service firms and information asymmetry. It is worth mentioning that Nayyar included four banks in his study sample among other different service companies. In contrast, a study by Limpaphayom and Polwitoon (2004) on banking relationships and firm performance in Thailand found that bank equity ownership shows a positive relationship to investment expenditures and firm performance. This indicates that firms benefit from an equity-based relationship with banks. When banks own equity in a firm, they might be able to share in the firm's investment decisions; both parties' objectives may then come together for better performance results. In other words, the lender will have the opportunity to access additional information about the firm. Accordingly, the information asymmetry between the bank and borrower will be reduced. Therefore, the authors' findings suggest that bank equity ownership improves firm performance and market valuation and reduces information asymmetry in Thailand, although the relationship is not linear. Nevertheless, this study compared the Islamic and conventional banks' performance for the period 2002-2015.

The results from many of these previous studies comparing the performances of Islamic and conventional banks are unsatisfactory for several reasons. First, most of the

studies do not test the significant differences between the profitability of the two types of banks. Second, the samples used in these studies are relatively small. This chapter extends the literature by investigating the profitability of Islamic and conventional banks for selected publicly listed banks with up to date available data using ROA and ROE. It includes banks from all around the world for the period 2002-2015. The study period is divided into pre-crisis, crisis, post-crisis, and full sample period. The different hypotheses investigate the consistency of the results for the various periods based on the arguments proposed. Table 6.1 shows a summary of prior profitability studies.

Table 6. 1 A summary of prior profitability studies.

Author (s)	Country (ies)	Period	Data Type	Research Focus	Methodology	Main Findings
Abdul-Majid et al. (2010)	10 countries	1996–2002	Annual	Investigates the efficiency of a sample of Islamic and conventional banks.	Output distance function	Country effects play a significant part in explaining efficiency distributions. In addition, the result suggests that Islamic banks will benefit more from increased scale than conventional banks.
Abdus Samad (2004)	Bahrain	1991-2001	Annual	Examines the comparative performance of Bahrain's interest-free. Islamic banks and the interest-based conventional commercial banks during the post-Gulf War period.	Student's t-test	There is no major difference in performance between Islamic and conventional banks with respect to profitability and liquidity. However, the study finds that there exists a significant difference in credit performance.
Al-Jarrah and Molyneux (2005)	Jordan, Egypt, Saudi Arabia and Bahrain	1992-2000	Annual	Estimate efficiency levels in various Arab banking sectors.	Stochastic Frontier Approach (SFA)	Islamic banks are found to be the most cost efficient, while investment banks are the least.

Author (s)	Country (ies)	Period	Data Type	Research Focus	Methodology	Main Findings
Al-Tamimi (2010)	United Arab Emirates	1996-2008	Annual	Examination of the factors that influence the performance of these banks compared with conventional banks.	Regression Model	Liquidity and concentration were the most significant determinants of conventional national banks' performance. On the other hand, cost and number of branches were the most significant determinants of Islamic banks' performance.
Amba and Almukharreq (2013)	Gulf Cooperation Council (GCC)	2006-2009	Annual	Impact of the financial crisis on the performance of both Islamic and conventional banks.	T-Test on profitability measures: return on assets (ROA), return on equity (ROE) and net interest margin (NIM)	The financial crisis had a negative impact on profitability of both Islamic and conventional banks but the Islamic banks were more profitable than conventional bank during the financial crisis but not statistically significant. Islamic banks had better capital structure than the conventional banks during the financial crisis while the conventional banks had better liquidity and liability ratios than the Islamic banks. No strong statistical evidence found that Islamic banking has weathered the financial crisis than conventional counterparts in all performance measures.
Bader et al. (2008)	21 countries	1990-2005	Annual	Measures and compares the cost, revenue and profit efficiency of Islamic and conventional banks.	Data Envelopment Analysis (DEA)	There are no significant differences between the overall efficiency results of conventional versus Islamic banks.

Author (s)	Country (ies)	Period	Data Type	Research Focus	Methodology	Main Findings
Bashir (1999)	Sudan	Faisal Islamic Bank (1979-1993) , Tadamon Islamic Bank (1984-1993)	Annual	Examines the effects of scale (total assets) on the performance of Islamic banks.	Regression - OLS	Larger Islamic banks are highly leveraged and more profitable.
Beck et al. (2013)	21 countries	1995-2009	Annual	Analyses the differences in business orientation, efficiency, asset quality, and stability of Islamic and conventional banks.	OLS regression	Islamic banks' business model might not be too different from that of the conventional banks. However, they are less efficient, but have higher intermediation ratios, have higher asset quality, and are better capitalized than conventional banks.
Elsiefy (2013)	Qatar	2006-2010	Annual	Examines performance of Islamic banks (IBs) in Qatar in comparison with their conventional counterparts.	Financial ratio analysis	Profitability in conventional banks show more sustainable rates than Islamic banks in pre and post financial crisis. However, Islamic banks are more efficient in utilising assets.

Author (s)	Country (ies)	Period	Data Type	Research Focus	Methodology	Main Findings
Fayed (2013)	Egypt	2008-2010	Annual	Analyse and compare the performance of Islamic and conventional banking.	Compare financial ratios of Islamic and conventional banks	The superiority of conventional banks over Islamic ones in profitability, liquidity, credit risk management as well as solvency.
Hasan and Dridi (2010)	7 countries	2007-2009	Annual	Examines the performance of Islamic banks (IBs) and conventional banks (CBs) during the recent global crisis.	Regression Model	Factors related to IBs‘ business model helped limit the adverse impact on profitability in 2008, while weaknesses in risk management practices in some IBs led to a larger decline in profitability in 2009 compared to CBs
Hassan and Bashir (2003)	21 countries	1994-2001	Annual	Examines the performance indicators of Islamic banks’ worldwide.	Regression	High capital and loan-to-asset ratios lead to higher profitability. Everything remaining equal, the regression results show that implicit and explicit taxes affect the bank performance measures negatively while favourable macroeconomic conditions impact performance measures positively.

Author (s)	Country (ies)	Period	Data Type	Research Focus	Methodology	Main Findings
Ibrahim (2015)	United Arab Emirates (2 Islamic and Conventional banks)	2002-2006	Annual	Comparative study on performance of Islamic and conventional banks.	T-test on performance measures i.e. liquidity, profitability, management capacity, capital structure and share performance ratios	Bank of Sharjah benefitted by having an overall higher degree of liquidity, profitability, management capacity and capital structure, Dubai Islamic bank was better off in relation to share indicators performance and in terms of overall stability.
Johnes et al. (2014)	18 Countries	2004-2009	Annual	Compare the efficiency of Islamic and conventional banks.	Data envelopment analysis (DEA) and meta-frontier analysis (MFA)	The DEA results provide evidence that there are no significant differences in gross efficiency (on average) between conventional and Islamic banks. When applying MFA, the type efficiency results provide strong evidence that Islamic banking is less efficient, on average, than conventional banking. Also, net efficiency is significantly higher, on average, in Islamic compared to conventional banks suggesting that the managers of Islamic banks are particularly efficient given the rules by which they are constrained.

Author (s)	Country (ies)	Period	Data Type	Research Focus	Methodology	Main Findings
Kouser and Saba (2012)	Pakistan	2006-2010	Annual	Comparison based on performance of Pure Islamic banks, mixed banks and conventional banks.	CAMEL model	Islamic banks have adequate capital and have good asset quality when compared to Islamic branches of conventional banks and conventional banks. Moreover, Islamic banks in general have good management competency in comparison to conventional banks. The earnings of Islamic branches of conventional banks are greater than full-fledge Islamic banks and conventional banks.
Limpaphayom and Polwitoon (2004)	Thailand	1990-1996	Annual	Examines the relation between bank relations and market performance in Thailand.	Three-stage least squares regressions	Both banks relationships, equity-based and debt-based, positively affect capital investment. Equity ownership improves performance, market valuation, and reduces information asymmetry. However, the relationship is not linear.
Merchant (2012)	Gulf Cooperation Council (GCC)	2008-2011	Annual	Comparative study on performance of Islamic and conventional banks.	CAMEL testing factors	Islamic banks possessed adequate capital structure but have recorded lower ROAE and poor management efficiency. Asset quality and liquidity for both the modes of banking system have not recorded any significant difference

Author (s)	Country (ies)	Period	Data Type	Research Focus	Methodology	Main Findings
Mohamad et al. (2008)	21 of Organisation of Islamic Conference (OIC)	1990-2005	Annual	Measures and compares the cost and profit efficiency in OIC.	Stochastic Frontier Approach (SFA)	There are no significant differences between the overall efficiency results of conventional versus Islamic banks. Also, There is no significance difference in average efficiency scores between big versus small and new versus old banks in both banking streams.
Nayyar (1993)	NA	NA	NA	The performance effects of information asymmetry and economies of scope in diversified service firms.	Questionnaires	There is a positive relationship between information asymmetry and performance effects in diversified service firms.
Parashar and Venkatesh (2010)	Gulf Cooperation Council (GCC)	2006-2009	Annual	Examines Islamic banks' performance during global financial crisis.	Compare six different ratios, capital adequacy ratio, cost/income ratio, ROAA, ROAE, Liquid assets/Total assets and Equity / Total assets	Islamic banks have suffered more than conventional banks during recent global financial crisis in terms of capital ratio, leverage and return on average equity, while conventional banks have suffered more than Islamic banks in terms of return on average assets and liquidity. Over the four years period, i.e. 2006-2009, Islamic banks performed better than conventional banks.

Author (s)	Country (ies)	Period	Data Type	Research Focus	Methodology	Main Findings
Ramlan and Adnan (2015)	Malaysia	2006-2011	Annual	Analyse the profitability in Islamic Banks and Conventional Banks.	T-Test Model, Regression and Correlation	Islamic Banks are more profitable than Conventional Banks whereas Total Loan to Total Asset for Islamic bank is higher than Conventional bank. Based on Regression test, for Conventional Banks, ROE is an influence profitability of Conventional Bank and for Islamic Banks, ROA and ROE are significant factor that influence profitability. Based on Correlation test, ROE is an influence profitability of Conventional Bank and for Islamic Banks, ROA and ROE are significant relationship with independent variable which is Total Equity to Total Asset.
Rashwan (2005)	15 countries	2007-2009	Annual	Tests the efficiency and profitability of Islamic and conventional banks.	MANOVA techniques	Islamic banks outperform traditional banks in 2007 and traditional banks outperform Islamic banks in 2009.
Usman and Khan (2012)	Pakistan	2007-2009	Annual	Comparative study on performance of Islamic and conventional banks.	paired sample t-test on Profitability and liquidity ratios	Islamic banks have high growth rate and profitability over the conventional banks. Moreover the Islamic banks have high liquidity power over conventional banks.

Author (s)	Country (ies)	Period	Data Type	Research Focus	Methodology	Main Findings
Youssef and Samir (2015)	Egypt	2010-2013	Annual	Comparative study on performance of Islamic and conventional banks.	Regression-OLS	Regarding profitability ratios, there are no significant differences between ROE and ROA in Islamic banks and conventional banks. Conventional banks have better risk management that supports the organization's efforts to avoid asset losses. Islamic banks have better management for their loan. Conventional banks perform better on liquidity management.

6.3 Hypothesis Development

As previously mentioned, Islamic banks are not permitted by Islamic Shariaa to deal with interest in their financial contracts. Hence, they established financing contracts that adhere to Islamic Shariaa (discussed in chapter 2). Among these are profit-and-loss financing contracts. Bashir et al. (1993, p.639) state that profit-and-loss contracts are characterised by relatively high-risk and variable returns. The authors also state that such contracts underline the importance of some financial variables in investment decisions. These financial variables are the total equity and total liabilities of the institution, as well as the profit shares distributed. It is worth mentioning that Islamic banks treat some deposit accounts as investment accounts (i.e. equity participation). Hence, these account holders also appear in the title of profit share, on the pre-agreed ratio, when the banks generate profit from their investments. Moreover, the total liabilities of the bank indicates its financial position. If the bank is in a strong financial position, it would be able to diversify its portfolio investments, minimise the inherent risk, and increase its profits (Bashir et al., 1993). As a result, more depositors would be attracted to the bank because of its good reputation in managing its investments, and thus, the bank would get more funds and increase its investments. Nevertheless, according to economic theory, conventional banks seek profit maximisation. In the same context, in addition to the profit maximisation objective, Islamic banks seek the welfare of society as a whole. They should operate according to the values and ethics of Islamic Shariaa. It is indisputable that both banks aim to maximise their profit, but is the profitability of both banks similar? This study seeks to investigate and compare the profitability of Islamic and conventional banks for the following periods: pre-crisis, crisis, post-crisis and for the full sample period (2002-2015). Since Islamic banks aim to promote the welfare of society, it is expected that their profitability would reduce as more resources are spend on society. Based on societal objectives, the following hypotheses can be generated:

H_1: Islamic banks have significantly lower profitability than conventional banks for the pre-crisis period (2002-2006)

H_2: Islamic banks have significantly lower profitability than conventional banks for the post-crisis period (2010-2015)

H_3: Islamic banks have significantly lower profitability than conventional banks for the full study sample period (2002-2015).

