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GEBZE TECHNICAL UNIVERSITY
INSTITUTE OF SOCIAL SCIENCES

EVALUATION OF BANK SPREAD DIFFERENCES BETWEEN CONVENTIONAL AND PARTICIPATION BANKS

YAŞAR UĞUR PABUÇCU
DOCTORAL DISSERTATION
DEPARTMENT OF BUSINESS ADMINISTRATION

GEBZE
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2017

GEBZE TEKNİK ÜNİVERSİTESİ	**DOKTORA JÜRİ ONAY FORMU**

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ÖZET

Bu tez çalışmasında İslam Konferansı Örgütü'ne üye ülkeler ve Birleşik Krallıkta yer alan geleneksel ve katılım bankalarının karlılıklarının dinamikleri incelenmektedir. Öncelikle İslami-katılım bankacılık uygulamaları ürün, yönetişim ve risk yönetimi açısından değerlendirilmiş ve ardından 2007 ve 2013 yılları arasındaki 74 katılım bankası ve 354 geleneksel bankanın karlılıkları ampirik olarak analiz edilmiştir.

Katılım bankaların yönetişim yapısı ve ürünleri ülke ve bölge bazında önemli oranda farklılık arz ettiği görülmektedir. Her ne kadar katılım bankalarının yönetişim yapısı geleneksel bankalardan farklılık gösterse de katılım bankaları kar-zarar ortaklığı ürünlerini yeterince kullanamamaktadırlar. Bunun yerine geleneksel bankacılık ürünlerinin benzerleri, örneğin murabaha (vadeli satış), İslam hukukunun izin verdiği ölçülerde adapte edilmektedir.

Tezin ampirik kısmında banka makası (net faiz marjı) ve aktif karlılığı bağımlı değişkenler olarak kullanılmakta ve literatüre önemli bir katkı olarak alternatif dağıtım kanalları, finansal hizmetlerin ülke içinde yaygınlaşma oranları, temel malların fiyat endeksleri, katılım bankaları için murabaha harici varlıkların oranı gibi yeni bağımsız değişkenler kullanılmıştır. Dinamik panel veri yöntemleri ile yapılan analizler katılım ve geleneksel bankaların karlılık ve banka makası dinamiklerinin önemli oranda farklı olduğunu göstermektedir.

Gerek banka makası gerekse aktif karlılığı, geleneksel bankalardan farklı olarak katılım bankaları için önceki yılların değerlerinden bağımsız gözükmektedir. Alternatif dağıtım kanallarının kullanımı ise her iki tür bankanın karlılığı için olumlu etki yapmaktadır. Bununla beraber, katılım bankalarının karlılıkları ile içinde bulundukları ülkenin İslami finans piyasalarının gelişmişliği arasında anlamlı bir ilişkiye rastlanmamıştır. Katılım bankalarının karlılığının murabaha dışı ürünlerin oranıyla doğru orantılı olduğu gözükmektedir.

Ayrıca Türkiye özelinde katılım bankacılığı genelinde fetva standardizasyonu sağlanması gerektiği, katılım bankalarının etkinliklerinin geleneksel bankaların düzeyine çıkartılması gerektiği değerlendirilmektedir.

Anahtar Kelimeler: Banka Makası, Net Faiz Marjı, Banka Karlılığı, Katılım Bankacılığı, İslami Bankacılık, Panel Veri

SUMMARY

This thesis analyzes and compares the dynamics for the profitability of conventional banks (CBs) and Islamic banks (IBs) in the OIC and UK. First, Islamic-participation banking practices are reviewed in terms of instruments, governance and risk management. An empirical study is then carried out using a sample of 74 Islamic and 354 conventional banks between 2007 and 2013.

Overall Islamic banking practices indicate that Islamic banking governance considerably varies among countries. Contrary to the expectations, IBs are not be able to adequately utilize profit-loss sharing structures though. IBs mostly tend to mimic the instruments of CBs in a form that Islamic law permits such as "murabahah".

Empirical part of the thesis utilizes "Net interest margin" or "bank spread" and "return on asset" as dependent variables. Moreover, several new variables such as, the usage of self service banking channels, penetration of financial services, commodity price indices and asset ratio of non-murabahah assets are employed as explanatory variables in the dynamic panel data estimates. Estimation results clearly imply that profitability of IBs relies on the different dynamics than that of CBs.

Unlike CBs, neither net interest margin nor return on assets for IBs are persistent over time. Usage of self service banking channels improves profitability of both types of banks. While IBs profitability shows no association with the country level Islamic finance development, usage of relatively more non-murabahah assets improve its profitability. Furthermore, achieving the fatwa standardization and improving the efficiencies of participation banks compared to CBs are essential issues in Turkey.

Key Words: Bank Spread, Net Interest Margin, Banking Profitability, Participation Banking, Islamic Banking, Panel data

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ABBREVIATIONS

Abbreviation		Explanation
AAOIFI	:	Accounting and Auditing Organization for Islamic Financial Institutions
BCBS	:	The Basel Committee on Bank Supervision
BIS	:	Bank for International Settlements
BRSA	:	Banking Regulation and Supervision Agency
BRSA	:	Banking Regulation and Supervision Agency
CB	:	Conventional Bank
CIBAFI	:	General Council for Islamic Banks and Financial Institutions
FEM	:	Fixed Effects Model
FSA	:	Financial Services Authority
GCC	:	Gulf Cooperation Council
GLS	:	Generalized Least Squares
GMM	:	Generalized Methods of Moments
IASB	:	International Accounting Standards Board
IB	:	Islamic Bank
ICD	:	Islamic Corporation for the Development of the Private Sector
ICIEC	:	Islamic Corporation for the Insurance of Investment and Export Credit
IDB	:	Islamic Development Bank
IFIs	:	Islamic Finance Institutions IFIs
IFRS	:	International Financial Reporting Standards
IFSB	:	Islamic Financial Services Board
IICRA	:	International Islamic Centre for Reconciliation and Commercial Arbitration
IIFM	:	International Islamic Financial Market
IIMM	:	Islamic Interbank Money Market
IIRA	:	International Islamic Rating Agency
INCEIF	:	International Center for Education in Islamic Finance
IRTI	:	Islamic Research and Training Institute

Abbreviation		Explanation
ITFC	:	International Islamic Trade Financing Corporation
KFH		Kuwait Finance House
KPI	:	Key Performance Indicators
LIBOR	:	London Interbank Offered Rate
LLP	:	Loan Loss Provisions
LMC	:	Liquidity Management Center
LSDV	:	Least Squares Dummy Variable
NIM	:	Net Interest Margin
NPL	:	Non-Performing Loans
OLS	:	Ordinary Least Squares
PB	:	Participation Bank
PBAT	:	Participation Banks Association of Turkey
PLS	:	Profit-Loss Sharing
REM	:	Random Effects Model
ROA	:	Return on Asset
ROE	:	Return on Equity
SAC	:	Shariah Advisory Council
SDIF	:	Saving Deposit Insurance Fund
SFH	:	Special Finance House
SPV	:	Special Purpose Vehicle
SSB	:	Shariah supervisory board
UAE	:	United Arab Emirates

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1. INTRODUCTION

1.1 Purpose of the Study

The purpose of this thesis is to compare and contrast the dynamics for the profitability of participation banks or Islamic Banks (IBs) and conventional banks (CBs) to contribute to the analysis of current Islamic banking phenomenon in the OIC countries and the UK. Islamic finance, as an alternative approach to conventional finance practices, has gained a remarkable momentum in recent years. According to the Thomson Reuters Zawya and Islamic Financial Services Board data the global size of Islamic financial assets is predicted to grow from 861 USD billion to more than 1.88 USD trillion from 2008 to 2015. This corresponds to a compound annual growth rate (CAGR) around 12 percent. As the flagship sector of Islamic finance industry, Islamic banking activities constitute around 74 percent of all Islamic financial assets as of the end 2014. In recent years, a new capital market instrument called as *Sukuk* (basically Islamic bonds) has risen up. As of the end 2014, total size of outstanding *Sukuk* accounts for around 16 percent of the global Islamic financial assets. These two relatively large segments of Islamic finance industry are followed by Islamic investment firms, funds, and financing companies whose assets under management accumulates to about 8% of the industry. Finally, as the recently advancing segment of the industry, the gross contributions made to the Islamic insurance (Takaful) sector total to the 2 percent of global assets.

On the other hand, as per the county-wise distribution of Islamic finance assets, three countries come forward, namely Malaysia, Saudi Arabia, and Iran. These three countries host almost two thirds of Islamic financial assets worldwide. Gulf countries like the United Arab Emirates (UAE), Kuwait, Qatar, and Bahrain are other prominent markets in terms of Islamic finance holding almost one fourth of the global assets. Countries, like Turkey, Indonesia, Bangladesh, Pakistan and Sudan are other important markets. Recent developments in markets like the UK and Luxemburg displayed that Islamic finance is not a phenomenon just confined to Muslim majority countries.

Idiosyncratic attributes of Islamic finance rises from prohibition of interest receiving and taking (*Riba*), gambling (*Maisir*), excessive uncertainty (*Gharar*) and restriction on investing on some sectors producing products which are unlawful

under Islamic jurisprudence. Moreover, financial contracts should be established based on assets through the principle of profit-loss-sharing (PLS). These principles are tried to be achieved through some contractual obligations which are constructed upon cost plus sales of goods and services (*Murabahah*), leasing (*Ijarah*) of or partnership in (*Musharakah*/*Mudarabah*) in an asset or a portfolio of assets (Iqbal and Mirakhor, 2011). It is argued that it is this PLS structure contributing to the capacity of Islamic banks in absorbing external shocks as compared to their conventional counterparts (Khan and Mirakhor, 1989) and to the capacity of adding to the overall economic growth by enabling long-term funding (Chapra, 1992; Imam and Kpodar, 2015). The advantageous nature of the PLS model employed by IBs has empirically supported by Hasan and Dridi (2010). They conclude that the business model used by Islamic banks has limited the adverse impact of the global financial crisis on the profitability while the lack of appropriate risk management practices in some IBs led to larger decline in profitability in 2009 as compared to CBs.

Despite those conclusions about the business model of Islamic financial institutions, contemporary practice of IBs has always been a matter of discussion. Theoretically, it is assumed that the business model that should be employed by IBs promotes risk sharing through rather asset based or asset –backed, partnership-like contractual structures. However, in practice, the contractual relationship constructed between IBs and their customers on the asset side is usually based on risk shifting transactional structures such as *Murabahah*, which leads to the conclusion tha t the behaviour of IBs are alike to the CBs (Khan, 2010 and Azmat et al., 2015). In addition, on the liability side, theoretically, it is assumed that the relationship with depositors is to be established based on investment accounts as the result of PLS logic. However, in practice, the relationship is established similar to the one at CBs. This situation does also support the view that operating of IBs are very similar to CBs, there thus would be no difference between the dynamics determining their performance (El-hawary et al., 2007).

Besides the issue of the difference between the theory and practice of Islamic finance, especially IBs, as the flagship industry, there are also some other issues which became more apparent after the remarkable growth of the sector. The first issue is related to the regulatory framework surrounding Islamic banking industry. Whether Islamic banks should be subject to different regulatory framework as compared to conventional banks, how the regulatory framework should be

established and how the regulations affect the efficiency and profitability of IBs have been a common question in the related literature (Song and Oosthuizen, 2014; Mejía, et al., 2014; Bitar, 2014; Sole, 2007)

The main purpose of this thesis is to contribute to the literature by investigating the dynamics of profitability for IBs in comparison to the CBs by employing bank spread, or Net Interest Margin (NIM), and return on asset (ROA) as dependent variables. First of all, Islamic banking practices are reviewed within the Organization of Islamic Countries (OIC) and the UK in order to highlight what kind of regional differences exist in terms of Islamic banking governance. Afterwards, employing a dynamic panel data approach for a sample of 74 IBs and 354 CBs in the OIC and the UK for the period between 2007 and 2013, the study aims to reveal

- differences and similarities of conventional and Islamic banks in terms of bank spread and profitability,
- how usage of self service banking channels, level of financial penetration, Islamic Finance development within a country affects the spread and the profitability of banks,
- how the breakdown of instruments of Islamic banks contributes their profitability

by using the dynamic panel data techniques.

1.2. Classic Economics from an Islamic Perspective

The philosophy of Islamic economic thought stands on top of three pillars. These three pillars are the concept of unity, the concept of vice- regency of human beings on earth, and the concept of free-will and responsibility. The concept of unity arises from the faith on Allah as the one and only God and Prophet Muhammed as His messenger. This testimony -tawhid- is the basic foundation of Islam. The whole universe is the creation of Allah therefore it must be seen as a whole and there are economic reflections of that attitude.

"Any economic action taken by an individual or a group of individuals should not be harmful to the interest of others nor should it be damaging to other sources of goodness in the universe. No misuse or abuse of economic resources in pursuit of the "maximization" of benefits to some on the account of sacrificing the benefits of others" (El-Ashker and Wilson, 2006, pp.37).

The concept of vicegerency defines “Man” as the centre of creation and God’s deputy on earth. This attitude entitles man to utilize resources and make economic decisions. However, these decisions must be in-line with commandments of Allah and Man is accountable about his actions and will be judged in after-life.

The concept of free-will and responsibility defines Man as a being who can make choices freely with or without accordance to Allah’s commandments and makes him responsible for his actions. And a reward or punishment is waiting at the day of judgment.

The methodology that determines what is allowable or prohibited regarding any issues, economic or non-economic, is like a pyramid. At the top, the Holy Koran constitutes the main source. One step below, Hadith, the teachings, practices and rulings of Prophet Mohammed exists. Holy Koran and Hadith are considered as the primary source of solving what is lawful and what is not. If there is no clear guidance in primary sources, then ijmaa and qiyas are utilized. Ijma stands for the consensus of particular prominent Muslim scholars. Qiyas refers to reasoning by analogy based on primary sources (Warde, 2000)

Islamic economic principles that arises from aforementioned methodology can be summarized as follows (El-Ashker and Wilson, 2006).

The Principle of Moderation:

Extremism is not welcome by Islam. Focusing on the economic behaviours, for example consumption should be moderate as Holy Koran describes the believers as those who spend neither excessively nor niggardly.

The Principle of Economic Efficiency:

Islam requires to use all resources wise and modest. Excessive consumption of resources (israf) and wasteful use of resources (tabzir) are prohibited. Therefore, economic efficiency must be sustained at both production and consumption functions. This includes the decisions regarding when to utilize resources, now or in future.

The Principle of Social Justice:

Social justice is a crucial part of Islam. People are equal and no supremacy can be gained via race, sex, heritage etc. Virtue of a person derives from his/her

compliance to Allah's orders. However, it is acceptable that some people can have more wealth due to differences in their ability or other factors. Bottom-line is all wealth on earth has been given by Allah to test people and being rich brings responsibilities. The Holy Quran states, poor people have a share in wealth of rich people (Quran: 51:19). The rich have to give to the needy and live in a harmony without sharp social classes. One critical distinction of Islamic economic view compare to contemporary economic theory is the concept of maximization is not compatible with Islam. Islam promotes moderation instead of maximization. Economic decisions of individuals are not supposed to be based on maximizing their own benefit. Instead main objective is to

"satisfy the needs of God's creatures as revolving mainly around the needs of humankind and to preserve the surrounding environment in particular and the universe in general" (El-Ashker and Wilson, 2006, pp. 44).

1.3. Prohibition of Interest

Raison d'être of Islamic banking comes from the interest prohibition in Islam. Interest – or riba, the term in Islamic law- ban is shaped by several verses in Holy Quran. Even though it is perfectly clear that riba-or interest- is prohibited there are different views what is riba and what is not. Riba stands for unjustified or unlawful increase. Most of the scholars consider the interest mechanisms of modern banking as riba and unlawful.

Even though interest prohibition is the key element of Shariah compliance there are other aspects to make sure any financial activity permissible. Literature summarizes five basic features of an acceptable financial activity or transaction (Algaoud and Lewis, 2007)

a. Riba is prohibited
b. The business must rely on a permissible activity
c. Maysir (gambling) is prohibited and transactions should be free from gharar (speculation or unreasonable uncertainty)
d. Zakat is to be paid by the bank to benefit society

e. All activities should be in line with Islamic principles, with a special Shariah board to supervise and advise the bank on the propriety of transactions

Riba and gharar are more crucial and controversial in current global economic system whereas the others are more universal and easier to clarify.

1.3.1. Types of Riba

The word riba means 'increase', 'excess', 'growth' or 'addition' in Arabic and it indicates unjustified enrichment, or 'receiving a monetary advantage without giving a counter value' and it is prohibited. Even though in Western thinking, the term 'usury' is used as 'exorbitant' or 'excessive' interest only, from Islamic point of view all interests are prohibited: 'But if ye repent, ye shall have your capital sums (that is principal)' (S2: 279) (Algaoud and Lewis, 2007).

Types of riba can be classified in two forms.

"First is riba al-nasi'ah, which is the fixing in advance of a positive return on a loan as a reward for waiting to be repaid. Second, riba al-fadl, is encountered in a hand-to-hand purchase and sale of commodities" (Zaher and Hassan, 2001, pp. 156).

Riba al-fadl occurs in case of exchanging same or similar kind of goods with different quantities. It is a little bit not clear why such kind of trade is banned especially considering the quality of two goods may not be the same. Scholars state two reasons. First, spot trading of same commodity can turn into a credit sale and contain riba and second, such transaction may include uncertainty causing one party faces a loss (El-Gamal, 2006). It is advised to sell goods at their market price and then buy the desired good. In other words, instead of direct exchange of goods, it is preferred to buy-sell them with market price.

Riba al-nasi'ah or deferred payment is more crucial in terms of its relation to contemporary finance instruments. This riba does not just include money-money transactions. It includes all types of exchanges with deferred time and unequal quantity. This type of exchanges is prohibited for three reasons. First, it allows exploiting of poor debtors; second, trading money can cause fluctuations in currency

values and third, such exchanges in food stock may cause shortages in spot market (El-Gamal, 2006).

It is important to comprehend the time value of money and goods in terms of Islamic law. According to scholars there is strong agreement on spot price and credit price of a good can be different meaning cash price of a good can be lower than the credit sales or future delivery price can be lower than spot price. This is valid as long as the seller has no authority to re-price in case of delay in payments. There is time value of goods but it is not applicable for money-money transactions. In Islamic point of view, money is not supposed as a tradable good instead it is an exchange tool. Therefore, valuation of money is not applicable. Instead, money is used to value other goods. (Ayub, 2007).

The prohibited interest rate mechanism has four basic elements.

"it is fixed ex ante; it is tied to a time period and the amount of the principal; its payment is guaranteed by the borrower regardless of the outcome of the transaction for which the money was borrowed; and the state apparatus sanctions and enforces its collection" (Iqbal and Mirakhor, 1999, pp 389).

Algaoud and Lewis (2007) summarizes how Razi, a famous Muslim scholar lived in 12th century, explains why riba-interest is unlawful.

1- The creditor cannot ask for a certain excess in return with the rationale that he could invest and gain profit with the amount he lent because the profit he would gain is uncertain. Hence, claiming a certain profit in return for an uncertain opportunity is considered as a harm to the debtor.
2- The mechanism of riba allows rich people to make money with the easy way without any effort or profession which is against the progress and prosperity of people.
3- If riba is prohibited, then it is possible to lend and pay back with no increase. However, if riba is allowed then people may borrow even with very high rate of interest to satisfy their requirements or desires and it can damage the society
4- Riba mechanism is in favour of the lender and it makes rich richer and makes the poor poorer.
5- Yet the Holy Koran declares riba as forbidden and it is not necessary that men should know all the reasons for it.

1.3.2. Discussions Regarding Interest in Modern Economics

Interest is unacceptable and unlawful from Islamic law point of view due to aforementioned reasons in above section. There are also different views on interest rate mechanism from conventional finance point of view.

Conventional economists use zero, negative and positive interest rates to examine real world economies. As Sheng and Singh (2013) summarizes, Stanford school argues that high interest rates lead higher savings and higher savings result with higher investment which improves productivity and boost economic growth. However, these assumptions are open for disputes both theoretically and empirically. First, savings are done by individuals and households whereas investments are done mostly by companies. These two groups have different objectives and motivations There is thus no certain mechanism which will cause savings to determine investments. Besides high interest rates can reduce the profit of the companies. More to the point, if saving propensity of individuals is lower than the companies then high interest rates cause a decline in total savings. On top of theoretical discussions, empirical evidence from Asia and Turkey shows there is no systematic increase in savings due to high interest rates (Sheng and Singh, 2013).

The thoughts of two reputed economists, Adam Smith and John Keynes, on interest rates are also important. Adam Smith's book Wealth of Nations can be considered as one of classic work of economics. Smith's understanding of economics has strong relations with moral-ethical values. "The invisible hand" metaphor refers to Creator design and in his previous book Theory of Moral Sentiments, Smith proposes a coherent moral-ethical social system consistent with the Creator's design. There are certain scholars who think neoclassical understanding of Smith's vision is distorted and it will be inadequate to link ex ante interest rates to Smith's vision. Smith's thinking of economics consists of mostly risk sharing instruments rather than predetermined interest rates (Mirakhor and Bao, 2013).

Sheng and Singh (2013) summarize the Keynes's point of view on interest as follows. Neo-classical thought states that free markets will generate interest rates by nature and guarantee full employment. However, Keynes opposes this argument in his famous book The General Theory of Employment, Interest, and Money (1936). According to Keynes, market magic is not working and therefore correct policy is to

have zero or low interest rate. Keynes asserts that savings are determined by the scale of investment and investment can be promoted by low interest rates. Owner of the capital claims interest because the capital is scarce however there is no intrinsic reason for the scarcity of the capital.

Another criticism of interest rates from conventional finance is positive interest rates will cause favouring current generation at the cost of future generations during a cost-benefit analysis. For example, future cash flows are discounted to present value with the interest rate to evaluate the feasibility of an investment. There are authors such as Pigou and Ramsey who argue that it is not ethical to discount future consumption because it occurs in future. However, as a counter-argument, non-zero discount rates are acceptable because the society in future will be richer with the economic growth. A non-zero discount rate in the cost-benefit analysis is supposed as acceptable in Islamic law however the rate has to be associated with economic growth not with the deposit interest rates (Sheng and Singh, 2013).

Aforementioned discussions indicate that ex-ante rates are not indisputable even from the point of view of classic economics thought. There are strong arguments from prominent economists that zero or low interest rates are in favour of society.

1.4. Islamic Economic Thought, Modern Economics and Finance Theory

There are differences and similarities between modern economic thought and Islamic economic thought. One of the concept that contemporary economic theories mostly base their hypothesis is "homo economicus". Homo Economicus is a term that describes how human beings make economic decisions.

"In the conventional theory of consumer behaviour, the consumer is assumed to be "Homo-Economicus" whose ultimate objective is to maximise his consumption utility function of goods and services. According to the marginal analysis, the achievement of this objective will occur at the tangential point between the consumer's indifference and income curves. At this point the consumer is said to be in equilibrium (El-Ashker and Wilson, 2006, pp. 65).

There are criticisms against the concept homo economicus from Islamic and non-Islamic rationale. First, human beings are not fully rational on decision making. Another strand of literature, behavioural finance demonstrates that people can make irrational decisions. Second, assuming people as beings whose ultimate objective is to maximize their consumption utility is criticized by altruist economists. Instead, they propose "Homo-Economicus-Humanus" with ethical values and religions are a crucial source of ethics. Focusing on Islam, As El-Ashker and Wilson (2006) summarizes from Kahf (1980), "Homo-Economicus-Islamicus" behave based on four factors

- the concept of ownership by trusteeship
- belief in the system of reward/punishment in the hereafter
- the principle of moderation
- the relationship between saving and investment

Therefore, Muslims are supposed to maximize two components, the utility of life on earth and the utility of afterlife and the weight of those two utilities are determined by the person's religious scale (El-Ashker and Wilson, 2006). In reality the difference between Homo Economicus and Homo Islamicus is narrow. Islamic economics adds the ethical-social dimension that conventional economics omits. Pragmatic application of Islamic economics is not primarily different then Keynesian, Christian-Jewish or secular authors who pursue to balance limitless self-interest with social ethical values. The most critical debate between Islamic and conventional finance is the status of fixed rate debt contracts. Prohibition of interest is criticized from conventional finance point of view because zero interest rates mean no savings, no investment, no growth, no monetary policy. Besides there will be infinite amount of loan demand and zero loan supply. As an answer to those questions, in a zero interest rate environment there will be equity based instruments for capital demand and supply as explained in the previous section.

This will bring the question that whether debt based or equity based instruments are more beneficial both for individuals and the society. According to the Modigliani-Miller Theorem (MM) value of a company is independent from its debt-equity structure. In other words, it does not make any difference for the company whether it finds financing via debt or equity. The implication of this theory favours the debt based financing as it brings tax advantages and the risk of additional debt

will be shifted to stakeholders (Mirakhor and Bao, 2013; Ikbal and Mirakhor, 1999). However, the assumptions of MM theorem such as perfect competition, no transaction costs, no taxation, and no bankruptcy, are open to discussions. Keynesian economists do not accept the perfect capital market assumptions and argue that the MM theorem is not operational in the real world. Major practice around the world allows companies to deduct interest expenses from taxes. Besides considering bankruptcy and financial distress an optimal debt-equity structure is expected (Sheng and Singh, 2013).

For the banks, debt based fixed rate contracts are crucial. Banks collect funds from depositors which are mostly short-term and liquid and lend with longer term and illiquid basis. Banks heavily rely on ex-ante fixed rate contracts to cover all operation and monitoring costs and risks during this process. It is considered that banking system will be too risky without fixed rate contracts both at the asset and liability side. However, there are downsides of fixed rate contracts as well. Fixed rate contracts are subject to adverse selection in markets with asymmetric information. Banks prefer to lend customers with minimum risk who indeed requires less funding. As a result, some groups can be excluded from credit market even their expected returns is higher. Besides, it is hard for new borrowers to find financing. In case the economic conditions get severe, banks may be forced to increase their return rates for depositors while earnings are decreasing. This trend may lead a banking crisis (Iqbal and Mirakhor, 1999)

On the other hand, Islamic economics promote equity based financing. Even though debt-based contracts dominate the global economy, equity based financing has certain advantages. Equity financing does not have the aforementioned adverse selection issues. Small or new companies can find funding. It promotes risk sharing rather than risk shifting which brings resilience against crisis an economic shock. Conventional finance has the options like venture capital, angel investors for equity based financing. Currently many technology and Fintech start-ups are financed thru equity financing. It is obvious that most of these high potential start-ups wouldn’t find any funding with debt financing.

1.5. Moral-Ethical Issues of Islamic Economics

Financial contracts include information asymmetry. It is not always possible for banks or lender to know exact solvency status of the investee. Some companies may seem solvent in terms of financial reports but reality might differ. The critical distinction between conventional debt contracts and Islamic equity contracts is that conventional lender shifts the risk to borrower and guarantees himself with collaterals. However, this risk shifting does not protect lender totally. When real interest rates increase, the value of discounted cash flow of the lender declines whereas the real value of liabilities increases. Considering the value of collateral may also diminish at high real interest periods, lender may face the risk of insolvency (Sheng and Singh, 2013).

As previously mentioned equity based financing is superior to debt based financing in terms of adverse selection issues. However, equity contracts are not free from information asymmetry and moral hazard problems. Islamic banks unfortunately do not have the luxury of ignoring moral hazard of their customers because of the religious foundation of Islamic banking. As previously discussed, Homo Economicus and Homo Economicus Islamus are not widely different. Experience from early practices of Islamic banking shows that Islamic banking practice that solely relies on mutual trust between bank and the costumers does not work. Some of the facts that Islamic banks face regarding moral hazard is as follows. The overconfidence of an Islamic bank on its customers may attract people with bad intention specifically. Religion sometimes can be used as a shield against audits and examinations. Conflicts between religious rules and legal environment may compose gray areas that allow customers avoid their obligations (Warde, 2000).

Considering the fact that losses are shared in equity contracts, moral hazard and information asymmetry issues are more severe. On the asset side Islamic banks gave-up the Mudarabah model because they couldn’t handle the moral hazard and information asymmetry problems. Considering the fact that Islamic banks are managed by ex-bankers mostly, they lack the skills of monitoring, managing the partnership agreements. Equity assets and equity liabilities rise in forms of venture capital, private equity or mutual funds. However, these are not banking models. Banking model does not have the solutions for moral hazard and information asymmetry in equity type of contracts (El-Gamal, 2007).

Moral hazard problems and their effects on equity instruments are one of the most critical issues in Islamic economics and banking. Regulations, monitoring tools and techniques can ease the hardships of the problem but they cannot provide a solution entirely. Banking is a risk averse industry that financial stability is protected with strict regulations. A dilemma that have to be solved is how Islamic banks carry out profit-loss sharing contracts without exceeding the expected risk threshold of regulations.

2. REVIEW OF ISLAMIC BANKING IN THE OIC AND THE UK

Iqbal and Mirakhor (1999) divide theory and practice of Islamic banking in three periods:

- 1950 - 1975: Development of conceptual framework
- 1975 - 1990: Experimentation
- 1990 - Present: Recognition

After the establishment of the Islamic Development Bank (IDB), first Islamic banks arise in the Gulf area. Saudi Arabia (1974), the United Arab Emirates (1975), Kuwait (1977) and Bahrain (1978) launched their first full-fledged Islamic banks. Until 1975, Muslim scholars mainly endeavor to maintain awareness among Muslims against interest and they come to conclusion that fixed-fee debt contracts must be eliminated in order to achieve an interest-free system. As a result, a model based on profit-loss sharing principle generated (Iqbal and Mirakhor, 1999).