Due to the mixed results in the literature on the performance of Islamic banks regarding their profitability during the financial crisis, and based on the unique nature of Islamic banking, this study adds the following hypothesis:

H_4: Islamic banks have significantly lower profitability than conventional banks for the crisis period (2007-2009).

The research aims to answer the following question: Did Islamic banks perform significantly better than their conventional counterparts during the study periods?

6.4 Data and Methodology

6.4.1 Data Sample

This section discusses the data sample used in the research and the different dependant and independent variables used in the regression analysis. Table 6.2 presents a summary of the sample banks included in the study. The sample has unbalanced panel data and includes publicly listed banks from thirteen countries from Asia, Europe and Africa over the period between 2002 and 2015. The study uses the same sample used in the credit risk chapter. Using Datastream, all required variables are retrieved for the period 2002-2015.

Table 6. 2 Summary of numbers of publicly listed banks in each country in the sample

Country	Islamic Banks	Conventional Banks
BAHRAIN	**6**	**10**
EGYPT	**2**	**9**
INDONISIA	**1**	**37**
JORDAN	**2**	**11**
KSA	**4**	**7**
KUWAIT	**6**	**10**
MALAYSIA	**1**	**9**
OMAN	**1**	**7**
PAKISTAN	**1**	**13**
QATAR	**2**	**5**
TURKEY	**2**	**14**
UAE	**6**	**17**
UK	**1**	**41**
TOTAL	**35**	**190**

There are different ways to measure a bank's performance. However, accounting data are considered the primary source of data for evaluating a bank's internal performance. This is because financial ratios usually provide a general picture of a bank's financial condition as those ratios are constructed from the historical data of the bank's income statement and balance sheet (Bashir, 2003, p. 38). This section aims to measure and compare the performance of Islamic and conventional banks for the period 2002-2015. The analysis covers four periods: the full study period (2002-2015), pre-financial crisis period (2002-2007), crisis period (2008-2009), and post-financial crisis period (2009-2015). The study uses the most common variables used in the literature as measures of performance. According to Beck et al., (2005), return on assets (ROA) and return on equity (ROE) are considered as the best measures of a bank's overall performance. Hence, this study uses these two dependent variables along with other independent variables to evaluate Islamic and conventional banks' performance. The following sections are explanations of the variables used in this study.

6.4.2 Dependent Variables: Profitability Ratios

(i) Return on Assets (ROA) and Return on Equity

Return on asset is defined as the ratio of net income to the total asset. On the other hand, return on equity is defined as the ratio of net income to total equity. Both ratios are considered as profitability ratios that measure a bank's performance. They reflect "the bank's ability to generate income from non-traditional services" (Bashir, 2003, p.39). For instance, the return on asset ratio reflects the bank's efficiency in managing its assets to produce a profit during a specific period. A higher ratio indicates a better management ability on a bank's assets to produce a profit (Bashir, 2003, p.39; Siddiqui, 2008, p.690). The following is the return on asset formula:

Return on Asset (ROA) = Net Income/ Total Asset **(13)**

On the other hand, return on equity (ROE) reflects the bank's ability to generate profit from its shareholders' investments. In other words, return on equity shows the bank's effectiveness in managing its shareholder funds (Bashir, 2003, p.39). The following is the return on equity ratio formula:

Return on Equity (ROE) = Net Income/Total Shareholders' Equity **(14)**

6.4.3 Independent Variables

The study uses different bank characteristics and economic conditions as control variables. These might affect the relationship between bank type and profitability. According to Beck et al., (2013, p.437), due to scale of economy, larger banks might be more efficient. Hence, the study uses the log of total asset as a control for bank size. Therefore, it is expected that bank size has a positive relationship with bank profitability. This is because as bank size increases, the cost would be reduced and hence performance would be improved (Al-Tamimi, 2010, p.3). However, Athanasoglou et al. (2008) argue that if banks become extremely large, they may be made more bureaucratic and hence it would have a negative effect on profitability.

According to Athanasoglou et al. (2008), there are several theories that suggest that credit risk is associated with a reduction in a firm's profitability. In other words, it is expected that there is a negative relationship between credit risk and profitability ratios (ROA and ROE). Hence, the study uses loan-loss provisions to loans ratio as a proxy for credit risk and control variable. Kabir et al. (2015), Abedifar et al. (2012) and Kwan and Eisenbeis (1997) have also shown that inefficiency (cost to income ratio) increases bank risk. If the cost to income ratio increases banks risk, it is assumed that it will reduce profitability. This is because bad management will mean a bank's resources are not utilised and thus will result in a reduction in its profitability. Therefore, one can expect to have a negative relationship between profitability measures and cost to income ratio. Furthermore, expense management is used as a control variable. It is expected to be negatively related to profitability. This ratio is computed as total operating expenses to total assets. Improving the management expense would result in increasing the bank's efficiency and thus raise its profitability.

In addition to the bank-specific variables described above, the analysis includes a set of macroeconomic characteristics that are expected to have an impact on bank profitability, for example, country gross domestic product growth (GDP growth) and inflation. Moreover, the study uses country, year, and type of bank dummies.

As mentioned in section 5.2.6, the OLS regression determines the linear relationship between two or more variables. However, the study uses a sample that includes banks from different countries for different years. Therefore, the random effect regression allows generalising the interpretation of the result beyond the sample used in the model. On the

other hand, the OLS robust regression aims to mitigate the effect of outliers and heteroscedasticity if existed. The following shows the regression model used in the study:

Performance *it* = β_0 + β_1 (Islamic Banks) + β_2 (Size it) + β_3 (Cost to income ratio it) + β_4 (loan-loss provisions to loans) + β_5 (Asset Growth it) + β_6 (Inflation it) + β_7 (GDP Growth it) + β_8 (Years Dummies) + β_9 (Countries Dummies) + ϵ it **(15)**

Where,

Performance= profitability ratio proxy measure defined as the logarithm of ROA and logarithm of ROE of bank i at time t

Islamic Banks= dummy variable equal to 1 if it is Islamic banks, and 0 if otherwise

Size= logarithm of total asset of bank at time t

Cost to income ratio= the logarithm of Cost to Income ratio of bank i at time t

Loan-loss provisions to loans= logarithm of Loan-loss provisions to loans of bank i at time t

Asset growth= logarithm of asset growth of bank i at time t

Inflation= logarithm of inflation for country i at time t

GDP Growth= the logarithm of GDP growth for country i at time t

Year Dummies= the years used in the sample

Country Dummies= the countries used in the sample

Є= Error

Table 6.3 shows the expected relationship signs between performance proxies and other independent variables of equation 15.

Table 6. 3 The expected relationship signs between performance proxies and other independent variables of the equation 15

Variable	Expected effect on profitability	Expected sign with ROA	Expected sign with ROE
Size	Positive	+	+
Cost inefficiency ratio	Negative	-	-
Loan Loss provision to Total Loan ratio	Negative	-	-
Asset Growth	Positive	+	+
GDP Growth	Positive	+	+
Inflation	Negative	-	-

6.5 Empirical Results

6.5.1 Descriptive statistics

The sample selected covers the period from 2002 to 2015. Nevertheless, the study compares the results of four different periods: the full period (i.e. 2002-2015), pre-crisis period (i.e. 2002-2006), crisis period (i.e. 2007-2009), and post-crisis period (i.e. 2010-2015). The study measures profitability for Islamic and conventional banks. A group mean test is conducted on all variables included in the regression to show any significant differences between Islamic and conventional banks.

Table 6.4 presents the descriptive statistics of the profitability variables (ROA and ROE), along with other variables included in the regression (i.e. size, cost to income ratio, loan loss provision to total loan, asset growth, GDP growth and inflation) for the period 2002-2015. For each variable, the table shows the number of observations, mean value, standard deviation, minimum value, maximum value and t-test difference. Most of the variables are significantly different between the two banking systems except the cost to income ratio variable. Conventional banks show significantly higher return on asset (ROA) and return on equity (ROE) variables at the 1% and 5% levels, respectively. This may suggest that the profitability of Islamic banks may be lower than conventional banks. The size mean variable is also higher in conventional banks than Islamic banks suggesting that the average conventional bank's size is bigger than the average Islamic bank's size. However, Islamic banks show higher loan loss provision to total loan ratio indicating that they may be

less profitable compared to conventional banks. Islamic banks also show a significant and higher asset growth at the 5% level.

Overall, the profitability variables, ROA and ROE, show a significant difference between Islamic and conventional banks. Other variables also show a significant difference between the two banking systems. Further regression analysis is conducted in the following sections to have a clearer picture of profitability in Islamic and conventional banks.

Table 6. 4 Descriptive Statistics for the Full Sample Period (2002-2015)

	All Banks					Islamic					Conventional					
Variable	**Obs**	**Mean**	**Std. Dev.**	**Min**	**Max**	**Obs**	**Mean**	**Std. Dev.**	**Min**	**Max**	**Obs**	**Mean**	**Std. Dev.**	**Min**	**Max**	**T-test diff.**
Profitability																
ROA	2070	0.677	1.0117	-3.912	3.7695	226	0.447	1.111	-3.912	2.914	1844	0.705	0.994	-3.912	3.770	-0.257***
ROE	2380	2.411	0.928	-3.912	6.1723	297	2.255	1.141	-2.813	5.216	2083	2.433	0.892	-3.912	6.172	-0.178**
Bank -specific																
Size	2607	16.616	3.647	10.707	27.5314	356	15.253	1.608	11.855	22.688	2251	16.832	3.828	10.707	27.531	-1.579***
Cost to Income ratio	2365	1.110	1.219	-4.551	7.7507	304	1.0535	1.095	-2.400	5.291	2061	1.119	1.237	-4.551	7.751	-0.0652
Loan loss provision to Total Loan	1914	-7.238	3.860	-22.548	-2.2109	280	-5.573	1.844	-15.668	-2.211	1634	-7.523	4.040	-22.548	-2.242	1.951***
Asset Growth	2066	-1.860	1.142	-9.608	3.6507	290	-1.606	1.176	-6.618	1.823	1776	-1.902	1.131	-9.608	3.651	0.295***
Macroeconomic																
GDP Growth	911	-1.952	1.325	-7.462	2.2172	139	-1.669	1.255	-4.716	1.972	772	-2.004	1.331	-7.462	2.217	0.335**
Inflation	2577	2.371	3.661	-5.574	6.1107	335	4.059	1.905	-4.983	6.111	2242	2.118	3.792	-5.574	6.111	1.941***

6.5.2 Correlation Matrix

Table 6.5 shows the correlation matrix for the main variables used in the regression. In general, there are no high correlations between the dependent and explanatory variables.

Table 6. 5 The Correlation Matrix

	ROA	ROE	Size	Cost to Income ratio	Loan loss provision to Total Asset ratio	Asset Growth	GDP Growth	Inflation
ROA	1							
ROE	0.72	1						
Size	-0.061	0.0268	1					
Cost to Income ratio	-0.630	-0.605	-0.011	1				
Loan loss provision to Total Loans	0.0527	0.097	-0.740	-0.070	1			
Asset Growth	0.0797	-0.025	-0.033	0.049	-0.073	1		
GDP Growth	0.215	0.119	-0.217	0.050	0.144	-0.031	1	
Inflation	0.0473	0.060	-0.509	-0.199	0.746	-0.101	0.071	1

6.5.3 Regression Results

The ordinary least square (OLS) regression, OLS robust and random effect regression are used to compare the profitability measures between Islamic and conventional banking systems. Table 6.6, 6.7, 6.8, and 6.9 present the main empirical results for the pre-crisis period (2002-2006), crisis period (2007-2009), post-crisis period (2010-2015) and full sample period (2002-2015) respectively. Furthermore, columns (1) - (3) show the results of using the OLS regression, robust regression and random effect regression, respectively, for ROA as the dependent variable. Similarly, columns (4) – (6) present the results of applying the OLS regression, robust regression and the random effect regression, respectively, for ROE as the dependent variable. Moreover, all dependent variables in all columns are regressed along with the bank-specific and independent macroeconomic variables (i.e. Islamic bank dummy, size, cost to income ratio, loan loss provision to total loans ratio, asset

growth, GDP growth, and inflation). Country and year dummies are also used in the regressions as control variables. The following sub-sections discuss the results of the regression analysis for the different periods.

(i) Regression Results: Pre-Crisis period (2002-2006)

Table 6.6 shows the regression results for the profitability measures with the bank-specific and macroeconomic variables for the pre-crisis period (2002-2006). Although the results show Islamic banks have lower profitability, the estimated coefficient for the Islamic dummy for both profitability measures, ROA and ROE, does not show any significant differences for the pre-crisis period in the OLS and random effect regressions. Therefore the H_1 hypothesis is rejected as it assumes Islamic banks have significantly lower profitability than conventional banks for the pre-crisis period. In addition, and unlike the exceptions, size (log total asset) shows a significant and negative relationship with ROA in the OLS and random effect regression models with a value of -0.163 at the 1% level. Athanasoglou et al. (2008) provide a possible explanation for this. They argue that when banks become extremely large, they become more bureaucratic which negatively affects their profitability. Another interesting result that is in line with the study expectation is having a significant and adverse relationship between cost to income ratio and profitability measures at the 1% level in OLS and random regression models. This suggests that a bank's profitability is negatively related with the cost to income ratio. A possible explanation is that the cost to income ratio reflects bad management which might reduce the bank's profitability. Moreover, the asset growth sign is in line with the study expectations and shows a strong positive relationship with ROA under the OLS regression model with a value of 0.254 at the 1% level.