Even though first Islamic banks rise-up in the Gulf Cooperation Council (GCC) area, GCC governments didn't show full commitment to Islamic banking at that time. (Imam and Kpodar, 2010). On the other hand, there has been a growing attention to Islamic banking in Malaysia. The first attempt in Malaysia started to allow Muslims save money for pilgrimage with a Shariah-compliant way and as a result Tabung Haji established in 1963. The success of Tabung Hajj increased the attention on Islamic banking in Malaysia and government established a council to study how to set-up Islamic banking in Malaysia in 1981. Afterwards the first Malaysian Islamic bank launched in 1983 (Al Nasser and Muhammed, 2013).

While Islamic banking spreading over the world in the 1980's, Iran (1979), Pakistan (1980) and Sudan (1984) turned their banking system totally to Islamic Banking. However, Sudan and Pakistan left-off and turned back to dual banking system later (Imam and Kpodar, 2010).

New instruments also started to be introduced. IDB gave permission to Sukuk –Islamic Bonds- in 1988. First takaful – Islamic Insurance- company was born in Malaysia in 1989. Islamic banking started to get attention from conventional banking industry. Citibank, ABN AMRO, HSBC opened their Islamic windows or subsidiaries and joined the Islamic banking industry (Khan and Bhatti, 2008).

Conventional banks have also contributed the Islamic banking industry by playing the role of financial intermediaries and providing technical know-how (Mirakhor and Iqbal,1999).

Institutions to support regulatory and research requirements were also established. In 1991, Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI) established in Bahrain in order to development and issuance of standards for the global Islamic finance industry (http://aaoifi.com/about-aaoifi/?lang=en). Bahrain has a special role as hosting, the International Islamic Rating Agency (IIRA) and the Liquidity Management Center (LMC) along with the AAOIFI. Malaysia, another pioneer, launched full-fledged Islamic Stock broker company ICM in 1994, Islamic Financial Services Board (IFSB) in 2003 and Global university of Islamic finance (INCEIF) in 2006.

Islamic banking industry spread to a wide region from the Gulf region to the Far East. There are more than 900 Islamic Finance institutions according to Thomson Reuters Islamic Finance Development Report 2014. Different regions experienced Islamic banking separately and progress of the industry followed different paths according to political, cultural, religious environment and financial structure of each country. Figure 2.1 (World Islamic Banking Competitiveness Report 2016) and 2.2 (ICD - Thomson Reuters Islamic Finance Development Report 2014) summarize the total asset amount and number of number of Islamic Finance Institutions (IFIs). Following section explains country wise details.

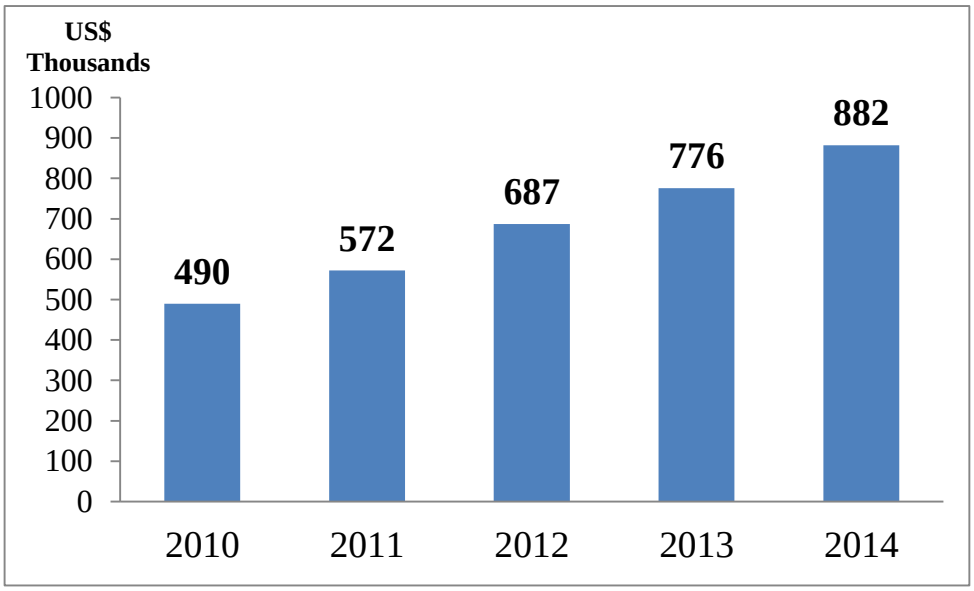

Figure 2.1: International Islamic Banking Assets.

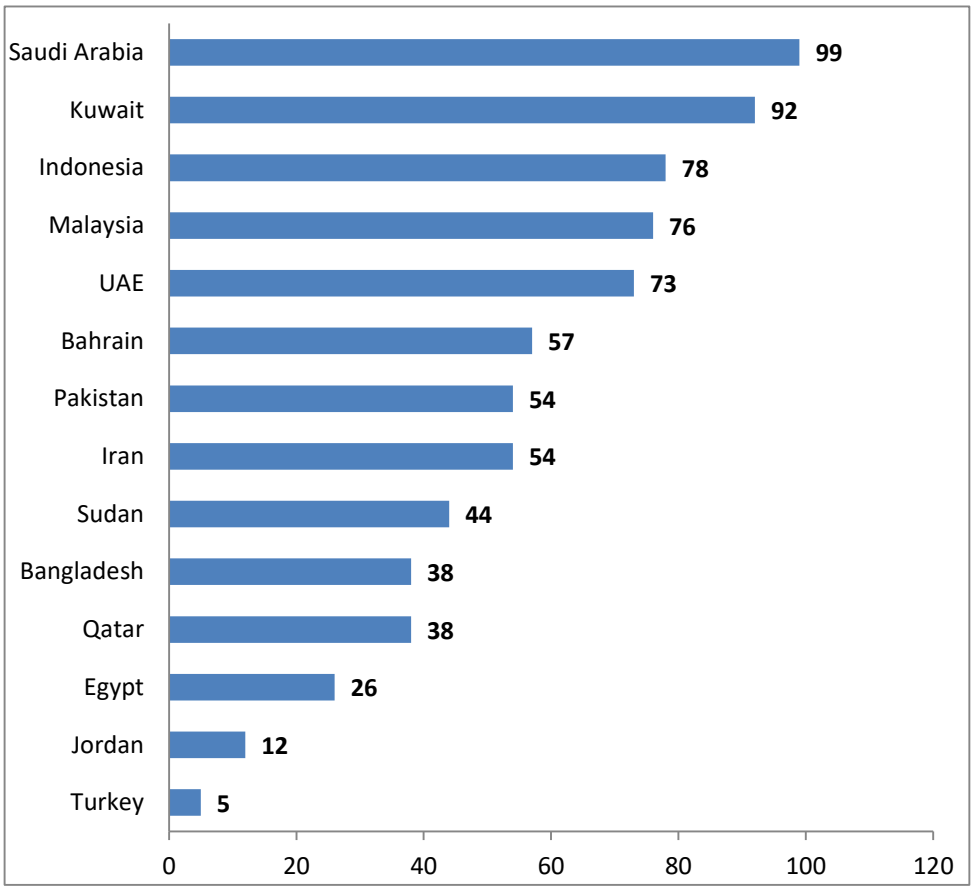

Figure 2.2: Number of IFIs in Top 15 Largest Islamic Economics.

2.1. Islamic Banking Development by Region

2.1.1. Islamic Banking in the Gulf Cooperation Council

The Gulf Cooperation Council (GCC) has been established in 1981 and consists of six countries; Bahrain, Kuwait, Saudi Arabia, Qatar, the United Arab Emirates and Oman. Except Kuwait, all countries use fixed exchange rate regimes. They are all oil exporters.

Banking sector is prevailing in financial market. Some of the shared characteristics of GCC banking industry are

- domestic banks leading market
- concentration is high
- public banks have significant share

Top 5 banks in all countries are national banks and keep 50-80 percent of banking assets. (Al-Hassan et al, 2010)

Capitalization and soundness of banks are also satisfactory. The GCC countries resemble in terms of macroeconomic indicators as well. They established a Monetary Council in 2009 in order to achieve a monetary union. Table 2.1 summarizes some of the key aspects of banking structure of GCC (Espinoza et al., 2011) and Table 2.2 shows basic statistics of the region.

Table 2.1: Structure of Banking Sector in the GCC.

Country	Market Share to total assets (%)				
	# of Banks	Domestic Banks	Foreign Banks	Share in total GCC bank assets	Assets/GDP
Bahrain	30	45	55	6	304
Kuwait	17	90	10	13	90
Oman	17	90	10	3	68
Qatar	16	90	10	10	110
Saudi Arabia	17	98	2	32	72
UAE	52	78	22	36	151

Islamic banking is a significant portion of GCC banking industry except Oman. Islamic banking assets stand for one-third of total global banking assets.

Table 2.2: Basic Statistics: GCC Countries.

Country	Area (km^2)	Population	Muslim %	GNI per Capita 2013 (USD)	Islamic Banking Market Share (%) (2014)	IB Global Market Share (%) (2014)
Bahrain	690	1300000	81.20%	21050	29.30%	1.60%
Kuwait	17,818	3892000	86.40%	52000	45.20%	10.10%
Saudi Arabia	1,960,580	31540372	97.10%	25140	51.20%	33%
Qatar	11,520	2235355	77.50%	89950	25.80%	8.10%
UAE	83,600	9,156,963	76.00%	43860	21.60%	15.40%
Oman	309,500	4,490,541	87.70%	16870	7.5%*	N/A

Data derived from various reports and World Bank databases

*This figure is from year is 2015.

2.1.1.1. Bahrain

Market share of Bahrain Islamic banks reached up to 29.3% which corresponds 1.6 percent of global Islamic banking assets. Shariah-compliant assets share increased 2 percent from 2010 to 2014 according to World Islamic Banking Competitiveness Report 2016. Bahrain is a small country with 690 km^2 area with 1.3 million populations. However, it has important role and position for Islamic banking. Bahrain -after Malaysia- is the second well developed Islamic finance market according to Thomson Reuters. It hosts important Islamic Banking institutions such as Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI) International Islamic Rating Agency (IIRA) and the Liquidity Management Center (LMC). These institutions contribute Islamic banking and finance via setting-up standards such as regulatory frameworks, accounting standards, capital adequacy, liquidity, asset management, hedging, corporate governance, etc. (Khan and Bhatti, 2008).

Central Bank of Bahrain is the regulator of overall banking system and all Islamic banks are required to have a Shariah Board and adopt AAOIFI's governance standards (Hasan, 2009). Bahrain also has a national Shariah Supervisory board even though this board doesn't have direct authority on Islamic finance institutions.

2.1.1.2. Kuwait

Islamic banks in Kuwait have a significant market share with 45.2 percent. Islamic banking assets market share increased 3 percent between 2010-2014 and 2014 Islamic banking assets stand for 10% of global market. Kuwait is relatively small country with 17.818 km^2 even though it has very large GNI per capita with 52.000 USD as of 2013. Unlike the 3.8 million small population Kuwait hosts large number of Islamic finance institutions. With 92 entities it is number two after Saudi Arabia according to ICD Thomson Reuters Islamic Finance Development Report 2014.

A major cornerstone of Islamic banking development in Kuwait is establishment of Kuwait Finance House (KFH) in 1977. KFH became one of the top

players in Islamic banking industry having subsidiaries in Turkey, Malaysia, Bahrain and Germany.

One of the interesting point in Islamic banking development in Kuwait is, charging interest on loans banned in 1981 but at the same year commercial transactions excluded (Hasan, 2009). Central bank of Kuwait is the regulator of whole banking industry. The Central Bank of Kuwait issues laws for Islamic banking. Islamic banks are required to have Shariah boards according to the banking law although the central bank does not have such entity and delegate Islamic law related issues to the Fatwa Board in the Ministry of Awqaf (Hasan, 2009). Kuwait has strong takaful business with 14 percent market share and also have Shariah index with 15 listed stocks. In 2006 first Islamic derivatives commenced by Standard Chartered Bank (Khan and Bhatti, 2008).

2.1.1.3. Saudi Arabia

Saudi Arabia is distinctive with its high Muslim population percentage, and being the destination of pilgrimage. It hosts Islamic Development Bank in Cidde. 51.2 percent of total banking assets belong to Islamic banks and stand for 33 percent of the global market.

Islamic banking started in 1974 with establishment of Islamic Dar al-Mal al-Islami Company, the Faisal Islamic Bank and the Al Baraka Banking group. According to ICD - Thomson Reuters Islamic Finance Development Report 2014, Saudi Arabia is number one in hosting Islamic finance institutions. Saudi Arab Monetary Agency controls the banking system and conventional banks even though Islamic banks are regulated as commercial companies and under control of Saudi Ministry of Commerce (Hasan, 2009). An interesting point is that the banking law of Saudi Arabia does not mention interest and neither regulates nor prohibits it. This silence on interest supports conventional banking practices. Besides, having a Shariah board or governance system is a voluntary action for Islamic banks.

Market share of Islamic banking increased from 38 percent to 51 percent between 2010-2014. Saudi Arabia shows a very spectacular growth for Islamic banking as Ernst & Young Islamic Banking Competitiveness Report (2016) states Saudi Arabia is the first country that Islamic banking assets reach majority

nationally. Even though there is lacuna in regulations for Islamic banking it is interesting Saudi Arabia reached the highest ratio for Islamic banking and main reason is the people of Saudi Arabia sensitiveness to interest prohibition in Islam and there is natural strong demand for Shariah-compliant instruments.

2.1.1.4. Qatar

25.80 percent of Qatar's banking asset managed by Islamic banks and its ratio for global market is 8.1 percent. Qatar is in between Bahrain and Kuwait in terms of population and area. It is the richest country in the world with 89,950 USD GNI per capita in 2013. Main source of wealth is oil and natural gas. Islamic banking assets market share increased 5% percent between 2010-2014.

Qatar Islamic Bank established in 1983. Qatar issued first sukuk in 2003 and significant amount of project financing done by sukuk. Takaful industry is also well developed.

Even though Qatar sees the Islamic law as main source of legislation, commercial law is not regulated by Islamic law primarily. Qatar Civil and Commercial Code allows the interest-based transaction and Qatar Monetary Agency is in charge of determining the interest rates (Hasan, 2009). Apart from central bank, Qatar has established Qatar Financial Center in 2005 in order to provide regulatory framework and platform for both local and foreign companies.

Central bank and Qatar Financial Center have own regulatory frameworks. Central bank is in charge of prudential regulations whereas Financial Center issues regulations related to Islamic banks.

Another key point, is that Qatar prohibited conventional banks having Islamic banking windows in 2011. This decision caused slow-down on market share increase for Islamic banks even though in 2014 Islamic banks succeeded a significant increase in total assets.

2.1.1.5. The United Arab Emirates

The UAE is the second largest country in terms of land and population after Saudi Arabia in the GCC. The UAE is a federal union of seven emirates. Out of

seven, Abu Dhabi and Dubai dominates the banking industry with more than 90 percent of the total domestic assets (Hashmi, 2007). In 1980, the law which is the backbone of banking issued. In 1985, charging interest rates prohibited but this ban abrogated by the laws promulgated in 1987 and 1993 (Hasan, 2009).

There are restrictions for foreign banks in the UAE. Until 2003, foreign banks could open up to eight branches only but after 2003 it is possible for foreign banks to have more branches by providing special permission (Hashmi, 2007). However, the size of banking industry is in top two in the GCC along with Saudi Arabia. The UAE banks are quite well capitalized not just in the GCC but in the world. Because of the standards of the UAE Central Bank local banks already exceed the norms set by the Bank for International Settlements (BIS) as part of the Basel III criteria (Miniaoui and Gohou, 2013). Dubai has specific position in terms of banking as the UAE issued a separate law for Dubai allowing privileges such as zero tax from income, allowing 100% foreign ownership etc. (Hasan, 2009)

2014 figures show Islamic banking has 21.6 percent share in total banking assets and market share increased from 19 percent to 21.6 percent between 2010 and 2014. Islamic banking started in 1975 with Dubai Islamic bank. Ministry of Justice and Islamic Affairs is in charge of supervising Islamic banks and provides Shariah opinion when necessary. Islamic banks in the UAE must have a Shariah board consisting of minimum three members. Shariah board members have to be approved by Higher Shariah Authority. Islamic banks also must adopt AAOIFI Governance Standards. Conventional banks are allowed to have Islamic windows. Sukuk, Takaful and private equity funds demand also increasing (Khan and Bhatti, 2008).

2.1.1.6. Oman

Oman or the Sultanate of Oman distinct from other the GCC countries as Islamic banking started quite late. Oman has resisted implementing the Shariah-compliant banking for political reasons (Hasan, 2009). In May 2011 adoption of a dual financial system approved and Shariah compliant products are allowed along with conventional ones (Magd and McCoy, 2014). Reason for the change is mainly intention to bring capital from other the GCC countries to Oman via Shariah-compliant products.

As of 2013 two banks are licensed as Islamic banks. It can be said Oman has some late mover advantage by having the opportunity of using previous expertise of other countries. Oman market share of Islamic banks is 7.45 percent in 2016.

2.1.1.7. Summary of the GCC Region

With high GDP, high Muslim population and oil exportation revenues the GCC countries have a significant position in Islamic banking. Two remarkable points come out of Islamic banking experience in the GCC.

First, even though population of the GCC countries is dominantly Muslim and they are on the lands Islam spread first, financial system is quite secular. Attempts to ban interest didn't work out in Kuwait and the UAE. Other countries including Saudi Arabia didn't even try this. Overall financial system runs "conventional" way and Islamic banking function as a complementary but not an alternative same as with the overall practice in the OIC. Government level Shariah boards –if exist- don't have authority on Islamic banks instead they have advisory roles.

Second, cultural, economic, religious similarities of the GCC countries haven't given birth to a common way of Islamic banking practice. Saudi Arabia has no specific regulation of Islamic banking and do not force Islamic institutions to have a Shariah board and doesn't have a nationwide supervisory board. Bahrain, the UAE, Kuwait and Qatar requires Islamic banks to have a Shariah Supervisory Board (SSB). However, Bahrain and the UAE established government level SSBs whereas Kuwait and Qatar didn't. On the other hand, Oman hesitated set-up Islamic banking environment and recently authorize Islamic banking.

Petro-dollars, countries considering the Islamic law as a main source of legislation, dense Muslim population, Islamic finance institutions like AAOIFI, IIRA, LMC enabled the GCC countries to obtain a major stage in Islamic banking. However, Islamic banking in the GCC still endures same issues with the rest of the world, lack of standardization and affinity with a conventional banking. It can be said that all these advantages in the GCC region fail to establish a real alternative to conventional finance and standardized best practice for the other countries.

2.1.2. Islamic Banking Development in Asia-Pacific Region

2.1.2.1. Malaysia

Malaysia's leading role for Islamic banking is indisputable in the region. Even though Asia is hosting the biggest Muslim population in the world, Malaysia is the leading force Islamic banking. As of 2013 Malaysia holds 70 percent of the Islamic banking assets in Asia. Figure 2.3 illustrates the Islamic banking assets share in Asia (IFSB, 2015)

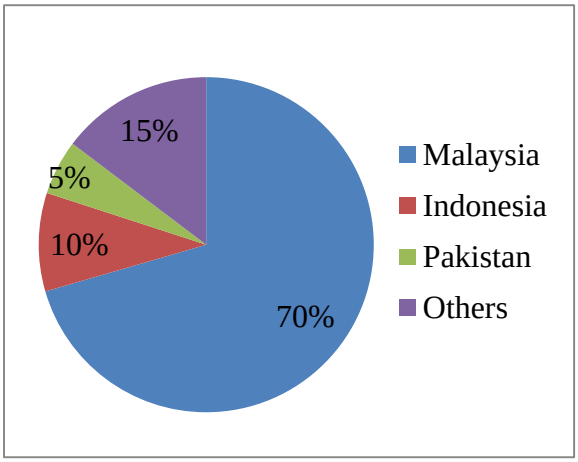

Figure 2.3: Islamic Banking Assets in Asia by Domicile (2013).

It is possible to state that Malaysia experienced Islamic banking in a unique way. Majority of Malaysia's population is Muslim even though the density of Muslims -which is 61.4 percent- is considerably lower comparing to the GCC countries. However Islamic banking and finance received good tolerance and support from the Malaysian government.

The first initiative of Islamic finance in Malaysia is Tabung Haji which is established in 1963 aiming to support Muslims to save money for pilgrimage according to Islamic rules. After the good performance of Tabung Haji, Malaysian government is asked to take steps to set-up a full-fledged Islamic bank (Al Nasser and Muhammed, 2013). In 1981 government established a council of experts to study Islamic banking in Malaysia and in 1983 first Islamic bank, Bank Malaysia Berhad, launched.

The developments of Islamic banking and finance progressed in various dimensions. In 1983, Islamic money market was established. In 1985 first takaful company launched. In 1990, first Sukuk issued. In 1993 the Central Bank allowed conventional banks to have Islamic windows. Although various Islamic banking and finance instruments growing in Malaysia, the progress of Sukuk needs to be highlighted. As of 2011, Malaysia issued 58 percent of total global sukuk. The contribution of Malaysia to Islamic banking instruments, standardization is obvious even though the concept of Malaysian practice is accused by some scholars as too liberal in Islamic Shariah principles (Khan and Bhatti, 2008).

Malaysia has mixed legal systems as common law and Shariah. Shariah involves for family matters and for the rest common law is in charge so Islamic banking is under control of common law (Hasan, 2009). Central bank of Malaysia established a Shariah board namely Shariah Advisory Council in 1997. This council started as an arbitrary and become the highest authority for Islamic banking matters as of 2009.

Malaysia also shows attention to education and standardization for Islamic banking. In 2003 Islamic Banking Services Board (IFSB) was established. IFSB main purpose is standard setting to promote the stability and resilience of the Islamic financial services industry (http://www.ifsb.org/mission.php). INCEIF (International Center for Education in Islamic Finance) was established in 2006 by central bank in order to produce world-class talent for the global Islamic finance industry. (http://www.inceif.org/about/philosophy-brand/)

Even though all aforementioned developments in Malaysia, Islamic banking assets share is 21.3 percent and its market share increased 4 percent annually between 2010-2014. According to Ernst&Young report, Islamic banking growth is slowing down and seems to reach a stable level.

2.1.2.2. Bangladesh

Bangladesh is another country with massive Muslim population. 90 percent of 161 million are Muslim. GNI per capita is considerably smaller compare to other Muslim countries which is 1010 USD according to 2013 World Bank data.

Islamic banking started in 1983 in Bangladesh. New Islamic banks continued to be established in 1987, 1995, and 1999. Currently Islamic banks hold almost 20 percent of the total banking assets. There is no separate Islamic banking framework in Bangladesh. Conventional banks are allowed to have Islamic windows. According to guideline issued by central bank in 2009, board of Islamic banks are required to keep their products and operations as Shariah compliant and they can form a Shariah board. Bangladesh has a Shariah supervisory council nationally.

2.1.2.3. Indonesia

Indonesia is the largest Muslim population country. With 257 millions of people population –out of 88.1% is Muslim- and 1.811.8570 km² land, Indonesia is the largest country. It has the smallest GNI per capita comparing to aforementioned Islamic countries.

Islamic banking in Indonesia started in 1992 with establishment of Bank Muamalat Indonesia. Progress of Islamic banking is slow until 1998 and the reason may be the existence of disincentive former leader. After 1998 with the new government issued and act for Islamic banking. In 2002, central bank released "Blueprint of Islamic Banking Development in Indonesia" which is long term planning for Islamic banking (Ika and Abdullah, 2011). Conventional banks are allowed to have Islamic windows. A unique outcome in Indonesia is Islamic windows become spin-offs and converted to full-fledged Islamic banks (Siswantoro, 2014).

Indonesia has takaful companies and also Shariah-compliant stocks and Jakarta Islamic index. With all these initiatives, the market share of Islamic banks are quite small, 3.7 percent though. According to World Islamic Banking Competitiveness Report the progress between 2010 and 2014 Islamic banks asset ratio seems stable. Indonesia has huge potential for Islamic banking but currently it is far from realizing it.

Central bank is the main regulator of overall banking industry. There is no separate Islamic banking law (Zaher and Hassan, 2001). Central bank is responsible for prudential issues just like conventional banks. Religious issues are handled by the National Syariah Board of the Ulama Council of Indonesia (Lindsey, 2012). Islamic

banks also have separate Shariah boards. A distinct feature of Indonesia is that legal disputes regarding Islamic banking are handled by Shariah court (Majid and Gazal, 2012).

2.1.3. Countries with an Entire Islamic Banking System

Three countries have different path regarding Islamic banking practice as they try to abolish interest for an overall economy; Pakistan, Iran and Sudan. Pakistan is one of the highest Muslim population country with 189 millions of people out of 96 percent are Muslim. The decision of removing interest rates announced in 1979 in Pakistan. In 1981, PLS basis deposit collection started along with conventional deposits. Pakistan tried to ban interest transactions while foreign banking works with conventional way. In 1991, Federal Shariah Court declared all interest based operations as unlawful (Majid and Ghazal, 2012). In 1998 all interest rates abolished. However, in 2002, Pakistan turned back to dual banking system while all conventional banks are required to have Islamic windows (Khan and Bhatti, 2008). Takaful, sukuk and Islamic equity index are other Islamic banking and finance instruments. Shariah Federal Court is the ultimate decision-maker for Islamic banking issues and disputes which is independent from the central bank (Hasan, 2009). The attempt of Pakistan show that removing interest is not practical or applicable in case most of banking relies on mark-up instruments.

Islamic banking started in Iran with the Islamic revolution in 1979. Iran nationalized the baking industry and the central bank reduced the interest rate of commercial banks both for depositors and lenders in 1980. As a result of nationalization, 37 commercial banks merged into six commercial and three specialized banks (Nili, 2014).

Interest payments abolished in 1983. Only exception was transactions between central bank and government institutions (Shahdani, 2007).

"Riba was eliminated and replaced at the commercial level by profit (rate of return). However, because of the restrictions of Shariah- compliant monetary policy instruments, the authorities were obliged to intervene and determine the profit rates for both deposits and loans" (Nili, 2014, pp. 187).

Islamic banking in Iran can be considered as isolated and centralized at the beginning but starting from the mid-1990s privatization and deregulation started (Khan and Bhatti, 2008). In 1999, foreign banks are allowed to work in free trade zones.

At deposit side, Iranian banks pay a monthly profit to term or investment depositors based on a "anticipated profit" of the bank and final profit concluded at the end of the fiscal year. At the funding portion various instruments, Qard hassan loans are available for certain individuals or companies such as farmers, couples getting married, companies provide basic requirements of society. Same amount of the loan is paid back even though banks can charge up to 4 percent as administration fees. There are mudarabah, murabahah, salam, hire-purchase (leasing) instruments similar to other regions. A debt-purchase schema is also allowed in Iran unlike most of other regions.

Iranian banks do not have separate Shariah boards instead a board in Central Bank exists. Iranian banks are allowed to charge late fees as a part of their income. General practice is that banks donate the fines they charged to social responsibility areas and use fine as a disincentive against late installments.

Even though Iran banned interest related transactions, the phenomenon of interest is still keep possessing state's monetary and banking system. Murabahah loans are in increasing and qard hassan loans are in decreasing trend. (Hassani, 2010)

Finally, Sudan is a large country with around 40 millions of people. Ratio of Muslims is 71.4 percent and living north side of the country whereas southern side is mostly Christian. First attempt of Islamization of economy started in 1984. Before this date Islamic banks were already established starting from 1977. Due to economic and political reasons Islamization of economy couldn't reach to the expected level. In 2004, dual banking adopted and northern portion of the country use Islamic banking and southern side adopts conventional banking. However, both sides are under jurisdiction of central bank's monetary and fiscal policies (Khan and Bhatti, 2008).

2.1.4. Islamic Banking in the UK

As a non-Islamic country, the experience of Islamic banking and finance in the UK is worth to look at it. The UK has a 4.6 percent Muslim population. The UK has

sophisticated and well developed banking and finance infrastructure and shows good attention to Islamic banking progressively. UK's major aim is to become a center or a hub for Islamic banking globally.

UK interaction with Islamic banks started with a wholesale banking. UK banks provided deposit accounts with Murabahah mark-up based on London Metal Exchange to Islamic banks in the Gulf Region (Ainley et al., 2009). First Islamic bank established in 1982, Al Barakah Bank, but stopped its operation in 1993. Al Barakah provided mudarabah deposits, house finance and investment banking. However, it couldn't reach a reasonable scale to compete in the UK. When Bank of England increased the regulatory requirements due to losses of another bank in the market, Al-Barakah couldn't meet requirements and regulations and gave up its license. After Al-Barakah resigned, United Bank of Kuwait entered house financing in 1997. However double stamp tax occurrence while purchase of houses and re-sell to customers effected its operation (Wilson, 2010).

In 2000 a working group established by Bank of England to study how to make Islamic banking sustainable. As a result, several laws and adjustment issued regarding tax and regulatory systems and in 2004, Islamic Bank of Britain established (Hasan, 2009). The UK removed the double stamp duty, changed tax requirements to ease Islamic banking instruments in 2003, 2005 and 2006 (Khan and Bhatti, 2008).

Even though a number of banks and market share is low, different instrument structures are available in the UK. For house financing, a fixed payment based on murabahah scheme is available. Besides, an ijarah based rental structure also provided. However, the rental fee binds to LIBOR to avoid costly evaluations of rental value of houses every year. Even though this links the payment to an interest rate Shariah board of related banks authorized this scheme. Diminishing musharakah scheme is also available which is based on re-calculating bank's and client's ownership share based on the client's payment. It is important to note that cost of using Islamic mortgages seem to be expensive compare to conventional ones.

As a non-Muslim and secular country, the UK doesn't have a national Shariah board. There is no requirement for Islamic banks to set-up their own Shariah boards either. Islamic windows are allowed in the UK. The Financial Services Authority (FSA) allows banks to have Shariah boards as long as their role is not executive.

FSA also expects Islamic banks in the UK not to adopt a Shariah governance tied to a jurisdiction out of UK (Hasan, 2009).