(ii) Regression Results: Crisis period (2007-2009)

Table 6.7 shows the regression results for the profitability measures with the bank-specific and macroeconomic variables for the financial crisis period (2007-2009). The results from the OLS and regression show that Islamic banks have significantly lower ROA than conventional banks with a value of -0.534 at the 5% level. Hence, the results suggest that Islamic banks have lower profitability than their counterparts in the crisis period. Moreover, ROE is lower in Islamic banks. However, it is insignificant. Therefore, the results are in line with the H_4 hypothesis that states that Islamic banks have significantly lower profitability than conventional banks during the financial crisis period. Therefore, the H_4

hypothesis is accepted. Similar to the pre-crisis period, the cost to income ratio continues to show a significant and negative relation with profitability measures. Nevertheless, in this period, size follows the study expectations and shows a positive and significant relationship with ROE with a value of 0.142 and 0.188 at the 5% level in the OLS and random effect regression models, respectively.

Table 6. 6 Profitability Regression Results for Pre-Crisis Period 2002-2006

VARIABLES	(1) OLS ROA	(2) OLS Robust ROA	(3) Random Effect ROA	(4) OLS ROE	(5) OLS Robust ROE	(6) Random Effect ROE
Islamic Banks	-0.204	-0.204	-0.284	-0.17	-0.17	-0.254
	(0.240)	(0.141)	(0.319)	(0.172)	(0.180)	(0.221)
Size	-0.163***	-0.163***	-0.152***	0.012	0.012	0.014
	(0.033)	(0.029)	(0.047)	(0.023)	(0.026)	(0.032)
Cost to Income ratio	-0.535***	-0.535***	-0.529***	-0.552***	-0.552***	-0.584***
	(0.065)	(0.118)	(0.060)	(0.044)	(0.060)	(0.048)
Loan Loss Provision to Total Loan	0.086	0.086	0.038	-0.068	-0.068	-0.04
	(0.064)	(0.062)	(0.033)	(0.045)	(0.045)	(0.038)
Asset Growth	0.254***	0.254**	0.021	0.053	0.053	0
	(0.083)	(0.098)	(0.037)	(0.058)	(0.065)	(0.046)
GDP Growth	0.006	0.006	0.022	-0.049	-0.049	-0.015
	(0.071)	(0.062)	(0.028)	(0.050)	(0.047)	(0.036)
Inflation	-2.18	-2.18	-3.931***	-2.345*	-2.345*	-3.705***
	(2.009)	(2.162)	(0.842)	(1.392)	(1.365)	(0.978)
Constant	7.109***	7.109***	7.998***	5.749***	5.749***	7.2845***
	(2.291)	(2.498)	(1.192)	(1.581)	(1.655)	(1.191)
Observations	99	99	99	104	104	104
R-squared	0.609	0.609		0.698	0.698	
Number of Banks			51			52
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes
Country Dummy	Yes	Yes	Yes	Yes	Yes	Yes

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 6. 7 Profitability Regression Results for Crisis Period 2007-2009

VARIABLES	(1) OLS ROA	(2) OLS Robust ROA	(3) Random Effect ROA	(4) OLS ROE	(5) OLS Robust ROE	(6) Random Effect ROE
Islamic Banks	-0.534**	-0.534**	-0.473	-0.09	-0.09	-0.005
	(0.230)	(0.260)	(0.312)	(0.253)	(0.336)	(0.316)
Size	-0.056	-0.056	-0.045	0.142**	0.142**	0.188**
	-0.059	-0.041	-0.078	-0.068	-0.064	-0.08
Cost to Income ratio	-0.801***	-0.801***	-0.659***	-1.037***	-1.037***	-1.132***
	(0.095)	(0.119)	(0.113)	(0.104)	(0.173)	(0.108)
Loan Loss Provision to Total Loans	0.104	0.104	0.13298*	0.053	0.053	0.043
	(0.100)	(0.096)	(0.073)	(0.098)	(0.098)	(0.094)
Asset Growth	0.032	0.032	-0.03	0.088	0.088	0.067
	(0.064)	(0.061)	(0.055)	(0.059)	(0.055)	(0.062)
GDP Growth	0	0	0.07721*	-0.013	-0.013	0.035
	(0.070)	(0.069)	(0.045)	(0.079)	(0.069)	(0.071)
Inflation	2.265	2.265	3.753***	1.327	1.327	2.53
	(2.189)	(1.748)	(1.415)	(2.622)	(2.089)	(2.360)
Constant	-9.479	-9.479	-17.768**	-5.403	-5.403	-12.592
	(12.083)	(9.532)	(7.893)	(14.496)	(11.347)	(13.063)
Observations	73	73	73	90	90	90
R-squared	0.758	0.758		0.72	0.72	
Number of Banks			50			64
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes
Country Dummy	Yes	Yes	Yes	Yes	Yes	Yes

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

(iii) Regression Results: Post-Crisis period (2010-2015)

Table 6.8 shows the regression results for the profitability measures with the bank-specific and macroeconomic variables for the post-crisis period (2010-2015). Under the OLS and random effect regression models, and at the 1% level, ROA shows that Islamic banks have lower profitability than conventional banks with a value of -0.396 and -0.41064 respectively. This is supported by regression results from the OLS regression for the ROE which shows that a significant relation with Islamic bank dummies with a value of -0.211 at the 10% level. The results support the H_2 hypothesis which states that Islamic banks have significantly lower profitability than conventional banks for the post-crisis period. Again, the cost to income ratio shows a negative and significant relationship with profitability measures. The loan loss provision to total loan ratio shows positive and significant relations with ROA and ROE, which is in contradiction to the study expectations.

(vi) Regression Results: Full sample period (2002-2015)

Table 6.9 shows the regression results for the profitability measures with the bank-specific and macroeconomic variables for the entire period (2002-2015). The results indicate that the ROA of Islamic banks is significantly lower than for conventional banks under the OLS and random effect regression with values of -0.4 and -0.411, respectively, at 1% level. These findings are supported by the ROE results that show a value of -0.211 at the 10% level in the OLS regression model. Therefore, the study accepts the H_3 hypothesis which states that Islamic banks have significantly lower profitability than conventional banks for the full sample period. Interestingly, size shows mixed results when it comes to showing the type of relationship with profitability measure. For instance, contradicting the study expectations, size shows a strong and negative relation with ROA with a value of -0.083 at the 1% level in the OLS regression model. On the other hand, it shows a strong and positive relation with ROE which is in line with the study expectations. Nevertheless, the strong negative relationship between profitability measures and cost to income ratio continues to appear. GDP growth also shows a significant and positive relation with ROA as expected suggesting that profitability increases when GDP growth increases. Although the results of the profitability measure with Islamic dummy are consistent with each other, some other variables may be in conflict. The conflict in the results may be because of the existing sample data which contains missing data, outliers, and non-normality assumptions of OLS estimations in multiple regression that violate the assumptions of OLS estimation in multiple

regression (Schumacker et al., 2002, p.13). Hence, the following section uses the OLS robust regression to solve any of the abovementioned issues.

6.6 Robustness Check

For each table results, column (2) and (3) presents the OLS robust regression model for the profitability measures. For the pre-crisis period, profitability measures do not show any significant differences between Islamic and conventional banks. Hence, there is no difference in profitability performance for Islamic and conventional banks during the pre-crisis period. Therefore, the robustness check rejects H_1. However, during the crisis, post crisis and the full sample periods, ROA is significantly lower in Islamic banks at the 5%, 1% and 1% level respectively. Moreover, in line with the ROA results, ROE is lower in Islamic banks during the mentioned periods. However, it is not at the same level of significance as it is only significant at the post-crisis period at the 10% level. Therefore, the robustness check accepts the three hypotheses H_2, H_3, and H_4. These findings suggest that Islamic banks have underperformed compared to conventional banks in terms of profitability in the mentioned periods. Nevertheless, for the full sample period, the findings suggest that Islamic banks have lower profitability than conventional banks. These results support the study by Merchant (2012) on the performance of Islamic and conventional banks in the GCC both during the crisis and after the crisis periods. However, they also contradict the findings of a study by Amba and Almukharreq (2013), in which it was found that there was no significant difference between Islamic and conventional banks' profitability during the crisis period. The pre-crisis findings also contradict a study by Rashwan (2005) as he found that Islamic banks were more efficient and profitable than conventional banks. However, the study's post-crisis findings support Rashwan's findings in which Islamic banks show lower profitability than conventional banks.

Moreover, size does not demonstrate any significant relationship with profitability measures for the pre-crisis period. However, during the crisis, post-crisis and full sample period, it shows a significant and positive relationship with ROE as expected at the 5%, 1% and 1% level respectively. On the other hand, size does not indicate and significant relationship with ROA during the crisis and post-crisis period, though it shows a negative and significant relation with ROA for the full sample period at the 1% level. Also, the cost to income ratio continues to show a strong significant and negative relationship with profitability measures for the different periods. Moreover, loan loss provision to total loan

ratio is only significant for the full period sample where it shows a positive and strong relation with ROA. Asset growth is only positively significant for the pre-crisis period. GDP growth is also significant at the 10% level for the full sample period with ROA. Inflation is negatively related with ROE for the pre-crisis level at the 10% level.

Table 6. 8 Profitability Regression Results for Post-Crisis Period 2010-2015

VARIABLES	(1) OLS ROA	(2) OLS Robust ROA	(3) Random Effect ROA	(4) OLS ROE	(5) OLS Robust ROE	(6) Random Effect ROE
Islamic Banks	-0.400***	-0.400***	-0.411***	-0.211*	-0.211*	-0.176
	(0.100)	(0.106)	(0.117)	(0.119)	(0.126)	(0.139)
Size	0.003	0.003	-0.001	0.14955***	0.14955***	0.139***
	(0.025)	(0.031)	(0.029)	(0.031)	(0.037)	(0.036)
Cost to Income ratio	-0.731***	-0.731***	-0.722***	-0.587***	-0.587***	-0.621***
	(0.048)	(0.066)	(0.043)	(0.052)	(0.089)	(0.048)
Loan Loss Provision to Total Loans	0.066**	0.066	0.079***	0.064	0.064	0.064*
	(0.031)	(0.040)	(0.030)	(0.040)	(0.060)	(0.036)
Asset Growth	0.026	0.026	0.027	0.005	0.005	0.005
	(0.040)	(0.039)	(0.030)	(0.045)	(0.043)	(0.037)
GDP Growth	0.066	0.066	0.01	0.043	0.043	0.011
	(0.047)	(0.053)	(0.034)	(0.057)	(0.062)	(0.044)
Inflation	0.596	0.596	0.654	-1.155	-1.155	-0.516
	(1.376)	(1.402)	(0.997)	(1.377)	(1.182)	(1.045)
Constant	-2.008	-2.008	-2.401	7.224	7.224	3.669
	(7.835)	(8.041)	(5.712)	(7.865)	(6.838)	(5.981)
Observations	120	120	120	151	151	151
R-squared	0.821	0.821		0.664	0.664	
Number of Banks			82			100
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes
Country Dummy	Yes	Yes	Yes	Yes	Yes	Yes

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 6. 9 Profitability Regression Results for Full Sample Period 2002-2015

VARIABLES	(1) OLS ROA	(2) OLS Robust ROA	(3) Random Effect ROA	(4) OLS ROE	(5) OLS Robust ROE	(6) Random Effect ROE
Islamic Banks	-0.437***	-0.437***	-0.452***	-0.190*	-0.19	-0.203
	(0.101)	(0.100)	(0.145)	(0.100)	(0.130)	(0.127)
Size	-0.084***	-0.084***	-0.046	0.09130***	0.0913***	0.105***
	(0.020)	(0.018)	(0.031)	(0.021)	(0.022)	(0.029)
Cost to Income ratio	-0.667***	-0.667***	-0.667***	-0.701***	-0.701***	-0.757***
	(0.038)	(0.082)	(0.035)	(0.036)	(0.076)	(0.038)
Loan Loss Provision to Total Loans	0.092***	0.092***	0.016	-0.006	-0.006	-0.018
	(0.031)	(0.030)	(0.025)	(0.031)	(0.035)	(0.031)
Asset Growth	0.047	0.047	0.006	0.029	0.029	0.013
	(0.034)	(0.036)	(0.025)	(0.031)	(0.031)	(0.029)
GDP Growth	0.059*	0.059*	0.031	0.019	0.019	0.018
	(0.034)	(0.035)	(0.022)	(0.034)	(0.036)	(0.030)
Inflation	0.295	0.295	0.485*	-0.5	-0.5	-0.448
	(0.407)	(0.431)	(0.290)	(0.412)	(0.373)	(0.379)
Constant	1.718	1.718	-0.686	4.560**	4.560**	3.945*
	(2.203)	(2.393)	(1.599)	(2.223)	(2.076)	(2.051)
Observations	292	292	292	345	345	345
R-squared	0.662	0.662		0.637	0.637	
Number of Banks			118			136
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes
Country Dummy	Yes	Yes	Yes	Yes	Yes	Yes

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

6.7 Conclusion

This chapter investigated and compared the profitability of Islamic and conventional banks for different periods. The results support three out of the four proposed hypotheses. Table 6.10 a summary of main findings of the profitability regression results. They show that Islamic banks profitability is lower than conventional banks for the crisis, post-crisis and full sample period. The results may be due to Islamic banks still growing and being comparably new in the banking system. Stakeholders are still learning about Islamic banks and their products. Moreover, as Islamic banks are concerned about the welfare of society, it can expected that they would participate in helping to improve it. Therefore, it is expected that additional expenses may be generated for this purpose which will lead to a decrease in their profits. However, for the pre-crisis period, the results show no significant differences in profitability for both banks.