2.1.5. Islamic Banking in Turkey

Islamic banking is known as "participation banking" in Turkey. Turkey is the largest economy in OIC countries and has 98.6 percent Muslim population. With its big economy and high population Turkey is often referred as a big potential for Islamic banking. However, the market share of Islamic banking is around 5.5 percent level and does not show an increase comparing last 5 years. It seems that Islamic banking stuck around 5 percent level.

Islamic banking started in 1985 in Turkey with the name of Special Finance Houses (SFHs) and without making any reference of Islamic requirements due to secular political culture of the country (Asutay, 2013). Between 1985 and 1991 interest-free finance companies Al Baraka, Kuveyt Türk, Faisal Finans, Anadolu Finans, İhlas Finans and Asya Finans established. However, SFHs had to operate with a minimal legal and regulatory framework and even without mentioning interest-free banking principles. Turkish economy was having rough times in the late 1990's and Ihlas Finans- the top player- bankrupted in 2001 due to the liquidity problem. At the conventional banking side, over twenty banks also failed during that crisis, too (Hardy, 2012). Significant portion of Ihlas Finans customers withdrew their monies and transferred to conventional banks offering very attracting rates. The Central Bank had no role as a lender of last resort and there was no deposit insurance for participation banks – or SFHs name at that time. After Ihlas Finans got into trouble, it caused a chain reaction as deposits of SFHs were not under deposit insurance, many customers of other SFHs wanted to withdraw their monies (Tunç, 2010). Thus, in 2001 the Union of Special Finance Houses was established and a deposit insurance scheme was extended to include the SFHs.

At 2002, Justice and Development Party gained the majority in the November election, which starts to ease pressures on Islamic foundations. Similarly, economic situation as well as Islamic banking is started to normalize and then to improve. A new banking law issued in 2005 alters the name of "special finance houses" to "participation banks" and finally providing them to operate in an acceptable legal

framework. Union of Special Finance Houses changed its name to Participation Banks Association of Turkey (PBAT). One recent and substantially important change in Turkey is the entry of two state banks to the participation banking market. Two state banks –Ziraat Bankası and Vakıflar Bankası- established participation banking subsidiaries in 2015.

Between 2014-2015 participation banking faced an internal hardship. Bank Asya, the leader of the market transferred to Saving Deposit Insurance Fund (SDIF) It was no secret that Bank Asya had a direct relation with Gulenist movement and significant amount deposit withdrawn by public due to hostile actions of Gulenists against the government. Afterwards Bank Asya rejected to share information about its privileged shareholders and its control transferred to SDIF (http://www.bddk.gov.tr) in 2015. This issue disturbed the participation banking sector and reduced its total market share.

Figure 2.4 (PBAT, 2010; PBAT, 2015) shows the market share of Islamic banking as a percentage of total banking sector in Turkey. For the first 15 years (1985 to 2000), their share reached to around 2 percent in 2000. During the 2001 crisis, they lost almost half of their market share.

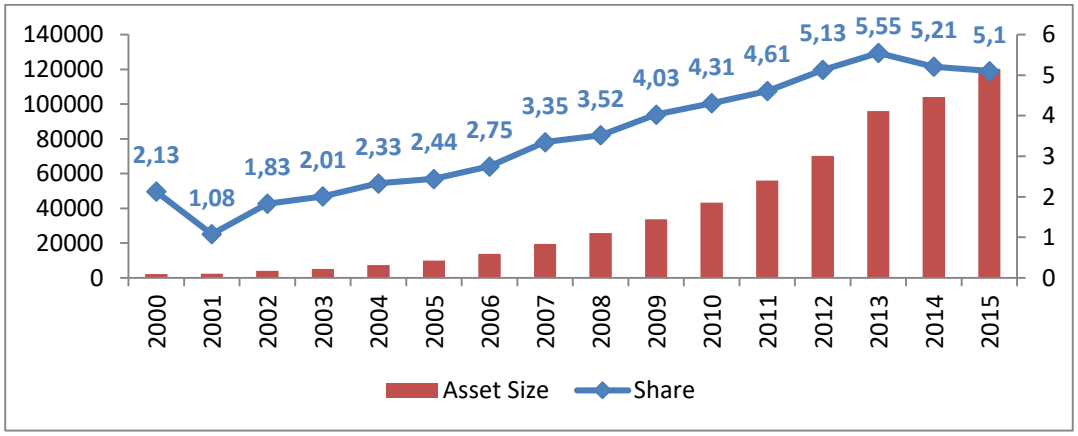

Figure 2.4: Participation Banking Assets and Market Share in Turkey.

Since then the share of PBs has been steadily increasing to 5 percent. While the exit of Bank Asya caused some negative effect on the increasing trend of shares. Moreover, in 2015, PBAT issued a strategy document covering 2015-2025 and set a target to raise the market share of participation banking to at least 15 percent until 2025 (PBAT, 2015).

Even though Islamic banking activities started more or less same time with the other OIC countries, Turkey shows significant delays introducing other Islamic finance products and services. First tekaful company –Neova Sigorta- established in 2009 and in 2014 its market share is around 1.67% (Aslan, 2015). Similarly, first Sukuk issued in 2010 by Kuveyt Türk Participation Bank. Istanbul stock exchange introduced participation index in 2011. Those recent developments are related with the eagerness of government on Islamic finance. Potential of Turkey is obvious however the market share of participation banks seems balanced. State owned participation banks are expected to boost Islamic banking industry.

Based on the data of Banking Regulation and Supervision Agency (BRSA) key performance indicators (KPIs) of participation and conventional banks are as follows.

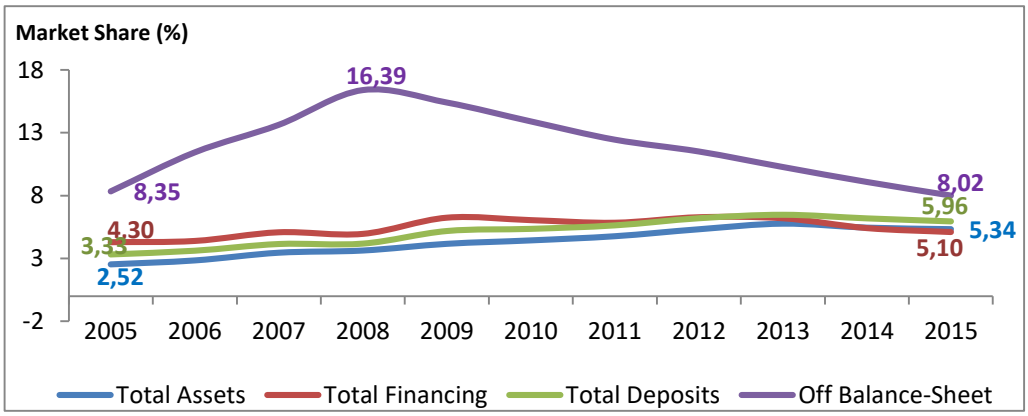

Figure 2.5: PBs Market Share in Assets, Financing and Deposits

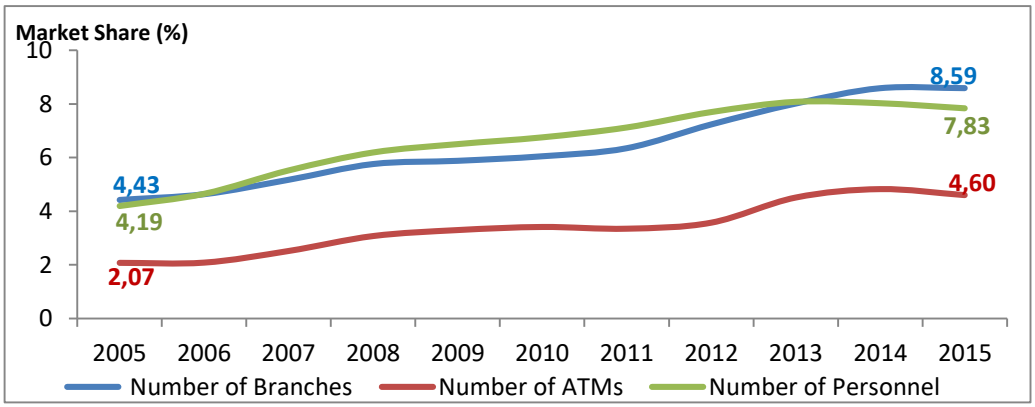

Figure 2.6: PBs Market Share in Number of Branches, ATMs and Personnel

The shares of PBs in size measures do not seem to importantly improve compared to their 2005 values. Off-balance sheet times reached to 16 percent in 2008 but 2015 level is almost same with 2005. Rapid increase in off-balance items between 2005 and 2008 followed by a continuing decrease that can be interpreted as a strategy shift for PBs. Almost all KPIs show negative slope as of 2013 due to Bank Asya transferring to Saving and Deposit Insurance Fund.

Even with the closure of Bank Asya, the relative share of PBs in number of branches, number of ATMs and number of personnel shares of PBs is higher because there is a decrease in CBs branches and entrance of two new state participation banks and the expansion of Kuveyt Türk. Note that since these KPIs are cost items, increase in the latter measures must be compensated with financial growth to compete.

Regarding key financial ratios such as Return on Asset (ROA), Return on Equity (ROE), Net Interest/Profit margin (NIM) and non-performing loans (NPL) for both PBs and CBs. Results are summarized in Figure 2.7

The first salient issue is the substantial decrease in profitability for PBs. Although CBs profitability fluctuates, its level in 2015 are similar with that in 2005 with a decreasing trend since 2010. For PBs, there is a continuous decrease since 2005 in both ROA and ROE. While losses in last two years might be explained with the Bank Asya case, as a trend PBs profits have been shrinking even though financing profit margins (NIM) have been pretty much the same for both type of banks.

NPL of CBs increased during the latest global financial crisis but decreased afterwards. However, NPL of PBs is still on the rise. Another highlight, PBs were more profitable until 2008-2009 than CBs. It is extremely important to further study factors causing reduction in profitability and increase in NPL even in relatively good times. Note that regarding NPL, PBs used to charge no penalty fees in case of late payments but there has been serious exploitation of this process (Tunç, 2010). Current practice is charging penalty in case of late payments and utilize them in social responsibility activities.

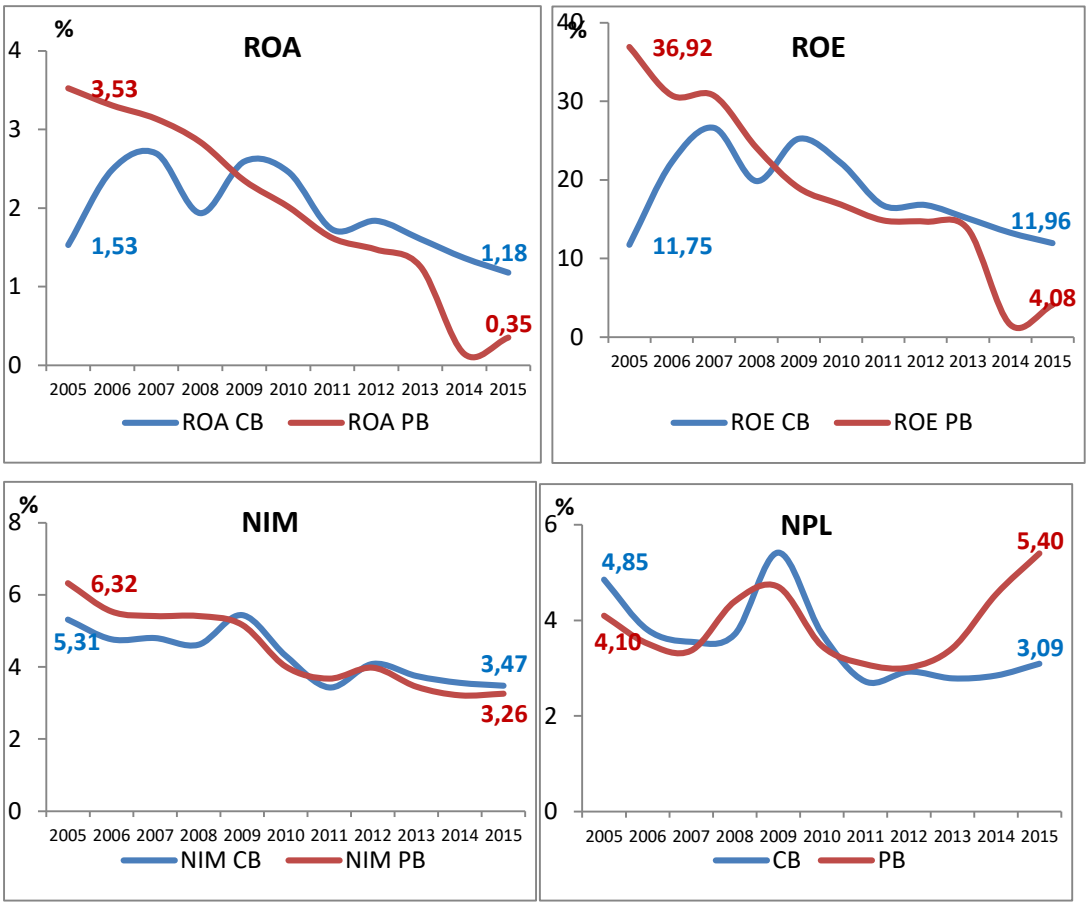

Figure 2.7: Key Financial Ratios

Business patterns of PBs and CBs examined by using following measures: total financing ratio, current account ratio, SME funding ratio and SME NPL, which can be seen on Table 2.3 derived from BRSA database. PBs are expected to utilize their funds in real economy via financing PLS or trade based instruments and overall expectation for PBs is to have higher financing ratios. From 2005 to 2010 PBs have apparently higher financing ratios. However, after 2010 CBs close the gap and in 2015 exceed the PBs. It is important to note that CBs increase their funding ratio from 37 percent level to 62 percent, which is a sign of transition in the Turkish economy. With the end of high inflation era, banks have to do banking instead of lending the government to make easy profits. Ratio for PBs seem to be stable around 65 percent. Closing of Bank Asya probably is the reason for reducing the ratio under 65 percent level.

Another significant difference is the high ratio of current account in total deposits for PBs. Current accounts are deposits that customers receive no profits or interests and can be withdrawn anytime. These deposits have no cost for banks, they

are free of charge sources and PBs dominate CBs. This is an essential advantage for PBs but the reasons behind this must be questioned. Why do customers of PBs tend to keep their monies in current accounts and give-up profits? Is it because they are risk averse and they don't prefer PLS accounts or they hesitate to obtain a surplus from a PLS account and consider the gains as quasi-interest or "grey area"? Anyhow in both cases, it is a challenging issue for PBs even though they take advantage of it. If customers think that there is a high probability of losses, PBs urge to convince customers for their operational reliability.

Table 2.3: Several Ratios Regarding Business Patterns.