Table 6. 10 A summary of main findings of the profitability regression results

Research Question	Hypothesis	Accept/Reject	Main Findings
Did Islamic banks have significantly lower profitability than conventional banks?	H1: Islamic banks have significantly lower profitability than conventional banks for the pre-crisis period (2002-2006)	Reject	ROA and ROE do not show any significant differences between Islamic and conventional banks.
			Size shows a significant and negative relationship with ROA at 1% level.
			Cost to income ratio shows a significant and negative relationship with ROA and ROE at 1% level.
			Asset growth shows a significant and positive relationship with ROA at 1% level.
	H2: Islamic banks have significantly lower profitability than conventional banks for the post-crisis period (2010-2015)	Accept	ROA shows a significant and negative relationship with Islamic banks at 1% level.
			ROE shows a significant and negative relationship with Islamic banks at 10% level.
			Cost to income ratio shows a significant and negative relationship with ROA and ROE at 1% level.
			Loan loss provision to total loan ratio shows a significant and positive relationship with ROA at 5% level.
			Loan loss provision to total loan ratio shows a significant and positive relationship with ROE at 10% level.
Did Islamic banks have significantly lower profitability than conventional banks?	H3: Islamic banks have significantly lower profitability than conventional banks for the full sample period (2002-2015)	Accept	ROA shows a significant and negative relationship with Islamic banks at 1% level.
			ROE shows a significant and negative relationship with Islamic banks at 10% level.
			Size shows mixed results.
			Cost to income ratio shows a significant and negative relationship with ROA and ROE at 1% level.
			GDP growth shows a significant and positive relationship with ROA at 10% level.
	H4: Islamic banks have significantly lower	Accept	ROA shows a significant and negative relationship with Islamic banks at 5% level.

Research Question	Hypothesis	Accept/Reject	Main Findings
	profitability than conventional banks for the crisis period (2007-2009)		Size shows a significant and negative relationship with ROE at 5% level.
			Cost to income ratio shows a significant and negative relationship with ROA and ROE at 1% level.

Chapter 7: Research conclusion

This chapter discusses the conclusions of the thesis. It seeks to achieve the following objectives. First, it summarises the research findings. In this regard, the findings are based on the level of on formation asymmetry in Islamic banks in comparison to conventional banks; the level of credit risk in Islamic banks compared to conventional banks; and the level of profitability in Islamic banks compared to conventional banks. Second, it explains the policy implications of the study, and where appropriate, makes recommendations. Third, the chapter summarises the contributions of the study. Fourth, it identifies the limitations of the current study. Finally, the chapter highlights potential avenues for future research and improvements.

The chapter is organised as follows. Section 7.1 presents the summary of the research findings. Section 7.2 discusses the policy implications of the current study and makes recommendations. Section 7.3 summaries the contributions of the present study. Section 7.4 reports the limitations of the study. Section 7.5 provides potential avenues for future research and improvements.

7.1 Summary of the research findings

As has been discussed in Chapter one, the global financial crisis 2007-2008 affected the world's economy. Therefore, the financial crisis also affected its banking systems. As banks play an important role in financing the needs of the global economy, they were also a part of the 'credit crunch' because of their excessive lending. However, there is an alternative banking system that does not operate like conventional banking systems, which is the Islamic banking system. The Islamic banking system adheres to Islamic principles (Shariaa). The prohibition of interest is one of the main foundations of Islamic banking. There is a general misunderstanding from many people that interest (usury) is only forbidden in the Islamic religion. Usury is considered as injustice and immoral act. Therefore, Chapter two showed that usury was banned at early times and in many civilisations. It was also forbidden at some point of time in the history of both Judaism and Christianity. Therefore, Islam is not the only religion to acknowledge the harm of interest (usury), but it is the only religion that has kept its prohibition. The fact that people need to finance themselves for different reasons required Muslim scholars and practitioners to provide an alternative way of financing that does not include interest (usury) in its operations, i.e. Islamic banking. Arguably, Islamic banking is unique in terms of its characteristics. For many people, the concept of Islamic banking may

appear as window-dressing for conventional banking activities. Nevertheless, it is important to understand that the main difference between Islamic and conventional banks is that the earlier transactions must comply with Islamic principles, which is not the case in the conventional banking system.

As Islamic banking transactions must comply with Islamic Shariaa, a question may arise as to how that makes Islamic banks different than conventional banks regarding their banking activities. This research focused on three factors, i.e. information asymmetry, credit risk and profitability, to identify whether there are significant differences between Islamic and conventional banks. The following sections present and discuss the research findings based on the information asymmetry, credit risk and profitability regression results for Islamic and conventional banks.

7.1.2 Findings based on the information asymmetry regression results

Four main hypotheses have been tested in the information asymmetry chapter. The hypotheses tested if Islamic banks have significantly lower information asymmetry levels than conventional banks for the pre-crisis, crisis, post-crisis, and entire study period 2002-2015.

Initially, bid-ask spread, share turnover ratio, intangibility ratio and stock price synchronicity (SYNCH) were used as information asymmetry for this study. The findings for the pre-crisis period did not show any significant differences in information asymmetry for the Islamic and conventional banks. However, during the crisis period, the bid-ask spread, share turnover ratio, and stock price synchronicity (SYNCH) showed that Islamic banks have significant and lower information asymmetry levels than conventional banks. The same results were obtained for the post-crisis and entire study periods where all three information asymmetry proxies showed that Islamic banks have a significantly lower information asymmetry than conventional banks at the 1% level. These results suggest that Islamic banks showed lower information asymmetry during the crisis, post-crisis and entire study periods. These findings are in line with El-Hawary, 2004; Siddiqui, 2008; Al-Jarhi, 2002; Chong and Liu, 2009 and Iqbal 1997. Therefore, they suggest that Islamic banks' equity finance instruments lower the information asymmetry problem. However, Aggrawal and Yousef (2000) state that most financing instrument in Islamic banks are based on debt (i.e. Murabaha) rather than equity based financing instruments. Hence, they contradict the argument of Islamic banks having lower information asymmetry because of their equity

financing instruments. As is known, the banks' excessive lending was one of the reasons for the cause of the financial crisis. Although Islamic banks are not isolated from the world economy, the effect of the crisis was less severe on them compared to conventional banks. A possible reason may be that Islamic banks' financing characteristics are based on the Islamic Shariaa. The Islamic banks were more transparent and had more information about their clients in comparison to their counterparts. Unlike conventional banks, finance was given for low uncertainty investments and backed by assets through financing instruments that comply with Islamic principles (i.e. debt financing and equity financing). The intangibility ratio was used in the study as an information asymmetry proxy in the robustness test. The robustness test confirmed that Islamic banks had significantly lower information asymmetry levels than conventional banks in all four studied periods. However, these findings are in contrast to those of Jensen and Meckling (1976). A possible explanation may be that the conclusions of Jensen and Meckling were applied to conventional banks. Islamic banks have their own unique characteristics that were not taken into account by Jensen and Meckling such as the prohibition of interest and low uncertainty investments. Therefore, because of their unique way of operating, Islamic banks can be considered as an exceptional case to the theory.

7.1.3 Findings based on the credit risk regression results

Four main hypotheses were tested in the credit risk chapter to test if Islamic banks have significantly lower credit risk levels than conventional banks for the pre-crisis, crisis, post-crisis, and entire study period 2002-2015.

This study used the Z-score and non-performing loans (NPL) as a bank's credit risk measures. There are no significant differences in the credit risk between Islamic and conventional banks for the pre-crisis period. This contradicts the study hypothesis which suggested that Islamic banks have a significantly lower credit risk when compared to conventional banks for the pre-crisis period. Moreover, during the crisis period, Islamic banks showed a significantly lower Z-score compared to conventional banks which indicates that Islamic banks have a higher credit risk during the crisis period. This is not in line with the study expectation and hypothesis. On the other hand, the Islamic banks' NPL shows a significantly lower value for the post-crisis period. This suggests that Islamic banks had a lower credit risk than their counterparts which is in line with the study hypothesis. Nevertheless, the Z-score measure showed that Islamic banks have a significantly lower

credit risk compared to the conventional banks for the entire study period. There were mixed results regarding the credit risk differences in both types of banks. Therefore, the study used the OLS robust regression model to verify the previous findings. As a result, the robustness test showed that there are no significant differences between credit risk for Islamic and conventional banks for the four periods used in the study. Therefore, all four chapters' hypotheses are rejected. These findings contradicts Trad et al. (2017) where they show that Islamic banks remained more stable and more profitable than conventional banks after the financial crisis period. Nevertheless, they are in line with Bourkhis and Nabi (2013) in which they found no significant differences between Islamic and conventional banks regarding the effect of the financial crisis on the banking soundness. The insignificant differences in credit risk for Islamic and conventional banks can be attributed to the increased awareness of Islamic banks' risk management. The increasing period of applying such a system has grown the ability to understand it more, and accordingly, an increase in their managerial skills and investments strategy. According to Moody's, the improvement in Islamic banks' risk management and asset quality reduces the cost of risk. Moreover, the diversification of Islamic banks' investment towards other sectors other than real estate and lending has helped to spread the risk and thus reduce it.

7.1.4 Findings based on the profitability regression results comparison between Islamic and conventional banks

Four main hypotheses were tested in the profitability chapter. The hypotheses tested if Islamic banks have significantly lower profitability levels than conventional banks for the pre-crisis, crisis, post-crisis, and entire study period 2002-2015.

The return on asset (ROA) and return on equity (ROE) were used as the banks' profitability measures. For the pre-crisis period, the findings did not show any significant differences between Islamic and conventional banks' profitability. However, during the crisis period, the ROA showed a significant value of -0.534 at the 5% level. This suggests that Islamic banks' profitability is lower than their counterparts during the crisis period. The significantly lower profitability in the Islamic banks in comparison to the conventional banks was also detected in the post-crisis and entire study period. Furthermore, the OLS robust regression model for the profitability measures was used to confirm the previous results. The results are in line with Abdus Samad (2004) results suggesting that there are no significant differences in profitability for Islamic and conventional banks for the pre-crisis period. Therefore, the study hypothesis is rejected. The test also shows that there is a significantly

lower profitability in Islamic banks in comparison to the conventional banks for the crisis, post-crisis, and entire study period. As a result, the remaining three study hypotheses are accepted as they suggest that Islamic banks have a significant and lower profitability than conventional banks for the crisis, post-crisis, and entire study period. This finding is in line with Merchant (2012). However, they contradict with Amba and Almukharreq (2013) and Youssef and Samir (2015) where they show no significant differences between Islamic and conventional banks' profitability during the crisis and post-crisis periods respectively. As previously mentioned, Islamic banks invest in low uncertainty projects which may result in having low returns, and thus, low profitability.

7.2 The Study's Insight about Islamic Banking

Placing this study's opinion about Islamic banking is essential. A question can arise: is Islamic banks are genuinely Islamic? Despite the different arguments about of how Islamic banks operate, there will always be some doubts about their true intensions and practices. For example, although Islamic banks transactions must adhere to Islamic principles, the approval of such transactions is attributed to the Shariaa board committee (Ulama). The Shariaa board committee is a committee that includes Muslim scholars who try to interpret Islamic principles for financing transactions. They get paid to do that, where they are human who can make mistakes. In general, people assume good faith in them. However, if a bank wants to legalise a specific transaction, one scholar might not agree on its compliance to the Islamic Shariaa while another might do. Therefore, the differences in interpretations may question the integrity of such people (i.e. who is right?). Moreover, the different ways of Islamic financing instruments might be seen as a manipulation of terminologies to legalise interest. For instance, some Islamic banks use conventional banks interest rates as benchmarks to set their mark-up on Murabahah which will ordinarily equal to their interest rate or some percentage above. Also, Islamic banks are using the religion aspect to attract customers. The 'Islamic' terminology for many Muslims is the way of financing that complies with Islamic principles. They put their faith and trust in those banks to obey Islamic Shariaa. As a result, the terminology itself is acting as a marketing tool in which can be considered as exploitation. In fact, to make sure that Islamic banks are practising financing according to Islamic Shariaa, they must go back to the basics. They must understand the Islamic Shariaa and unify the different opinions about the different ways of financing instruments. Everyone is responsible for educating themselves regarding Islamic banking. People should not accept it just because a Shariaa committee approved it. They should go

further and seek for information about the Islamic banks' operations until they can make their judgment. It is also the role of the central banks to make sure that these banks are applying what they claim. Also, there should be a unified Fatwa about all Islamic financing transactions which can be applied in all banks. It is essential to activate The Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI) on a larger scale and revise their standards to be compulsorily applied to every Islamic bank around the world. This will be a step towards a better practice in Islamic banking industry.

7.4 Research limitations

The current study, like any other empirical research, may have some limitations which need to be acknowledged. For example, the sample included only publicly listed banks. As Islamic banks are considerably new, a restriction on the availability of data arose. There is a significant number of Islamic banks that are not listed on the market. Thus, the study could not investigate a larger sample. Moreover, information is not always available from listed Islamic banks. As previously mentioned, there were banks that were excluded from the sample because of national political and financial stability, for example, Iraq and Syria. Moreover, having the Islamic banks' detailed financial statements regarding their equity finance and debt finance operations would have given a better view of the results. However, there is insufficient data available in this regard. Therefore, it was not used in the study. Another study limitation was the use of other methods of data collection. The study could have benefitted from using other data collection methods, such as forecast analysis coverage and interviews to improve the quantity and quality of the data. Indeed, the data and time available in this study were not sufficient.

These imitations may have influenced the research findings, and therefore, these findings must be interpreted in the light of this fact.

7.5 Avenues for future research and improvements

There are several potential avenues for future research and improvements. The issue of information asymmetry has proven its importance for firms, especially those in the banking industry. Investors seek information about projects to help them make the proper decisions. Therefore, they also have the right to know the severity of information asymmetry. Several measures can be used to assess information asymmetry. Analyst forecast was an important information asymmetry proxy that was not used in the current study because of

the insufficiency of the data of the Islamic banks investigated. One potentially fruitful extension of this study would be to investigate information asymmetry for Islamic and conventional banks by using an analyst forecast measure. Another potential extension of the study would be using a mixed method rather than quantitative method only in collecting and analysing the data. For example, in addition to the financial statements and bank stock prices, interviews could be conducted to have a managerial perspective on the matter of information asymmetry.

Future study can also investigate the corporate governance in both types of banks and examine its effect on information asymmetry. Islamic banks have a Sharia board committee; a future study could investigate the committee's role in mitigating the issue of asymmetric information.

One of the arguments that was stated in this study is that equity based financing instruments reduce the problem of information asymmetry in banks. Another potential avenue for future study would be investigating the actual proportion of the equity based finance and the debt finance in Islamic banks and examining their effects on the matter of asymmetric information. This would help enhance the current understanding of how equity based financing reduces information asymmetry in the banking system.

8. Appendix

Appendix 2. 1 A summary of Bayt Al-Mal revenues and expenditures

Funds	Sources	Disbursement
Fund of Fifths	a. Fifth of ghanimah b. Fifth of minerals c. Fifth of hidden treasures in the ground d. Fifth of war booties	a. For Allah and His Messenger… now would be moved to the fund of war booties b. For His relatives c. For Orphans d. For the poor e. For the wayfarers.
Fund of War	a. Portion of Allah and His Messenger from the fifths b. Lands of ghanimah c. Tax of the lands of ghanimah d. Jizyah e. Tithes of free non-Muslims.	a. Grants b. Equipments, weapons, expenses of jihad c. Salaries of employees d. Taking care of needy Muslims e. Spending on free non-Muslim under Muslim rule f. Ransom for untying the Muslim captives g. The general welfare of Muslims
Fund of Missing	a. Properties found but the owners are unknown b. Wealth of thieves with having no claim on that	a. For foundlings that are poor and do not have guardians...as a charity from owners. b. Could be spent on general wellbeing of the Muslims.
Fund of Zakah	a. Zakah on various types of wealth b. Zakah on grazing livestock, crops, money, and commercial goods. c. Tithes of the lands subject to zakah d. Tithes from the Muslim traders	a. Would be spent on the eight sectors specified in the Qur'an. b. Could be spent on general wellbeing like the booty.
Fund of Public Properties	a. The general utilities for all people b. Assets whose natural formation prevents individuals from holding them exclusively c. Minerals that replenish and do not deplete	a. Would be spent upon what is related to public properties b. For general welfares and benefits of the citizens.

9. References

A simple introduction to Islamic mortgages. (2017). *Mohammedamin.com*. Retrieved 22 March 2017, from http://www.mohammedamin.com/Islamic_finance/Simple-introduction-to-Islamic-mortgages.html

Abarbanell, J. S., Lanen, W. N., & Verrecchia, R. E. (1995). Analysts' forecasts as proxies for investor beliefs in empirical research. *Journal of Accounting and Economics, 20*(1), 31-60.

Abduh, M., & Idrees, Y. (2013). Determinants of Islamic banking profitability in Malaysia. *Australian Journal of Basic and Applied Sciences, 7*(2), 204-210.

Abdul-Majid, M., Saal, D. S., & Battisti, G. (2010). Efficiency in Islamic and conventional banking: an international comparison. *Journal of Productivity Analysis, 34*(1), 25-43.

Abdul-Majid, M., Saal, D. S., & Battisti, G. (2011). The impact of Islamic banking on the cost efficiency and productivity change of Malaysian commercial banks. *Applied Economics, 43*(16), 2033-2054.

Abedifar, P., Ebrahim, S. M., Molyneux, P., & Tarazi, A. (2015). Islamic banking and finance: recent empirical literature and directions for future research. *Journal of Economic Surveys, 29*(4), 637-670.

Abedifar, P., Molyneux, P., & Tarazi, A. (2013). Risk in Islamic banking. *Review of Finance, 17*(6), 2035-2096.

Accounting and Auditing Organization for Islamic Financial Institutions. (2017). *Aaoifi.com*. Retrieved 22 March 2016, from http://aaoifi.com/adoption-of-aaoifi-standards/?lang=en

Adam, T., & Goyal, V. K. (2008). The investment opportunity set and its proxy variables. *Journal of Financial Research, 31*(1), 41-63.

Aggarwal, R. K., & Yousef, T. (2000). Islamic banks and investment financing. *Journal of money, credit and banking*, 93-120.

Agung, J., Kusmiarso, B., Pramono, B., Hutapea, E. G., Prasmuko, A., & Prastowo, N. J. (2001). Credit crunch in Indonesia in the aftermath of the crisis: Facts, causes and policy implications. *Policy paper*.

Ahmad, N. H., & 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), 65-80.

Ahmad, N. H., & Ariff, M. (2007). Multi-country study of bank credit risk determinants.

International Journal of Banking and Finance, *5*(1), 6.

Ahmad, Z. (1994). Islamic banking: state of the art.

Ahmed, A. (2010). Global financial crisis: an Islamic finance perspective. *International Journal of Islamic and Middle Eastern Finance and Management, 3*(4), 306-320.

Ahmed, H., & Khan, T. (2007). 10 Risk management in Islamic banking. *Handbook of Islamic banking*, 144.

Ahmed, S. (1989). Islamic banking and finance: A review essay. *Journal of Monetary Economics*, *24*(1), 157-167.

Akerlof, G. A. (1970). The market for" lemons": Quality uncertainty and the market mechanism. *The quarterly journal of Economics*, 488-500.

Akhigbe, A., Martin, A. D., & Newman, M. L. (2010). Information Asymmetry Determinants of Sarbanes-Oxley Wealth Effects. *Financial Management, 39*(3), 1253-1272.

Al Masry, A., Debes, A., & El Baradie, M. (2015). Islamic & Commercial Banking Systems A Theoretical Comparison. *University of Plymouth Business School. Asian Journal of Business Research*.

Algaoud, L. M., & Lewis, M. K. (2007). 3 Islamic critique of conventional financing. *Handbook of Islamic banking*, 38.

Al-Gazzar, M. M. (2014). The Financial Performance of Islamic vs. Conventional Banks: An Empirical Study on The GCC & MENA Region. *A Bachelor's Dissertation/Senior Year Project Submitted to Faculty of Business, Economics and Political Science at The British University in Egypt*.

Ali, A. J., Al-Aali, A., & Al-Owaihan, A. (2013). Islamic perspectives on profit maximization. *Journal of Business Ethics*, 1-9.

Ali, E. S., & Elrahman, A. (2012). *The impact of credit risk transfer on Islamic banks lending behavior and financial stability*. Retrieved from

Al-Jarhi, M. A. (2002). Islamic Finance: An Efficient and Equitable Option. *Islamic research and training institute, Islamic development Bank*.

Al-Jarrah, I., & Molyneux, P. (2007). Efficiency in Arabian banking.

Alkassim, F. A. (2005). The profitability of Islamic and conventional banking in the GCC countries: A comparative study. *Journal of Review of Islamic Economics, 13*(1), 5-30.

Allen, F., & Santomero, A. M. (1997). The theory of financial intermediation. *Journal of Banking & Finance, 21*(11), 1461-1485.

Al-Mamun, A., Yasser, Q. R., Entebang, H., Rahman, M. A., Nathan, T. M., & Mansor, S.

A. (2014). Comparison Between Islamic and Conventional Banking: Evidence from Malaysia. *International Journal of Excellence in Islamic Banking and Finance*, *4*(1), 1-14.

Al-Tamimi, H., & Hussein, A. (2010). Factors influencing performance of the UAE Islamic and conventional national banks.

Altrogge, M. (2017). *Books of the Bible List Order- New and Old Testament*. *Bible Study Tools*. Retrieved 29 March 2017, from http://www.biblestudytools.com/books-of-the-bible/

Al-Wesabi, H. A., & Ahmad, N. H. (2013). Credit risk of Islamic banks in GCC countries. *International Journal of Banking and Finance*, *10*(2), 8.

Amba, M. S., & Almukharreq, F. (2013). Impact of the financial crisis on profitability of the Islamic banks vs conventional banks-evidence from GCC. *International Journal of Financial Research*, *4*(3), 83.

Ariff, M. (1988). Islamic banking. *Asian-Pacific Economic Literature, 2*(2), 48-64.

Ariff, M., & Iqbal, M. (2011). *The foundations of Islamic banking: Theory, practice and education*: Edward Elgar Publishing.

Ariff, M., Badar, M., Shamsher, M., & Hassan, T. (2011). Performance of Islamic banks and conventional banks. *The foundations of Islamic banking theory, practice and education, Elgar, Cheltenham*, 127-152.

Armstrong, C. S., Core, J. E., Taylor, D. J., & Verrecchia, R. E. (2011). When does information asymmetry affect the cost of capital? *Journal of accounting research*, 49(1), 1-40.

Åström, Z. H. (2012). Risk Analysis for Profit and Loss Sharing Instruments. *Unpublished doctoral dissertation). International University of Sarajevo*.

ÅSTRÖM, Z. H. O. Enhancing the Structure of Islamic Banking by Lessening the Asymmetric Information Pertaining to Profit and Loss Sharing Instruments.

Atiase, R. K. (1985). Predisclosure information, firm capitalization, and security price behavior around earnings announcements. *Journal of accounting research*, 21-36.

Awan, A. G. (2009). Comparison of Islamic and conventional banking in Pakistan. *Proceedings 2nd CBRC, Lahore, Pakistan*, 1-36.

Ayub, M. (2009). Understanding Islamic Finance (Vol. 462): *John Wiley & Sons*.

Azhar Rosly, S., & Afandi Abu Bakar, M. (2003). Performance of Islamic and mainstream banks in Malaysia. *International Journal of Social Economics, 30*(12), 1249-1265.

Azmat, S. (2012). *Asymmetric information, credit risk and instrument characteristics in islamic finance*. Monash University. Faculty of Business and Economics.

Accounting and Finance.

Azmat, S., Skully, M., & Brown, K. (2014). Credit risk in Islamic joint venture bond. *Journal of Economic Behavior & Organization, 103*, S129-S145.

Bader, M. K. I., Mohamad, S., Ariff, M., & Hassan, T. (2008). Cost, revenue and profit efficiency of Islamic versus conventional banks: International evidence using Data Envelopment Analysis. *Islamic Economic Studies, 15*(2), 23-76.

Baele, L., Farooq, M., & Ongena, S. (2014). Of religion and redemption: Evidence from default on Islamic loans. *Journal of Banking & Finance, 44*, 141-159.

Baldwin, K., Dar, H. A., & Presley, J. R. (2002). On determining moral hazard and adverse selection in the Islamic firm. *Theoretical Foundations of Islamic Economics*, 145.

Barbosa, R. C. O., & Marçal, E. F. (2012). The impacts of information asymmetry in determining bank spreads. *Revista Gestão & Políticas Públicas, 1*(2).

Bashir, A., Darrat, A., & Suliman, M. (1993). Equity capital, profit sharing contracts, and investment: theory and evidence. *Journal of Business Finance & Accounting, 20*(5), 639-651.

Bashir, A.-H. M. (1999). Risk and profitability measures in Islamic banks: the case of two Sudanese banks. *Islamic Economic Studies, 6*(2), 1-24.

Bashir, A.-H. M. (2001). Assessing the performance of Islamic banks: Some evidence from the Middle East. *Topics in Middle Eastern and North African Economies, 3*.