Year	Total Financing / Total Assets (%)		Current Account / Total Deposits (%)		SME Funding Ratio (%)		SME NPL (%)	
	CB	PB	CB	PB	CB	PB	CB	PB
2005	37.48	65.09	20.18	23.44				
2006	43.02	67.79	17.59	21.82	27.17	41.79	3.66	2.01
2007	48.33	72.37	15.99	18.80	27.06	31.50	3.75	3.27
2008	49.44	68.46	13.52	17.98	23.09	28.55	4.96	6.11
2009	45.94	70.30	15.40	18.88	21.01	29.64	8.44	6.70
2010	51.38	71.12	15.73	19.31	23.30	37.56	4.70	4.50
2011	55.48	68.64	16.95	25.39	23.29	40.15	3.14	3.30
2012	57.41	68.24	17.65	21.94	24.22	47.21	3.26	3.27
2013	60.00	64.56	18.33	24.54	25.31	46.42	3.17	3.50
2014	61.97	61.41	18.48	24.50	26.66	45.45	3.22	5.15
2015	62.85	59.94	18.64	27.15	26.21	41.92	3.87	6.99

SME funding ratio shows the share of funds provided to SMEs. PBs are clearly dominating the CBs for this ratio. PBs utilize almost 40-45 percent of their funding activity on SMEs. This is also a very critical distinction and an indication of PBs contribution to a real economy through supplying loans to small scale businesses that are supposed to be riskier.

Finally, the efficiency of KPIs for both types of banks are evaluated with asset per personnel, deposit per personnel, profit per personnel, asset per branch, deposit per branch, funding per branch, personnel per branch, overhead cost to average assets and commission and bank service income to overhead costs. Figure 2.8 presents these ratios for both PBs and CBs.

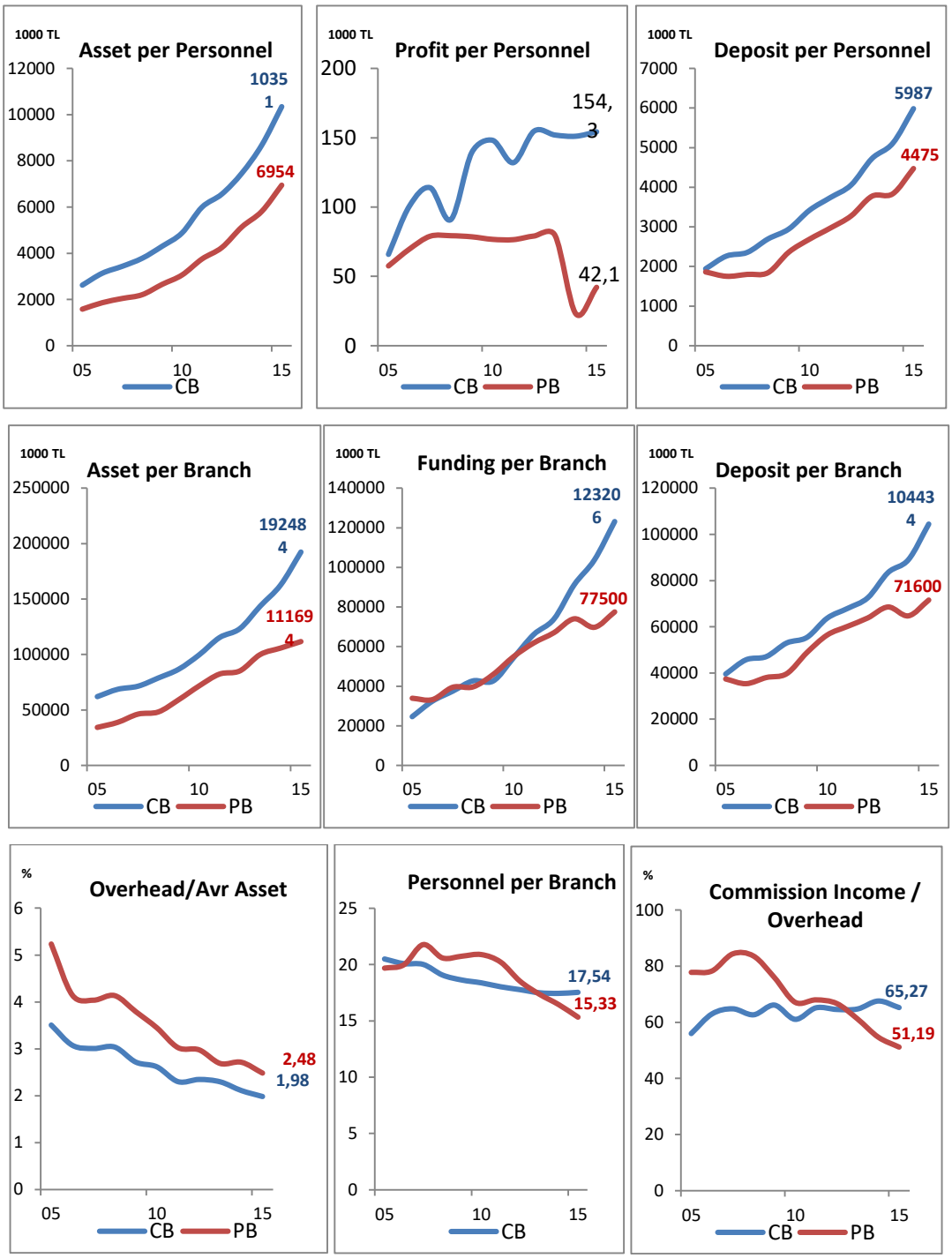

Figure 2.8: Efficiency KPIs between 2005 and 2015

Asset and deposit per personnel/branch figures indicate that both PBs and CBs have increasing trends. However, the gap for these measures were in favor of CBs in 2005 and since then they have been getting larger through time. Since participation banking is not as mature as conventional banking and trying to grow, which might cause some inefficiency problem. This might be a very well problematic assumption concealing real problems of PBs though.

Personnel per branch figures are pretty close to each other and in fact lately PBs are in a better position. Thus, an efficiency gap should not be resulted from an excess employment. Although overhead costs of PBs are also higher than those of CBs, its ratio is decreasing meaning that PBs try to optimize their costs via efficiency improvements. Commission and banking service income ratio to overhead was better than that of CBs until 2012 but now vice versa with continuous reduction since 2005. Its level for CBs is stable with a slightly increasing trend. One side of the profitability problem captured in ROA/ROE seem to be resulted from reduced commission and banking service income compared to overhead costs. While PBs may have to charge less commissions to compete with CBs, they seem not to increase deposits and assets in parallel. In short, PBs collect fewer deposits and do less fund utilization with the same personnel per branch and charge less commission and fees. The lack of instrument variety could be the major cause of this, as discussed previously. PBs heavily rely on Murabahah instruments (more than 90 percent) and current business model may have reached its boundaries. However, even with this disadvantage Turkey should at least reach market share levels close to the OIC countries.

2.1.6 Discussion of Regional Islamic Banking Practices

Countries experienced Islamic banking growth in different ways in different regions and various practices co-exist globally. Malaysia composed a dual banking system and with separate regulations specifically for Islamic banks. Most of other countries released laws and regulations for Islamic banks but the banking system is based on conventional banking rules. Bahrain and the UAE established government level Shariah boards whereas other GCC countries do not have this upper framework for Islamic banking. Instead banks set-up their own Shariah boards. Saudi Arabia remains silent on interest issues and leaves all governance to Islamic banks. Iran on the other hand abolished all interest operations and run on Islamic finance principles.

Islamic banking usually followed by tekaful and sukuk introduction. Turkey established these markets quite late compare to other countries. Malaysia becomes the leader of sukuk market and Saudi Arabia is the leading country for tekaful business.

Different methods, governance structures, market share interestingly lead to similar banking practices. None of the regions managed to get free from conventional banking schemes. It can be said that financial markets are quite secular and run with interest principles. Inevitably most of the instruments are debt based and Islamic banking –as a whole- claimed to be too similar with conventional banking. Even in Iran, who claims to run overall economy totally interest free, banking practice and instruments resemble conventional banking.

Islamic banking instruments, governance issues and risk management discussed in detail in following sections.

2.2. Modern Islamic Banking Practice

2.2.1. Framework of an Islamic Bank

The major distinction of Islamic banks lies on the profit-loss sharing (PLS) principle, which prohibits IBs to charge or promise fixed rates. Unlike their conventional competitors, IBs have to set-up PLS relations with their customers both on asset and liability sides such as Islamic joint ventures (Musharakah/Mudarabah) and trade or lease based financing (Murabahah/ Ijarah/Salam). Khan and Mirakhor (1989) claim that the PLS structure enables Islamic banks to outperform their conventional competitors in terms of absorbing external shocks and Chapra (1992) asserts that IBs contribute economic growth via providing long term funding.

The key point is Islamic banks collect funds via PLS (mudarabah) or agency (Wakalah) agreements and utilize them on real business activities via trading (murabahah), leasing (Ijarah) or PLS (mudarabah/musharakah) agreements to gain profit. There should be a real business activity allowed under Islamic law.

2.2.1.1 Liability Side of an Islamic Bank

Current Accounts: It is a deposit account that banks guarantee the account balances. Customers use these accounts to keep their fund safe at the bank and withdraw or transfer when they need. Islamic banks collect current accounts on a wakalah basis contract. Islamic banks can use the amount in these accounts in

funding or treasury activities based on regulation limits however they are not required to return any profit. Banks may share the profit as a gift (hibah) principle with the customers.

Savings/Investment Accounts: These accounts work with PLS principle. Funds are collected via mudarabah contract. Banks –along with its capital- use the amount in savings account for funding activities to gain profit. There is an agreement of bank with customers regarding the profit share ratio based on the tenors of the account for example 1 month, 3 months, 6 months etc. Banks compose a pool as earning asset base and calculate and distribute profit accordingly. If banks utilize the funds on fixed return instruments mostly then customers receive quasi-fixed profits which also raises concerns on Shariah-compliancy.

Shareholder Funds: Islamic banks can raise capital with equity participation as well. From Islamic law perspective it is a musharakah contract and equity owners receive the pre-determined ratio of the profit acquired.

Islamic banks can compose different fund pools consist of bank capital, shareholder funds or savings account. Each pool's profit distributed based on the pre-determined ratio.

2.2.1.2 Asset Side of an Islamic Bank

Kahn (2010) summarizes asset side of an Islamic bank as follows.

Cash and Cash Equivalent: It is identical with conventional banking balance sheet in terms of content and function

Receivables: This item mostly consists of cost plus sales (murabahah) transactions and it corresponds to loans and securities portion of a conventional bank. Islamic banks authorize the customer to purchase the good, semi-finished product, machinery that will be funded and instantly re-sell the customer with mark-up. Leasing (ijara), project financing (istisna), future sales (salam) are other modes of finance listed in this category.

One critical distinction of Islamic banks is those assets in receivables section cannot be re-sold in the market on discount as they represent a debt. Thus, unlike conventional banks, their liquidity is lower than the loans of a conventional bank.

Investments: This item is unique to Islamic banks and includes risk bearing investments. PLS based investments (mudarabah, musharakah) and direct investment in the equity of clients are listed under this category.

Other Assets: This portion is also similar with conventional banks containing bank's own assets, real estate's etc. Figure 2.9 summarizes the balance sheet of an Islamic bank (see, Khan, 2010).

Assets (Uses of Funds)	Liabilities and Capital (Sources of Funds)
Cash and cash equivalents	Current account deposits
Receivables	Investment accounts
Investment	Borrowings
Other assets	Bank capital

Figure 2.9 Sample of a balance sheet for an Islamic bank.

2.2.2. Islamic Banking Instruments

There is a variety of instruments available for Islamic banking funding. They can be grouped in two broad categories, PLS based and debt based. Apparently debt based instruments dominate the Islamic banking industry currently but there is almost a consensus on increasing the PLS based instruments ratio. Other than funding instruments, there are other instruments such as Islamic Bonds –Sukuk-, Islamic derivatives, tawarruq. It is important to highlight that there is no consensus on compliance of all instruments to Islamic law and applications change region by region. However, all of the instruments are either asset backed or asset based and have direct or indirect relation to real economy.

2.2.2.1. PLS Based Instruments

Mudarabah:

"Under Mudarabah, one party, the rabb al-mal (beneficial owner or the sleeping partner), entrusts money to the other party, called the mudarib (managing trustee), who is to utilize it in an agreed manner. After the operation is concluded, the rabb al-mal receives the principal and the pre- agreed share of the profit. The mudarib keeps for himself the remaining profits" (Warde, 2000, pp. 136).

One key point of Mudarabah is capital that provider bears in case of a loss. That's why it comes with agency problems. Another agency issue is how to capture the precise profit of the business. Besides, it does not guarantee that mudarib will do his best. (Visser, 2005)

Mudarabah is widely used on liability side of Islamic banks where customers are the the rabb al-mal and Islamic banks are mudarib. Islamic banks utilize the fund entrusted in Shariah compliant activities and share the profit. However, in asset side due to aforementioned agency risks usage of this instrument is low.

Musharakah:

"Musharakah is similar in its principle to Mudarabah, except for the fact that the financier takes an equity stake in the venture. It is in effect a joint- venture agreement whereby the bank enters into a partnership with a client in which both share the equity capital, and sometimes the management, of a project or deal" (Warde, 2000, pp. 136).

The losses are shared based on capital ratio but profit share can be any predetermined ratio. Partners can participate in the management. In practice Islamic banks prefer to monitor closely to make sure business is managed well. (Shanmugam and Zahari, 2005)

Musharakah also has agency and moral hazard problems. It is less compare to Mudarabah as losses are shared. Islamic law prohibits Islamic banks to ask collateral to guarantee their shares in case of losses. Therefore, it still contains significant risks (Visser, 2005).

2.2.2.2. Debt Based Instruments

Murabahah: Murabahah is the most widespread instrument in Islamic banking. It can be referred as cost plus sales or mark-up transaction.

"A Murabahah contract is a trade contract, stipulating that one party buys a good for its own account and sells it to the other party at the original price plus a mark-up" (Visser, 2005, pp.57).

In practice the mark-up determined based on LIBOR or prevailing interest rate as a benchmark which brings questions. Murabahah mode of finance has resemblance conventional loans but there are certain requirements that transaction should meet.

- Bank must have risk ownership of the related good before selling it
- Bank should offer price, delivery date, installments and customer should agree
- The purchase of the good by the bank and selling to customer should separately documented and banks should bear the risks during this period
- After agreement sales price cannot change
- Bank can ask for a collateral to secure its receivables
- Murabahah receivables cannot be securitized and cannot be traded in secondary market (Said, 2008).

Even though banks are obliged to have some risk during this transaction, most of the cases bank purchase and re-sell to customer may take place instantly. Customers may be assigned as agent to buy the goods on behalf of the bank and banks may never take the ownership legally. The operations may change region by region based on the banking regulations.

"Critics argue that the substance of a Murabahah transaction is no different from that of a conventional loan because the Islamic bank purchases the goods only after it has obtained a promise from the client that he or she will purchase those goods from the bank; the purchase and sale are processed as quickly as possible so that the length of time goods are owned by the bank is minimized; the trade takes place only if credit is involved; the markup is usually benchmarked to prevailing interest rates; and the amount payable to the bank tends to depend on the length of the credit period" (Shanmugam and Zahari, 2005, pp. 32).