Bashir, A.-H. M. (2003). Determinants of profitability in Islamic banks: Some evidence from the Middle East. *Islamic Economic Studies, 11*(1), 31-57.

Beck, T., Demirgüç-Kunt, A., & Merrouche, O. (2013). Islamic vs. conventional banking: Business model, efficiency and stability. *Journal of Banking & Finance, 37*(2), 433-447.

Berger, A. N., & DeYoung, R. (1997). Problem loans and cost efficiency in commercial banks. *Journal of Banking & Finance, 21*(6), 849-870.

Berger, A. N., & Udell, G. F. (1990). Collateral, loan quality and bank risk. *Journal of Monetary Economics, 25*(1), 21-42.

Berger, A. N., ESPINOSA-VEGA, M. A., Frame, W. S., & Miller, N. H. (2005). Debt maturity, risk, and asymmetric information. *The Journal of Finance, 60*(6), 2895-2923.

Bester, H. (1985). Screening vs. rationing in credit markets with imperfect information. *The American Economic Review, 75*(4), 850-855.

Bharath, S. T., Pasquariello, P., & Wu, G. (2008). Does asymmetric information drive capital structure decisions? *The Review of Financial Studies, 22*(8), 3211-3243.

Bharath, S. T., Pasquariello, P., & Wu, G. (2009). Does asymmetric information drive capital structure decisions? *Review of Financial Studies, 22*(8), 3211-3243.

Bidabad, B., & Allahyarifard, M. (2008). *Assets and liabilities management in Islamic banking.* Paper presented at the 3rd International Conference on Islamic banking and Finance, Karachi, Pakistan.

Bikker, J., & Bos, J. W. (2008). *Bank Performance: A theoretical and empirical framework for the analysis of profitability, competition and efficiency*: Routledge.

Bitara, M., Hassanb, M. K., Pukthuanthongc, K., & Walkera, T. The performance of Islamic vs. conventional banks: A note on the suitability of capital ratios.

Blau, B. M., Brough, T. J., & Griffith, T. G. (2017). Bank opacity and the efficiency of stock prices. *Journal of Banking & Finance, 76*, 32-47.

Boujelbene, Y., & Besbes, L. (2012). The Determinants of Information Asymmetry between Managers and Investors: A Study on Panel Data. *IBIMA Business Review, 2012*, 1.

Boumediene, A. (2010). Is credit risk really higher in Islamic banks?

Bourkhis, K., & Nabi, M. S. (2013). Islamic and conventional banks' soundness during the 2007–2008 financial crisis. *Review of Financial Economics, 22*(2), 68-77.

Building a better working world. (2013). Emergingmarkets.ey.com. Retrieved 15 November 2013, from http://emergingmarkets.ey.com/world-islamic-banking-competitiveness-report-2012-2013/

Bushee, B. J., & Noe, C. F. (2000). Corporate disclosure practices, institutional investors, and stock return volatility. *Journal of accounting research*, 171-202.

Campbell, D., & Campbell, S. (2008). Introduction to regression and data analysis. *Paper presented at the StatLap Workshop Series*.

Campbel, T. S., & Kracaw, W. A. (1980). Information production, market signalling, and the theory of financial intermediation. *The Journal of Finance, 35*(4), 863-882.

Canon Law - Medieval Studies - Oxford Bibliographies - obo. (2017). *Oxfordbibliographies.com*. Retrieved 29 March 2017, from http://www.oxfordbibliographies.com/view/document/obo-9780195396584/obo-9780195396584-0033.xml

Cevik, S., & Charap, J. (2011). The behavior of conventional and Islamic bank deposit returns in Malaysia and Turkey.

Chae, J. (2005). Trading volume, information asymmetry, and timing information. *The Journal of Finance, 60*(1), 413-442.

Chan, K., & Hameed, A. (2006). Stock price synchronicity and analyst coverage in emerging markets. *Journal of financial economics, 80*(1), 115-147.

Chapra, M. U. (1985). *Towards a just monetary system* (Vol. 8): IIIT.

Chapra, M. U., formation, I. i. d. r. e. d., & Khan, T. (2000). *Regulation and supervision of Islamic banks*: Islamic Research and Training Institute.

Choi, J. Y., Salandro, D., & Shastri, K. (1988). On the estimation of bid-ask spreads: Theory and evidence. *Journal of Financial and Quantitative Analysis*, *23*(02), 219-230.

Chong, B. S., & Liu, M.-H. (2009). Islamic banking: interest-free or interest-based? *Pacific-Basin Finance Journal, 17*(1), 125-144.

Chowdhury, M. A. F. (2015). Which is more important in terms of profitability of Islamic banks: Bank specific factors or macroeconomic factors? An empirical study on Malaysian Islamic banks. *European Journal of Islamic Finance*(2).

Chung, K. H., & Charoenwong, C. (1991). Investment options, assets in place, and the risk of stocks. *Financial Management*, 21-33.

Cihák, M. M., & Hesse, H. (2008). *Islamic banks and financial stability: An empirical analysis*: International Monetary Fund.

Cihak, M., & Hesse, H. (2008). Islamic banks and financial stability: An empirical analysis. *IMF Working Papers*, 1-29.

Clarke, J., & Shastri, K. (2000). On information asymmetry metrics. *Available at SSRN 251938*.

Collins, D. W., & Kothari, S. (1989). An analysis of intertemporal and cross-sectional determinants of earnings response coefficients. *Journal of Accounting and Economics, 11*(2), 143-181.

Cordella, T., & Yeyati, E. L. (2003). Bank bailouts: moral hazard vs. value effect. *Journal of Financial Intermediation*, 12(4), 300-330.

Copeland, T. E., & Galai, D. (1983). Information effects on the bid-ask spread. *The Journal of Finance, 38*(5), 1457-1469.

Cyree, K. B., Wansley, J. W., & Boehm, T. P. (2000). Determinants of bank growth choice. *Journal of Banking & Finance, 24*(5), 709-734.

Dakhlallah, K., & Miniaoui, H. (2011). Islamic Banks Vs. Non Islamic Ethical Dimensions.

Dam, L., & Koetter, M. (2012). Bank bailouts and moral hazard: Evidence from Germany. *The Review of Financial Studies*, 25(8), 2343-2380.

Dar, H. A., & Presley, J. R. (2000). Lack of profit loss sharing in Islamic banking: management and control imbalances. *international journal of Islamic financial services, 2*(2), 3-18.

Das, A., & Ghosh, S. (2007). Determinants of credit risk in Indian state-owned banks: An empirical investigation.

Dell'Ariccia, G., & Marquez, R. (2004). Information and bank credit allocation. *Journal of financial economics*, *72*(1), 185-214.

Deposits. (2017). *Financial Islam - Islamic Finance*. Retrieved 22 March 2017, from http://www.financialislam.com/deposits.html

Dhumale, R., & Sapcanin, A. (1998). *An application of Islamic banking principles to microfinance*: World Bank.

Diamond, D. W. (1984). Financial intermediation and delegated monitoring. *The review of economic studies*, *51*(3), 393-414.

Dixon, R. (1992). Islamic banking. *International Journal of Bank Marketing*, *10*(6), 32-37.

Drobetz, W., Grüninger, M. C., & Hirschvogl, S. (2010). Information asymmetry and the value of cash. *Journal of Banking & Finance*, *34*(9), 2168-2184.

Easley, D., & O'hara, M. (2004). Information and the cost of capital. *The Journal of Finance*, 59(4), 1553-1583.

Eisenhardt, K. M. (1989). Agency theory: An assessment and review. *Academy of management review*, *14*(1), 57-74.

El Massah, S., & Al-Sayed, O. (2013). Risk aversion and Islamic finance: an experimental approach. *International Journal of Information Technology and Business Management*, *16*(1), 49-77.

El Qorchi, M. (2005). Islamic finance gears up. *Finance and Development*, *42*(4), 46.

El-Ashker, A. A.-F. (1987). *The Islamic business enterprise*: Taylor & Francis.

El-Gamal, M. A. (1997). *Can Islamic Banking Survive?: A Micro-evolutionary Perspective*: Social Systems Research Institute, University of Wisconsin.

El-Gamal, M. A. (2000). *A basic guide to contemporary Islamic banking and finance* (Vol. 1): Rice University Houston.

Elgari, M. A. (2003). Credit risk in Islamic banking and finance. *Islamic Economic Studies*, *10*(2), 1-25.

El-Hawary, D., Grais, W., & Iqbal, Z. (2004). Regulating Islamic financial institutions: The nature of the regulated. *World Bank Policy Research Working Paper*(3227).

Elsiefy, E. (2013). Comparative analysis of Qatari Islamic banks performance versus conventional banks before, during and after the financial crisis. *International journal of business and commerce*, *3*(3), 11-41.

Eltabakh, M., Ngamkroeckjoti, C., & Siad, I. A. (2014). *A comparison Study on The Profitability and its Determinants between Islamic and Conventional Banks Listed in Qatar Exchange (QE) Pre, During, and Post 2008 Global Financial Crisis.* Paper

presented at the International Conference on Business, Law and Corporate Social Responsibility.

Erol, C., & El-Bdour, R. (1989). Attitudes, behaviour, and patronage factors of bank customers towards Islamic banks. *International Journal of Bank Marketing, 7*(6), 31-37.

Espinoza, R. A., & Prasad, A. (2010). Nonperforming loans in the GCC banking system and their macroeconomic effects.

Faizulayev, A. (2011). *Comparative analysis between Islamic banking and conventional banking firms in terms of profitability, 2006-2009.* Eastern Mediterranean University (EMU).

Famous Quotes On Money. (2017). *Freedom-school.com*. Retrieved 29 March 2017, from http://freedom-school.com/money/famous-quotes-on-money.html

Faye, I., Triki, T., & Kangoye, T. (2013). The Islamic finance promises: evidence from Africa. *Review of Development Finance, 3*(3), 136-151.

Fayed, M. E. (2013). Comparative performance study of conventional and Islamic banking in Egypt. *Journal of Applied Finance and Banking*, *3*(2), 1.

Fayed, M., & Ezzat, A. Do principal-agent conflicts impact performance and risk-taking behavior of Islamic banks?

Febianto, I., & Kasri, R. (2007). *Why Do Islamic Banks Tend to Avoid Profit and Loss Sharing Arrangements?* Paper presented at the 2nd Islamic Economics Conference.

Ferhi, A., & Chkoundali, R. (2015). Credit risk and efficiency: Comparative study between Islamic and conventional banks during the current crises. *Journal of Behavioural Economics, Finance, Entrepreneurship, Accounting and Transport*, 3(1), 47-56.

Fiordelisi, F., Marques-Ibanez, D., & Molyneux, P. (2011). Efficiency and risk in European banking. *Journal of Banking & Finance*, *35*(5), 1315-1326.

Flannery, M. J., Kwan, S. H., & Nimalendran, M. (2004). Market evidence on the opaqueness of banking firms' assets. *Journal of financial economics, 71*(3), 419-460.

Flannery, M. J., Kwan, S. H., & Nimalendran, M. (2013). The 2007–2009 financial crisis and bank opaqueness. *Journal of Financial Intermediation, 22*(1), 55-84.

French, K. R., & Roll, R. (1986). Stock return variances: The arrival of information and the reaction of traders. *Journal of financial economics, 17*(1), 5-26.

Gamaginta, R. R. (2015). The stability comparison between Islamic banks and conventional banks: Evidence in Indonesia. *Financial Stability and Risk Management in Islamic Financial Institutions, 101*.

Gaver, J. J., & Gaver, K. M. (1993). Additional evidence on the association between the

investment opportunity set and corporate financing, dividend, and compensation policies. *Journal of Accounting and Economics, 16*(1), 125-160.

George, T. J., Kaul, G., & Nimalendran, M. (1991). Estimation of the bid–ask spread and its components: A new approach. *Review of Financial Studies, 4*(4), 623-656.

Ghannadian, F. F., & Goswami, G. (2004). Developing economy banking: the case of Islamic banks. *International Journal of Social Economics*, 31(8), 740-752.

Gheeraert, L. (2014). Does Islamic finance spur banking sector development? *Journal of Economic Behavior & Organization, 103*, S4-S20.

Ghosh, P., & Ray, D. (1999). *Information and enforcement in informal credit markets*: Boston University, Institute for Economic Development.

Ghosh, P., Mookherjee, D., & Ray, D. (2000). Credit rationing in developing countries: an overview of the theory. *Readings in the theory of economic development*, 383-401.

Gilson, S. C., Healy, P. M., Noe, C. F., & Palepu, K. (1998). Information effects of spin-offs, equity carve-outs, and targeted stock offerings. *Equity Carve-outs, and Targeted Stock Offerings (June 1998)*.

Hamedian, B. (2013). *Financial Performance of Islamic Banks vs. Conventional Banks: The Case of Malaysia.* Eastern Mediterranean University (EMU).

Hamid, S., Craig, R., & Clarke, F. (1993). Religion: a confounding cultural element in the international harmonization of accounting? *Abacus, 29*(2), 131-148.

Hanif, M. (2014). Differences and similarities in Islamic and conventional banking. *International Journal of Business and Social Sciences, 2*(2).

Haniffa, R., & Hudaib, M. (2007). Exploring the ethical identity of Islamic banks via communication in annual reports. *Journal of Business Ethics, 76*(1), 97-116.

Haron, S. (2004). Determinants of Islamic bank profitability. *Global Journal of Finance and Economics, 1*(1), 11-33.

Haron, S., & Ahmad, N. (2000). The effects of conventional interest rates and rate of profit on funds deposited with Islamic banking system in Malaysia. *international journal of Islamic financial services, 1*(4), 1-7.

Haron, S., & Nursofiza Wan Azmi, W. (2008). Determinants of Islamic and conventional deposits in the Malaysian banking system. *Managerial Finance, 34*(9), 618-643.

Haron, S., Ahmad, N., & Planisek, S. L. (1994). Bank patronage factors of Muslim and non-Muslim customers. *International Journal of Bank Marketing, 12*(1), 32-40.

Harris, M., & Raviv, A. (1991). The theory of capital structure. *The Journal of Finance, 46*(1), 297-355.

Haryono, Y., Ariffin, N., & Hamat, M. (2016). Factors Affecting Credit Risk in Indonesian

Islamic Banks. Journal Of Islamic Finance, 5(1), 12-25.

Hasan, M. M., & Dridi, J. (2010). The effects of the global crisis on Islamic and conventional banks: A comparative study.

Hasan, Z. (2008). Theory of profit from Islamic perspective.

Hassan, A. (2009). Risk management practices of Islamic banks of Brunei Darussalam. *The Journal of Risk Finance, 10*(1), 23-37.

Hassan, A. (2009). The global financial crisis and Islamic banking. *UK: The Islamic Foundation, UK*.

Hassan, M. K., & Bashir, A.-H. M. (2003). Determinants of Islamic banking profitability. *Paper presented at the 10th ERF annual conference*, Morocco.

Hassoune, A. (2002). Islamic banks' profitability in an interest rate cycle. *international journal of Islamic financial services, 4*(2), 1-13.

Hayat, R. (2006). An empirical assessment of Islamic equity fund returns. *Failaka website*, 1-69.

He, W. P., Lepone, A., & Leung, H. (2013). Information asymmetry and the cost of equity capital. *International Review of Economics & Finance*, 27, 611-620.

Homer, S., & Sylla, R. E. (1996). *A history of interest rates*: Rutgers University Press.

Houston, J. F., Lin, C., Lin, P., & Ma, Y. (2010). Creditor rights, information sharing, and bank risk taking. *Journal of financial economics, 96*(3), 485-512.

How, J. C., Karim, M. A., & Verhoeven, P. (2005). Islamic financing and bank risks: the case of Malaysia. *Thunderbird International Business Review, 47*(1), 75-94.

Huddart, S. J., & Ke, B. (2007). Information asymmetry and cross-sectional variation in insider trading. *Contemporary Accounting Research, 24*(1), 195-232.

Ibrahim, M. (2015). A comparative study of financial performance between conventional and Islamic banking in United Arab Emirates. *International Journal of Economics and Financial Issues, 5*(4).

Iqbal, M., & Llewellyn, D. T. (2002). *Islamic banking and finance: new perspectives on profit sharing and risk*: Edward Elgar Publishing.

Iqbal, Z. (1997). Islamic financial systems. *Finance and Development, 34*, 42-45.

Islam, K. A., Alam, I., & Hossain, S. A. (2014). Examination of profitability between Islamic banks and conventional banks in Bangladesh: a comparative study. *Research in Business and Management, 1*(1), 78-89.

Islam: Governing Under Sharia. (2017). *Council on Foreign Relations*. Retrieved 22 March 2017, from http://www.cfr.org/religion/islam-governing-under-sharia/p8034

Ismail, A. G., Akbar, S., & Ngalim, S. M. (2014). *Measuring the Value of Islamic Banks*. Retrieved from

Ivashina, V. (2009). Asymmetric information effects on loan spreads. *Journal of financial economics, 92*(2), 300-319.

Jaffar, M., & Manarvi, I. (2011). Performance comparison of Islamic and Conventional banks in Pakistan. *Global Journal of Management and Business Research, 11*(1).

Jafri, S. H. A., & Margolis, L. S. (1999). The treatment of usury in the holy scriptures. *Thunderbird International Business Review, 41*(4-5), 371-379.

Jalbani, A. A., & Shaikh, S. A. (2009). Risk Management in Islamic and Conventional Banks: A Differential Analysis.

Jawadi, F., Jawadi, N., & Louhichi, W. (2014). Conventional and Islamic stock price performance: An empirical investigation. *International Economics, 137*, 73-87.

Jickling, M. (2009). Causes of the financial crisis.

Jiménez, G., Lopez, J. A., & Saurina, J. (2013). How does competition affect bank risk-taking? *Journal of Financial Stability, 9*(2), 185-195.

Johnes, J., Izzeldin, M., & Pappas, V. (2014). A comparison of performance of Islamic and conventional banks 2004–2009. *Journal of Economic Behavior & Organization, 103*, S93-S107.

Kabir, M. N., Worthington, A., & Gupta, R. (2015). Comparative credit risk in Islamic and conventional bank. *Pacific-Basin Finance Journal, 34*, 327-353.

Kabir, N., Worthington, A. C., & Gupta, R. (2014). Comparative Credit Risk in Islamic and Conventional Banks. *Available at SSRN 2491951*.

Kamarudin, W. N. W., & Ismail, A. G. (2013). Profit sharing and loss bearing in financial intermediation theory. *Investment Management and Financial Innovations, 10*(2), 184-192.

Kayed, R. N., & Hassan, M. K. (2011). The global financial crisis and Islamic finance. Thunderbird International Business Review, 53(5), 551-564.

Kearney, A., & Korea, L. (2012). The Future of Islamic Banking. online, Seoul, Korea.

Kettell, B. (2010). *Frequently asked questions in Islamic finance*: John Wiley & Sons.

Kettell, B. (2011). *Introduction to Islamic banking and finance* (Vol. 1): John Wiley & Sons.

Khan, F. (2010). How 'Islamic'is Islamic Banking? *Journal of Economic Behavior & Organization, 76*(3), 805-820.

Khan, M. S., & Mirakhor, A. (1989). The financial system and monetary policy in an Islamic

economy. Journal of King Abdulaziz University: Islamic Economics, 1(1), 39-57.

Khan, M. Y. (2016). *Corporate governance and cost of capital: evidence from Pakistani listed firms.* University of Glasgow.

Khan, T. (1995). Demand for and supply of mark-up and PLS funds in Islamic banking: some alternative explanations. *Islamic Economic Studies, 3*(1), 39-78.

Kim, D., & Santomero, A. M. (1988). Risk in banking and capital regulation. *The Journal of Finance, 43*(5), 1219-1233.

Kouser, R., & Saba, I. (2012). Gauging the financial performance of banking sector using CAMEL model: comparison of conventional, mixed and pure Islamic banks in Pakistan. *International Research Journal of Finance and Economics, 82*, 67-88.

Kozarevic, E., Nuhanovic, S., & Nurikic, M. B. (2013). Comparative analysis of risk management in Conventional and Islamic Banks: the case of Bosnia and Herzegovina. *International Business Research, 6*(5), 180.

Krishnaswami, S., & Subramaniam, V. (1999). Information asymmetry, valuation, and the corporate spin-off decision. *Journal of financial economics, 53*(1), 73-112.

Kureshi, H., & Hayat, M. (2014). *Contracts and Deals in Islamic Finance: A User? s Guide to Cash Flows, Balance Sheets, and Capital Structures*: John Wiley & Sons.

Lambert, R. A., Leuz, C., & Verrecchia, R. E. (2011). Information asymmetry, information precision, and the cost of capital. *Review of Finance*, 16(1), 1-29.

Lepetit, L., Nys, E., Rous, P., & Tarazi, A. (2008). Bank income structure and risk: An empirical analysis of European banks. *Journal of Banking & Finance, 32*(8), 1452-1467.

Leuz, C., & Verrecchia, R. E. (2000). The Economic Consequences of Increased Disclosure (Digest Summary). *Journal of accounting research, 38*, 91-124No.

Lewellen, W., Loderer, C., & Martin, K. (1987). Executive compensation and executive incentive problems: An empirical analysis. *Journal of Accounting and Economics, 9*(3), 287-310.

Lewis, M. K. (2007). *Comparing Islamic and Christian attitudes to usury.* Edward Elgar Publishing Limited.

Lewis, M. K., Ariff, M., & Mohamad, S. (2014). *Risk and regulation of Islamic banking*: Edward Elgar Publishing.

Liao, H.-H., Chen, T.-K., & Lu, C.-W. (2009). Bank credit risk and structural credit models: Agency and information asymmetry perspectives. *Journal of Banking & Finance,*

33(8), 1520-1530.

Lin, J.-C., Sanger, G. C., & Booth, G. G. (1995). Trade size and components of the bid-ask spread. *Review of Financial Studies, 8*(4), 1153-1183.

Limpaphayom, P., & Polwitoon, S. (2004). Bank relationship and firm performance: evidence from Thailand before the Asian financial crisis. *Journal of Business Finance & Accounting*, 31(9-10), 1577-1600.

Loghod, H. A. (2010). Do Islamic banks perform better than conventional banks? Evidence from gulf cooperation council countries. *Journal of Management, 7*(3), 56-72.

Lowry, S. T. (1979). Recent literature on ancient Greek economic thought. *Journal of Economic Literature, 17*(1), 65-86.

Maali, B., Casson, P., & Napier, C. (2006). Social reporting by Islamic banks. *Abacus, 42*(2), 266-289.

Madhavan, A., Richardson, M., & Roomans, M. (1997). Why do security prices change? A transaction-level analysis of NYSE stocks. *Review of Financial Studies, 10*(4), 1035-1064.

Maloney, R. P. (1971). Usury in Greek, Roman and Rabbinic Thought. *Traditio, 27*, 79-109.

Mansoor Khan, M., Ishaq Bhatti, M., & Siddiqui, A. (2008). Financial contracts, risk and performance of Islamic banking. *Managerial Finance, 34*(10), 680-694.

Masood, O. (2011). *Islamic banking and Finance*: Palgrave Macmillan.

Masood, O., Al Suwaidi, H., & Darshini Pun Thapa, P. (2012). Credit risk management: a case differentiating Islamic and non-Islamic banks in UAE. *Qualitative Research in Financial Markets, 4*(2/3), 197-205.

Massoud, A. (2015). Islamic vs. Conventional Banking in Financial Intermediation: What Does the Case of Egypt Show? *Applied Economics and Finance, 2*(3), 1-11.

Masud Rana, M., Hossain, K., & Rekha, R. S. (2016). Profitability and liquidity of conventional banking and Islamic banking in Bangladesh: A comparative study. *IJAR, 2*(9), 318-327.

Mayers, D., & Smith Jr, C. W. (1987). Corporate insurance and the underinvestment problem. *Journal of Risk and Insurance*, 45-54.

McLaughlin, R., Safieddine, A., & Vasudevan, G. K. (1998). The information content of corporate offerings of seasoned securities: An empirical analysis. *Financial Management*, 31-45.

Meethaq.com. Retrieved 16 May 2014, from http://www.meethaq.com

Merchant, I. P. (2012). Empirical study of Islamic banks versus conventional banks of GCC.

Global Journal of Management and Business Research, 12(20).

Mews, C. J., & Abraham, I. (2007). Usury and just compensation: Religious and financial ethics in historical perspective. *Journal of Business Ethics, 72*(1), 1-15.

Mileris, R. (2015). The impact of macroeconomic environment on credit risk in commercial banks [elektroninis išteklius].

Mills, P. S., & Presley, J. R. (1999). Islamic finance: Theory and practice: *Palgrave.*

Miniaoui, H., & Gohou, G. (2013). Did Islamic Banking Perform Better during the Financial Crisis?: Evidence from the UAE. *Journal of Islamic Economics, Banking and Finance, 9*(2), 115-130.

Mirakhor, A., & Zaidi, I. (2007). Profit-and-loss sharing contracts in Islamic finance. *Handbook of Islamic banking*, 49.

Mishkin, F. S. (1990). *Asymmetric information and financial crises: a historical perspective*. Retrieved from

Misman, F. N., Bhatti, I., Lou, W., Samsudin, S., & Rahman, N. H. A. (2015). Islamic Banks Credit Risk: A Panel Study. *Procedia Economics and Finance, 31*, 75-82.

Mohamad, S., Hassan, T., & Bader, M. K. I. (2008). Efficiency of conventional versus Islamic banks: International evidence using the stochastic frontier approach (SFA). *Journal of Islamic Economics, Banking and Finance, 4*(2), 107-130.

Mohd, E. (2005). Accounting for software development costs and information asymmetry. *The Accounting Review, 80*(4), 1211-1231.

Moin, M. S. (2008). *Performance of Islamic banking and conventional banking in Pakistan: a comparative study*.

Moisseron, J.-Y., Moschetto, B.-L., & Teulon, F. (2015). Islamic finance: a review of the literature. *The International Business & Economics Research Journal (Online), 14*(5), 745.