Ijarah: Ijarah is a similar contract type with conventional leasing with some slight differences.

"Ijarah contract is essentially the sale of the usufruct of the asset for a specified period of time. The bank receives profit from the rental of the asset and retains ownership of the asset. The lessee enjoys the immediate benefits of using the asset without incurring a large capital expenditure" (Shanmugam and Zahari,2005, pp. 33).

During rental period Islamic bank should be the owner of the product hence Islamic bank has to bear risks, repair costs, insurance costs etc. the customer –or lessee- can cancel the lease if usufruct does not satisfy and price of the asset at expiration date shouldn't be predetermined (Warde, 2000).

Salam: Salam is a sales contract where the buyer pays in advance for goods. It is a purchase with deferred delivery, or buyer's credit. The goods need not already exist at the time the bai'salam contract is entered into, but they must be ascertainable (Visser, 2005).

In order to have a proper salam transaction following rules must be met

- Buyer should pay the price in advance totally
- Price must not change
- Quality and quantity of the good should be specific. No ambiguity regarding the goods should exist
- Delivery date and place must be specified
- Banks are allowed to ask for collateral to make sure goods are delivered

according to the agreement (Said, 2008).

Salam transaction can be used to finance agriculture, commercial and industrial activities as long as the good is fungible –measurable by weight, volume, size etc. Salam is a forward sales and usually forward agreements are not permissible in Islamic law. However, Salam differs from conventional forward contracts in two ways. Buyer pays the price in advance and buyer must take the delivery of the actual good (Visser, 2005). The buyer – or the bank- can enter an another salam agreement at reverse position if there is another buyer willing to purchase the good at a certain price at maturity date which is called parallel salam. In that case price risk can be eliminated. Permission to trade salam contracts in secondary market is not clear as there are scholars both agree and disagree.

Istisna:

"Istisna is a contract of manufacture with progressive financing, or a contract of acquisition of goods by specification or order where the price is paid progressively in accordance with the progress of a job. Payments are made as the building or manufacturing of the object comes closer to completion" (Visser, 2005, pp. 62).

It is clear that the product is not available at the agreement date yet it brings some uncertainty (gharar). However, scholars give permission to this transaction via clear product specification and pricing.

Istisna resembles a Salam contract. However, unlike Salam, buyer doesn't have to pay in advance totally. Payment can be done with installments. Buyer can pay the

price based on the progress of the production as well. It is used for financing projects, constructions etc. Therefore, the product is not fungible but it is specified.

As long as the agreement allows, the manufacturer can subcontract the work to another party with a separate Istisna agreement. This is called parallel Istisna. Istisna agreements usually take place with a Ijarah agreement to support build, operate, transfer projects. Overall structure of Istisna agreement is similar to the conventional counterparts. (El-Gamal, 2005).

2.2.2.3. Islamic Derivatives

"Derivatives have largely been anathema in Islamic finance, even though the permitted bai'salam transaction is a kind of commodity future" (Visser, 2005, pp.70).

A valid derivative should include below specifications

- It should be interest free,
- No uncertainty or gharar exists meaning,
- It shouldn't be speculative (maysir),
- It shouldn't cover more than one transaction,
- It should be backed by real assets.

It is hard to compose a derivate product to meet all above requirements. Yet almost all derivative alternatives are subject to concerns of Shariah compliance. Even though salam is a future contract which has derivative nature it is mostly restricted to use it in foreign exchange market. Options on currencies and precious metals are also considered unlawful. There is no doubt that transactions to gain profit thru speculation are prohibited. However, if the purpose is hedging against price changes there are different views.

"*In favour of hedging, Chapra (1992) points to one of the important objectives of the Shariah, the protection of wealth (hifz al-mal). Without hedging this is hardly possible under floating exchange rates" (Visser, 2005, pp.72).*

2.2.2.4. Sukuk

Practically sukuk is referred as Islamic bonds but main distinction is Sukuk must be asset backed or asset based and they should not represent a debt rather their

cash stream tied to the underlying asset. Conventional asset securitization takes place in order to structure sukuk.

Sukuk sector is a fast growing segment in Islamic banking and finance. The global Sukuk volume achieved a compound annual growth rate (CAGR) of 20.8 percent between 2008 and 2013 and stands at USD294.7 billion (IFSB, 2015).

It can easily be stated that Malaysia is the leader of sukuk market by issuing 65.4 percent of global sukuk market. Figure 2.10 summarizes the details (IFSB, 2015). Malaysia is the pioneer of the sukuk and issued the first sukuk in 1990.

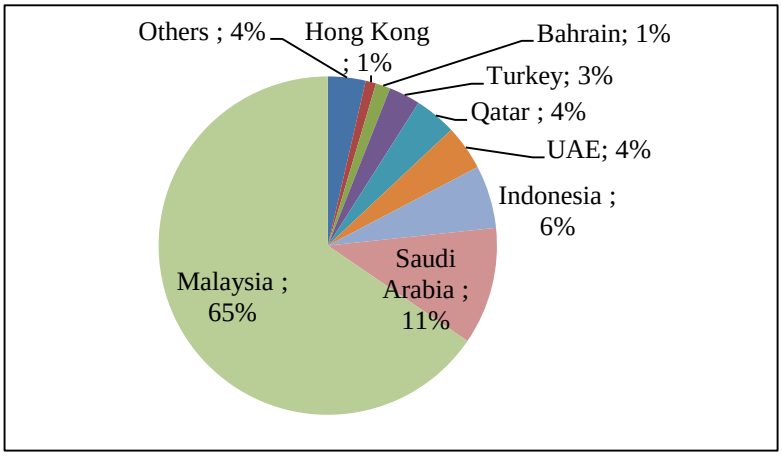

Figure 2.10: Sukuk Issuances by Domicile and Share (10M2014).

Sukuk can be structured in various ways such Ijara, Murabahah, Istisna, Mudarabah and Musharakah. There are 14 types of Sukuk that AAOIFI accepted.

Sukuk is not free from discussions. As in most cases it creates a fixed income flow either as a rental or sales pay-back raising concerns regarding interest-free condition.

Other than sukuk, Islamic indices and Islamic funds are also available in Islamic Capital market. Malaysia –like Sukuk- is the first to set-up a list of Shariah compliant equities in 1983 via Bank Islam Malaysia. The first Islamic equity index also introduced in Malaysia in 1996. Afterwards, Dow Jones Islamic Market (DJIM) in 1999, the Kuala Lumpur Shariah Index by Bursa Malaysia in 1999, and the FTSE Global Islamic Index Series by the FTSE Group in 1999 launched (Mannan, 2008).

First Islamic fund established in the US in 1986. Although Saudi Arabia is the leader of fund market, Malaysia grows fast with related tax incentives. (Shanmungam and Zahari, 2009). According to IFSB 2015 Islamic Financial

Services Industry Stability Report Islamic funds growth is CAGR of 6.6 percent from 2009 to 2013. As of 3Q2014, the Islamic funds sector reached to USD 75.8 billion.

2.2.3. Islamicness of Islamic Banking

Along with growth and its potential, the compliance of contemporary Islamic banking practice to its roots and mission is and ongoing debate. Discussion of Islamic banking and finance products from Islamic law perspective and opinions of different Islamic schools are beyond the limits of this study. Instead, reasons of low PLS instruments will be discussed.

As previously explained in Islamic banking instruments section, instruments in practice have significant controversial attributes. Recalling the basic principles of Islamic banking as El Hawary et al., (2007) summarize, transactions should involve risk sharing, rely on a real economic activity which is considered permissible in Islamic law and no exploitation of each parties. Most of the criticisms focus on the trade based instruments nature as they create fixed income and involve very little risk sharing. In some applications this risk reduced to level of conventional transaction.

"Clearly if the time period, 'purchase' and 'sale' prices are known, calculating the implicit interest rate is trivial. This is why Murabahah, ijara and other non-PLS forms are viewed by most conservative ulama as, at best, weakly Islamic since the similarities to a standard bank debt-finance contract are immediately obvious" (Khan, 2010, pp. 809).

Trade based instruments rely on time value of a good or its usufruct which is permissible. As it is briefly explained above in type of riba section advance and deferred sales prices of good can be different. The criticisms mainly target the process of ownership as Islamic banks do not own the good rather it finances the sale on behalf of the customer. It is an Islamic law interpretation issue but when these transactions become the main and dominant mode of financing, the distinction of Islamic banks start to vanish. Figure 2.11 shows the ratios of instruments in some prominent Muslim countries (PBAT Strategy Document 2015).

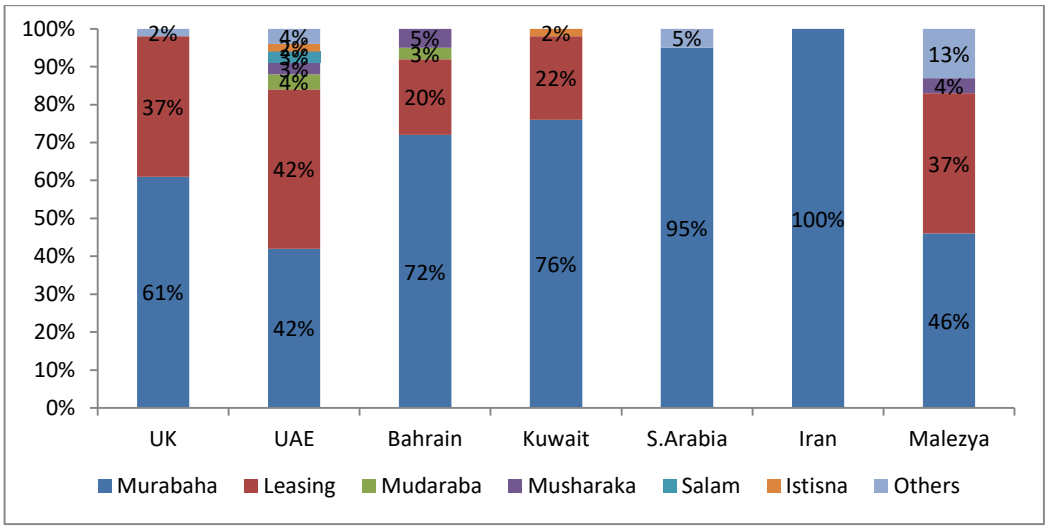

Figure 2.11: Islamic Banking Instrument Usage in 2013

In the literature, there are various reasons stated why PLS modes of finance stay in minority. Agency and moral hazard problems and regulations raise risk levels and limit the operation areas of IBs. Depositors are risk averse and cannot bear loss and saving deposits are mostly short-term and not suitable for long-term investments

At the asset side, PLS modes inevitably come with agency and moral hazard problems. The information asymmetry gives advantage to the customers that they can show their profit less or even none not to share it with the bank. Besides as previously explained losses are shared according to capital share in business and considering Islamic bank is the main source of fund clients may show little effort or take excessive risk (Azmat et al, 2015). There is significant under-reporting of sales to government exists in Muslim countries which requires strong screening and monitoring structure. Another example of moral hazard problem experienced by late payments of lenders. Because late fees and penalties are considered as riba, Islamic banks are not supposed to charge in case of debtors do not obey the installment plan. Hence in a dual banking world it is quite possible people may choose to pay their debt to conventional banks with higher priority. As Warde (2000, pp. 157) explains

"In Saudi Arabia, problems of late payment are endemic, and banks receive little help from the judicial system… In Pakistan, many borrowers took advantage of the ambiguity of a multi- layered legal system to avoid repaying much of their debt."

Regulations can be another reason for lack of PLS instruments. Muslim countries also manage their economies as the global world. Central banks, monetary policies, banking regulations are all based on interest based world. Like Malaysia

some countries may have dual banking regulation anyhow the conventional interest based economy and its regulations dominance is inevitable. Adding the fact that Islamic banks have lower market share, room for Islamic banks gets smaller.

At liability side there are also issues tackling PLS modes of finance. The depositors can be considered as risk averse and they can withdraw their savings in case of a loss. Besides, the savings deposits are mostly short-term or too liquid to support PLS based assets (Azmat et al, 2015).

"In other words, bad debts are not translated into "losses" for depositors. On the contrary, Islamic Banks have declared market-competitive returns for depositors (obviously to avoid deposit outflows and a loss of faith in Islamic Banking) even when running into financial difficulties themselves" (Khan, 2010, pp.812).

The behavior of depositors, banks and regulators show strong risk aversion which is in contrary to risk sharing principle. High unofficial/underground level of economy increases moral hazard and agency risks. Considering the fact that current human economic behavior is akin to homo economicus rather than Islamic, trade based instruments dominance is inevitable. However, considering Islamic banks same as conventional banks which replaces the term interest with profit is too harsh. Islamic banks activities rely on real business. There is a strong ethical-moral shield exists preventing them to interact speculative transactions. Those differences are visible via financial ratios (Olson and Zoubi,2008). Khediri et al., (2015) also differentiate IBs via credit and insolvency risk, operating leverage and off-balance sheet activities. The performance of Islamic banks in 2008 crisis also is another evidence of distinction (Hasan and Dridi, 2010).

2.3. Governance of Islamic Banking

2.3.1. International Islamic Finance Institutions

Islamic banking and finance is premature and small compare to conventional finance. It is quite challenging for IBs to become an alternative to CBs given the fact that the economic world runs with "conventional" rules. Lack of standardization and different interpretations of Islamic schools reduce the global acceptance of instruments. Moreover, number of researches and number of qualified human

resources have to be increased. There are institutions to address these problems and fortify weaknesses of industry. Those institutions and their missions briefly explained as follows.

Islamic Development Bank (IDB):

The Islamic Development Bank Group is consists of five entities: the Islamic Development Bank (IDB), the Islamic Corporation for the Insurance of Investment and Export Credit (ICIEC), the Islamic Corporation for the Development of the Private Sector (ICD), and the Islamic Research and Training Institute (IRTI) and International Islamic Trade Financing Corporation (ITFC)

IDB founded in 1975 and its headquarter is in Jeddah, Saudi Arabia. "The purpose of the Bank is to foster the economic development and social progress of member countries and Muslim communities individually as well as jointly in accordance with the principles of Shariah i.e., Islamic Law" (see, www.isdb.org).

Initial motive of IDB was to support poor Muslim countries to purchase oil with Murabahah by adding small mark-up. Saudi Arabia is the leading capital provider by one quarter. Its authorized capital was 45 billion USD. The basic conditions for membership are that the prospective country should be a member of the OIC, pays the first installment of its minimum subscription to the Capital of IDB, and accepts any terms and conditions that may be decided upon by the Board of Governors. Figure 2.12 summarizes the shareholders of IDB.

IDB has key role in development of Islamic banking. It supports knowledge creation, infrastructure institutions, capital markets, investment in Islamic banks and other IFIs, Mega Bank, Awqaf sector development. It also focuses on new product development and human resources.