Morck, R., Yeung, B., & Yu, W. (2000). The information content of stock markets: why do emerging markets have synchronous stock price movements? *Journal of financial economics, 58*(1), 215-260.

Myers, S. C. (1977). Determinants of corporate borrowing. *Journal of financial economics, 5*(2), 147-175.

Nayyar, P. R. (1993). Performance effects of information asymmetry and economies of scope in diversified service firms. *Academy of Management Journal*, 36(1), 28-57.

Neal, R., & Wheatley, S. M. (1998). Adverse selection and bid–ask spreads: Evidence from closed-end funds. *Journal of Financial Markets, 1*(1), 121-149.

Obaidullah, M. (2005). Islamic financial services.

Obeidat, B., El-Rimawi, S., Masa'deh, R., Maqableh, M., & Al-Jarrah, I. (2013). Evaluating the profitability of the islamic banks in Jordan. *European Journal of Economics, Finance and Administrative Sciences, 56*, 27-36.

O'hara, M. (1995). *Market microstructure theory* (Vol. 108): Blackwell Cambridge, MA.

Olechnowicz, C. A. (2011). History of Usury: The Transition of Usury Through Ancient Greece, The Rise of Christianity and Islam, And the Expansion of Long-Distance Trade and Capitalism. *Gettysburg Economic Review, 5*(1), 7.

Olson, D., & Zoubi, T. A. (2008). Using accounting ratios to distinguish between Islamic and conventional banks in the GCC region. *The International Journal of Accounting, 43*(1), 45-65.

Ouerghi, F. (2014). Are Islamic banks more resilient to global financial crisis than conventional banks? *Asian Economic and Financial Review*, 4(7), 941.

Pappas, V., Ongena, S., Izzeldin, M., & Fuertes, A.-M. (2014). Do Islamic banks live free and die harder?

Pappas, V., Ongena, S., Izzeldin, M., & Fuertes, A.-M. (2016). A survival analysis of Islamic and conventional banks.

Parashar, S. P. (2010). How did Islamic banks do during global financial crisis?

Paul, S. C., Bhowmik, P. K., Islam, M. R., Abdul, K., & Al Masud, A. (2013). Profitability and Liquidity of Conventional Banking and Islamic Banking in Bangladesh, A Comparative Study. *European Journal of Business and Management, 5*(24), 113-123.

Penman, S. H. (1996). The Articulation of Price–Earnings Ratios and Market-to-Book Ratios and the Evaluation of Growth (Digest Summary). *Journal of accounting research, 34*(2), 235-259.

Petria, N., Capraru, B., & Ihnatov, I. (2015). Determinants of banks' profitability: evidence from EU 27 banking systems. *Procedia Economics and Finance, 20*, 518-524.

Rahman, A. A., & Shahimi, S. (2010). Credit Risk and Financing Structure of Malaysian Islamic Banks. *Journal of Economic Cooperation & Development, 31*(3).

Rajhi, W., & Hassairi, S. A. (2013). Islamic banks and financial stability: a comparative empirical analysis between MENA and southeast Asian countries. *Région et développement, 37*, 149-177.

Ramlan, H., & Adnan, M. S. (2016). The profitability of Islamic and conventional bank: Case study in Malaysia. *Procedia Economics and Finance, 35*, 359-367.

Rashwan, M. H. (2010). A comparison between Islamic and traditional banks: Pre and post the 2008 financial crisis. *Available at SSRN 1724451*.

Religious Population Main Page. (2017). *Religiouspopulation.com*. Retrieved 22 March 2017, from http://www.religiouspopulation.com/

Roulstone, D. T. (2003). Analyst following and market liquidity*. *Contemporary Accounting Research, 20*(3), 552-578.

Rozzani, N., & Rahman, R. A. (2013). Determinants of bank efficiency: Conventional versus Islamic. *International Journal of Business and Management, 8*(14), 98.

Saeed, M., & Izzeldin, M. (2014). Examining the relationship between default risk and efficiency in Islamic and conventional banks. *Journal of Economic Behavior & Organization*.

Safieddine, A. (2009). Islamic financial institutions and corporate governance: New insights for agency theory. Corporate Governance: *An International Review*, 17(2), 142-158.

Salem, R. A. (2013). *Risk management for Islamic banks*: Edinburgh University Press.

Salihu, A. A., Man, M. Z., & AbdulJubreel, O. B. (2011). Concept of Profit Maximization Model in Islamic Commercial Banking System and its Weakness. *Arabian Journal of Business and Management Review, 1*(3).

Salim, M., & Yadav, R. (2012). Capital structure and firm performance: Evidence from Malaysian listed companies. *Procedia-Social and Behavioral Sciences, 65*, 156-166.

Samad, A. (2004). Performance of Interest-free Islamic banks vis-à-vis Interest-based Conventional Banks of Bahrain. *International Journal of Economics, Management and Accounting, 12*(2).

Samad, A. (2008). Market analysis from an Islamic perspective and the contribution of Muslim scholars. *Journal of Islamic Economics, Banking and Finance, 4*(3), 55-68.

Samad, A., & Hassan, M. K. (1999). The performance of Malaysian Islamic bank during 1984-1997: An exploratory study. *international journal of Islamic financial services, 1*(3), 1-14.

Sarker, M. A. A. (1999). Islamic business contracts, agency problem and the theory of the Islamic firm. *International journal of Islamic financial services*, 1(2), 12-28.

Scholtens, B., & Van Wensveen, D. (2003). The theory of financial intermediation. *SUERF, Vienna*.

Shahid Ebrahim, M., & Kai Joo, T. (2001). Islamic banking in Brunei Darussalam. *International Journal of Social Economics, 28*(4), 314-337.

Shamsuddin, Z., & Ismail, A. G. (2013). Agency theory in explaining Islamic financial contracts. *Middle East Journal of Scientific Research*, 15(4), 530-545.

Siddiqi, M. N. (1983). Banking without interest (Vol. 5): Islamic Foundation.

Siddiqi, M. N. (2006). Islamic banking and finance in theory and practice: A survey of state of the art. *Islamic Economic Studies, 13*(2), 1-48.

Siddiqui, A. (2008). Financial contracts, risk and performance of Islamic banking. *Managerial Finance, 34*(10), 680-694.

Siddiqui, S. H. (2001). Islamic banking: true modes of financing. *New Horizon, 109*(2), 15-20.

Siraj, K., & Pillai, P. S. (2012). Comparative study on performance of Islamic banks and conventional banks in GCC region. *Journal of Applied Finance and Banking, 2*(3), 123.

Smith, C. W., & Watts, R. L. (1992). The investment opportunity set and corporate financing, dividend, and compensation policies. *Journal of financial economics, 32*(3), 263-292.

Sole, J. A. (2007). Introducing islamic banks into coventional banking systems. *IMF Working Papers*, 1-26.

Sorwar, G., Pappas, V., Pereira, J., & Nurullah, M. (2016). To debt or not to debt: Are Islamic banks less risky than conventional banks? *Journal of Economic Behavior & Organization, 132*, 113-126.

Spence, M. (1973). Job market signaling. *The quarterly journal of Economics*, 355-374.

Staikouras, C. K., & Wood, G. E. (2011). The determinants of European bank profitability. *International Business & Economics Research Journal (IBER), 3*(6).

Stiglitz, J. E. (1975). The theory of" screening," education, and the distribution of income. *The American Economic Review*, 283-300.

Stiglitz, J. E., & Weiss, A. (1981). Credit rationing in markets with imperfect information. *The American Economic Review, 71*(3), 393-410.

Stoll, H. R. (1989). Inferring the components of the bid-ask spread: theory and empirical tests. *The Journal of Finance, 44*(1), 115-134.

Sundararajan, V., & 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.

Taeusch, C. F. (1942). The Concept of" Usury" the History of an Idea. *Journal of the History of Ideas*, 291-318.

Teng, K. Y., Wei, T., Yong, T., & Siew, Y. (2012). The determinants of Islamic banks profitability in Malaysia. *UNIVERSITI TUNKU ABDUL RAHMAN*.

The Internet Classics Archive | Laws by Plato. (2017). *Classics.mit.edu*. Retrieved 29 March 2017, from http://classics.mit.edu/Plato/laws.5.v.html

The Internet Classics Archive | Politics by Aristotle. (2017). *Classics.mit.edu*. Retrieved 29 March 2017, from http://classics.mit.edu/Aristotle/politics.1.one.html

The Medieval Church - History Learning Site. (2017). *History Learning Site*. Retrieved 29 March 2017, from http://www.historylearningsite.co.uk/medieval-england/the-medieval-church/

Thomas, S. (2002). Firm diversification and asymmetric information: evidence from analysts' forecasts and earnings announcements. *Journal of financial economics, 64*(3), 373-396.

Tlemsani, I., & 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), 298.

Toumi, K., Viviani, J. L., & Belkacem, L. (2011). A comparison of leverage and profitability of Islamic and conventional banks.

Trad, N., Trabelsi, M. A., & Goux, J. F. (2017). Risk and profitability of Islamic banks: A religious deception or an alternative solution? *European Research on Management and Business Economics, 23*(1), 40-45.

Turocy, T. L. (2001). Texas a&m university. *Bernhard von Stengel, London School of Economics "Game Theory" CDAM Research Report (October 2001)*.

Usman, A., & Khan, M. K. (2012). Evaluating the financial performance of Islamic and conventional banks of Pakistan: A comparative analysis. *International Journal of Business and Social Science, 3*(7).

Usmani, M. I. A. (2012). Examining the prudence of Islamic banks: A risk management perspective. *Journal Of Islamic Banking and Finance*, 93.

Uusmani, M. T., & Taqī 'Us̲mānī, M. (2002). *An introduction to Islamic finance* (Vol. 20): Brill.

Vallascas, F., & Keasey, K. (2013). Does bank default risk increase with information asymmetry? Evidence from Europe.

Van Greuning, H., & Iqbal, Z. (2008). *Risk analysis for Islamic banks*: World Bank Publications.

Van Ness, B. F., Van Ness, R. A., & Warr, R. S. (2001). How well do adverse selection components measure adverse selection? *Financial Management*, 77-98.

Venardos, A. M. (2012). *Islamic banking & finance in South-East Asia: Its development & future* (Vol. 6): World Scientific.

Vincent, J. (2014). Historical, Religious and Scholastic Prohibition of Usury: The Common

Origins of Western and Islamic Financial Practices.

Visser, W. A., & Macintosh, A. (1998). A short review of the historical critique of usury. *Accounting, Business & Financial History, 8*(2), 175-189.

Wahidudin, A. N., Subramaniam, U., Kamaluddin, P., & Mutalib, P. A. (2012). Determinents of profitability–a comparative analysis of islamic banks and conventional banks in ASEAN countries.

Wajdi Dusuki, A., & Irwani Abdullah, N. (2007). Why do Malaysian customers patronise Islamic banks? *International Journal of Bank Marketing, 25*(3), 142-160.

Werner, R. A. (2016). A lost century in economics: Three theories of banking and the conclusive evidence. *International Review of Financial Analysis, 46*, 361-379.

What Does the Bible Say About Usury?. (2017). *Openbible.info*. Retrieved 29 March 2017, from https://www.openbible.info/topics/usury

Wheelock, D. C., & Wilson, P. W. (1995). Explaining bank failures: Deposit insurance, regulation, and efficiency. *The Review of Economics and Statistics*, 689-700.

Wittenberg-Moerman, R. (2008). The role of information asymmetry and financial reporting quality in debt trading: Evidence from the secondary loan market. *Journal of Accounting and Economics, 46*(2), 240-260.

Yousfi, O. (2013). Does PLS financing solve asymmetric information problems? *Journal of Islamic Economics, Banking and Finance, 9*(3), 13.

Yousfi, O. (2013). Does PLS solve moral hazard problems? *Journal of Islamic Economics, Banking and Finance, 9*(3), 11-26.

Yousfi, O., Chatti, M. A., & Kablan, S. (2013). Are Islamic Banks Sufficiently Diversified?: An Empirical Analysis of Eight Islamic Banks in Malaysia. *Islamic Economic Studies, 21*(2), 23-54.

Youssef, A., & Samir, O. (2015). A comparative study on the financial performance between Islamic and conventional banks: Egypt case. *International Journal of Business and Economic Development (IJBED), 3*(3).

Yudistira, D. (2003). Efficiency in Islamic banking: An empirical analysis of 18 banks. *Islamic Financial Architecture, 479*.

Zagaglia, P. (2013). PIN: Measuring Asymmetric Information in Financial Markets with R. *R Journal, 5*(1).

Zaher, T. S., & Kabir Hassan, M. (2001). A comparative literature survey of Islamic finance and banking. *Financial Markets, Institutions & Instruments, 10*(4), 155-199.

Zeineb, G. B., & Mensi, S. (2014). Does the PLS Paradigm Spur the Islamic Banks Vs Conventional Banks Soundness: Case of the Global Financial Crisis. *Journal of*

Economics and Development Studies, 2(3), 177-192.

Zivko, I., & Kandzija, T. (2013). Impact of financial crisis on banking sector stability in Republic Croatia. *Business Excellence, 7*(1), 129.