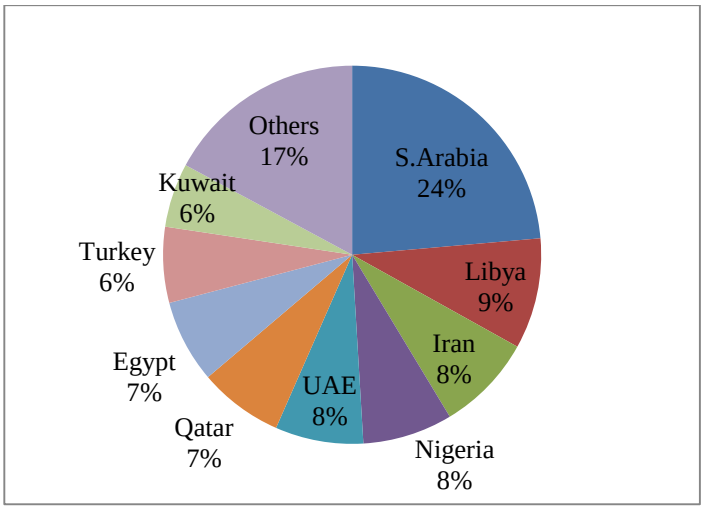

Figure 2.12: Major Shareholders of IDB

Islamic Corporation for the Insurance of Investment and Export Credit (ICIEC) founded in 1994.

"ICIEC was established with the objective of increasing the scope of trade transactions of its Member Countries, and to facilitate foreign direct investments (FDI) into the same countries. ICIEC fulfills these objectives by providing appropriate Islamic Shariah compatible credit and country risk insurance and reinsurance instruments".(http://www.iciec.com/)

Some of the key services of ICIEC are Export Credit Insurance Program, Foreign investment insurance services, Reinsurance facility, Investment promotion (Iqbal, 2007).

Islamic Corporation for the Development of the Private Sector (ICD) is established by IDB in order to support privatization programs within the member countries. ICD is operational since November 1999 (Iqbal, 2007).

International Islamic Trade Financing Corporation (ITFC) is an autonomous entity within the Islamic Development Bank Group aiming to support and encourage intra-trade among OIC member countries.

Islamic Research and Training Institute (IRTI) founded in 1981. It is an affiliate of the Islamic Development Bank Group responsible for leading the development and sustenance of a dynamic and comprehensive Islamic Financial Services Industry that supports socio-economic development in Member countries. (http://www.irti.org/English/AboutIRTI/Pages/default.aspx)

IRTI provides advisory, research, conferences, Global forum on Islamic Finance, thematic workshops, policy discussions, training-capacity building and publication services.

Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI)

AAOIFI is one of the key institutions for Islamic banking and finance an established in 1990 and registered as an international autonomous non-profit making corporate in Bahrain. AAOIFI defines its objectives as to develop accounting and auditing thoughts relevant to Islamic institutions; prepare, promulgate, interpret, review and amend accounting and auditing standards for Islamic financial institutions and to carry out commissioning of research in the area of Islamic accounting and auditing. (see, www.aaoifi.com)

The rationale for the establishment of AAOIFI is the requirement to have uniform financial statements within IFIs around the world in order to assess and compare them (Iqbal, 2007). AAOIFI issued several number of standards. Even though they are not mandatory but advisory in nature, their influence is significant.

However, there are criticisms regarding AAOIFI's standards rely on mostly on standards issued by International Accounting Standards Committee and lack of having alternative culture empowered by the Islamic values. They instead focus on interest ban, zakat calculations (Kamla, 2009).

Islamic Financial Services Board (IFSB)

IFSB is an international standard-setting organization that promotes and enhances the soundness and stability of the Islamic financial services industry by issuing global prudential standards and guiding principles for the industry, broadly defined to include banking, capital markets and insurance sectors. IFSB also conducts research and coordinates initiatives on industry related issues, as well as organizes roundtables, seminars and conferences for regulators and industry stakeholders (see, www.ifsb.org)

IFSB started operation in 2003 in Kuala Lumpur, Malaysia. Its work has complementary role on Basel Committee on Banking Supervision, International Organisation of Securities Commissions and the International Association of Insurance Supervisors and issued twenty-five standards and principles on risk

management, capital adequacy, corporate and Shariah governance, takaful, Islamic money markets etc.

International Islamic Financial Market (IIFM)

IIFM is a standard-setting organization for the Islamic Financial Services Industry focusing on standardization of Islamic financial contracts and product templates relating to the Capital & Money Market, Corporate Finance and Trade Finance segments of the industry (see, www.iifm.net).

IIFM founded in 2002 by the Islamic Development Bank, Bahrain Monetary Agency, Labuan Offshore Financial Services Authority, Central Bank of Sudan, Central Bank of Indonesia and Ministry of Finance Brunei Darussalam to support the infrastructure, for liquidity management among Islamic financial institutions. It also aims to maintain standardization and codification of laws and market practices. IIFM is headquartered in the Kingdom of Bahrain. (Iqbal, 2007).

IFM published standard regarding Treasury Placement, Tahawwut (Hedging), Profit Rate Swaps, Inter-Bank Unrestricted Master Investment, Master Collateralized Murabahah Agreement.

International Islamic Rating Agency (IIRA)

IIRA is the sole rating agency established to provide capital markets and the banking sector in predominantly Islamic countries with a rating spectrum. It covers the full array of capital instruments and specialty Islamic financial products, and aim to enhance the level of analytical expertise in those markets (see, www.iirating.com). IIRA is also Bahrain based institution started operation in 2005. On top standard rating process, IIRA also provides assessments regarding Shariah compliancy. IIRA services include Sovereign, Sukuk, Takaful Financial Strength and Issuer Credit Ratings. Besides, Asset Manager Quality Ratings, Fund Stability Ratings (FSR), Corporate Governance Ratings and Fiduciary Ratings also provided.

International Islamic Centre for Reconciliation and Commercial Arbitration (IICRA)

IICRA aims to settle in all financial and commercial disputes arising between financial or business institutions that choose to apply the provisions of Islamic law, Shariah principles. It also resolves disputes arise between these institutions and their

clients or between them and third parties through reconciliation or arbitration (see, http://www.iicra.com/en/misc_pages/detail/4c76b6d187). IICRA is a UAE based organization started its operation in 2007. The UAE, the IDB and General Council of Islamic Banks and Financial Institutions played major role on establishment of the institution.

General Council for Islamic Banks and Financial Institutions (CIBAFI)

CIBAFI is an international organization established in 2001 and Headquartered in the Kingdom of Bahrain. CIBAFI is affiliated with the Organization of Islamic Cooperation. CIBAFI represents the Islamic financial services industry globally, defending and promoting its role, consolidating co-operation among its members, and with other institutions with similar interests and objectives (see, http://www.cibafi.org). CIBAFI focuses on Policy, Regulatory Advocacy, Research and Publications, Awareness and information sharing and Professional Development.

International Centre for Education in Islamic Finance (INCEIF)

INCEIF defines itself as global university of Islamic finance. It was founded in 2005 by central bank of Malaysia. INCEIF offers Masters in Islamic Finance Practice, Master of Science in Islamic Finance (MSc) and PhD in Islamic Finance graduate programs. It also offers Consulting, executive programs, knowledge Management Centre, Research & Publications services.

2.3.2. Accounting Standards

Analyzing and comparing financial statements of banks require standardization since reporting similar operations in different methods can cause confusions. It is possible that banks can increase or decrease their profit according to financial reporting methods they use. International Financial Reporting Standards (IFRS) issued by the International Accounting Standards Board (IASB) fulfills the standardization purpose globally.

Islamic banks have issues with utilizing IFRS as accounting standard directly. IFRS does not include any ethical values. Further, Islamic banks have specific peculiarities and they have to apply certain rules to meet Islamic law. Accounting

and Auditing Organization for Islamic Financial Institutions (AAOIFI) was established to serve this purpose in 1990.

As explained above, AAOIFI and IFSB are the two essential institutions to sustain standardization and governance of Islamic finance institutions. However, they are both complementary in nature to conventional counterparts. IFSB focuses on risk management, capital adequacy etc. as corresponding to Basel committee whereas AAOIFI complements IASB. They both take the global standards as a starting point and add-change necessary items to achieve Islamic banking compatibility. AAOIFI deals with issues like how to report profit-sharing investment accounts, on the basis of the Mudarabah contract, on or off balance sheet and, if on balance sheet, should it be as a liability or as an equity item?

AAOIFI has many challenges to compose standards for Islamic banks; check IFRS compatibility to Islamic banking and modify and add standards regarding contracts unique to Islamic banking. The second, may be harder than it sounds. Islamic banks mostly have their own Shariah-boards and request approval for their instruments and operations. However, the recommendation and decisions of each Shariah board are not necessarily same and it is reflected to accounting as well. As a counter-measure AAOIFI has its own Shariah board providing the assumptions and the basis of the standards in terms of Islamic law. AAOIFI also issues Shariah standards as well. AAOIFI is not free from criticisms though. A number of researches claim that AAOIFI's main focus is interest ban and zakat calculations and it misses the emancipatory or holistic view of Islam regarding economics (see, Kamla, 2009).

"The pragmatic approach taken by the AAOIFI in developing its standards has been criticized in the context of the conceptual framework debate which asks whether accounting standards for Islamic entities can be adapted from conventional Western standards, or whether they should proceed from an Islamic framework" (Vinnicombe, 2010, pp. 56).

A number of researches state that AAOIFI's main focus is interest ban and zakat calculations and it misses the emancipatory or holistic view of Islam regarding economics (Kamla, 2009).

Currently Islamic banks can use IFRS, AAOIFI or their local standard for accounting purposes. AAOIFI cannot force its standards to Islamic banks. Islamic

banks may need to report in more than one standard due to the regulations and market requirements which is extra cost and operation.

2.3.3. Bank Profits and Role of Loan Loss Provisions

As previously stated, profit of banks can change according to the accounting methods they use. Another aspect that can change banks profit-loss is loan loss provisions (LLP). LLP is defined as an expense set aside as an allowance for uncollected loans and loan payments. This provision is used to cover a number of factors associated with potential loan losses including bad loans, customer defaults and renegotiated terms of a loan that incur lower than previously estimated payments.

Banks can use LLP for three purposes. First, from income management perspective bank management may tend to increase LLP in high profit times to carry profit to future cycles. Second, from the capital management hypothesis point of view, banks may use LLP as a buffer in low capital periods. Lastly, the signaling hypothesis state that high LLP can be used as a proxy for financial strength of the banks (Ali et al., 2015).

PLS principle of Islamic banks bring LLP adjustments into different position compare to conventional banks as Islamic banks share their profit with their depositor and increase-decrease of LLP can change the profit received by depositors. Islamic banks have also Shariah boards providing extra supervision and possibility to limit LLP changes.

It is not a deeply studied area. Ali et al., (2015) conclude that Islamic banks and conventional banks show similar behavior for income management meaning that LLP tend to be higher with increases in profit for both type of banks for the OIC countries. Banks using IFRS also show stronger income smoothing compare to banks using local accounting standards.

2.3.4. Shariah Boards and Overall Islamic Banking Governance

Governance of Islamic banks differ from conventional banks mainly in two aspects. Existence of Shariah supervisory boards (SSBs) and their PLS based

execution structure. SSB is a unique entity for Islamic banks working to ensure Islamic banks facilitate their operations in line with Islamic law.

AAOIFI defines SSB and its functionality as follows

- *'is an independent body of specialized jurists in fiqh almua'malat (Islamic commercial jurisprudence)',*
- *'is entrusted with the duty of directing, reviewing and supervising the activities of the Islamic financial institution in order to ensure that they are in compliance with Islamic Shariah rules and principles',*
- *can issue fatwas and rulings which 'shall be binding on the Islamic financial institution',*
- *'shall consist of at least three members' who are 'appointed by the shareholders . . . upon the recommendation of the board of directors (not including 'directors or significant shareholders of the Islamic financial institution'),*
- *shall prepare a report on the compliance of all contracts, transactions and dealings with the Shariah rules and principles,*
- *shall state that 'the allocation of profit and charging of losses related to investment accounts conform to the basis that has been approved' by the SSB; finally,*
- *'shareholders may authorize the board of directors to fix the remuneration of the Shariah Supervisory Board.' (Nienhaus, 2007, pp. 136).*

All Islamic finance institutions need to have SSB appointed by management in order to carry stay in-line with Islamic law. SSB role is to provide management an 'independent opinion' for Shariah compliance (Nienhaus, 2007).

PLS based structure requires calculation of profit and loss and reflecting depositors and shareholders. Islamic banks manage their financial asset in different asset pools such as general deposit pools, central bank's refinance scheme pools, treasury/financial institutions pool, equity pool, specific customers' pools. Shariah compliance and profit amount and distribution tools need to be managed by internal auditors or Shariah advisors (Ayub, 2007).

This unique structure brings its own agency issues. First issue is related to the treatment of investment deposits. Investment accounts (or Mudarabah accounts) are different from interest based deposit accounts because neither the profit-interest nor the principal amount is guaranteed by Islamic banks. By definition, investment deposits are profit-loss sharing accounts and customers are not supposed to claim the full repayment of their principal amount. In other words, investment depositors hold similar risks with shareholders. However, they don't have the right to monitor or control the management (Nienhaus, 2007). Profit distributed to shareholders and

investment depositors cannot be inline meaning that depositors receive much less profit compare to shareholders even though they are facing similar risk levels.

The problem of risk-return unbalance of Islamic banking depositors seem to be solved by another controversial approach of Islamic banks. Even though investment deposits bear risk of loss, this risk never occurs. In other words, Islamic banks do not reflect loss of bad debts to depositors and declare competitive returns to prevent deposit outflows (Khan, 2010). Literature also suggest that return of Islamic banks are quite similar with conventional competitors raising doubts on compliance to interest-free rules.

Nienhaus (2007, pp. 130) states "the returns for Islamic deposits seemingly fluctuate less than the income generated by the employment of the funds on Islamic deposit accounts. The reason is that the management has recourse to smoothing techniques which allow it to delink the profits allocated to depositors in a given period from the investment returns of the same period and to keep the Islamic returns in line with movements of the benchmark interest rate".

AAOIFI allows profit smoothing via transferring some of the income during high return periods.

There are agency or governance issues related with SSBs as well. Even though SSBs are independent in nature, they are attained by the bank management. There is no binding definition of how and who will be selected as SSB members. It is reasonable that SSB members may take into account the bank management intentions of certain instruments and operations. Anyway it is the board of bank who decides to extent the contract of the scholars. It is a fact that SSBs were more restrictive in early years of Islamic banking compare to current status though.

2.3.4.1. Country Practices in Shariah Governance

From regulation point of view, almost every country has its own way of governing Islamic banking, which is indeed an ongoing debate because this hinders standardizing instruments in Islamic finance. Table 2.4 summarizes the governance issues. For instance, Malaysia has a detailed regulatory framework for Islamic banking. Shariah Advisory Council exists under the central bank since 1997 and it is the highest authority for Islamic banking matters since 2009 (Hasan, 2009). IBs also must have their own Shariah boards. Indonesia has no separate Islamic banking law

(Zaher and Hassan, 2001). The Central bank is responsible for prudential issues just like conventional banks; however, religious issues are handled by the National Shariah Board of the Ulama Council of Indonesia (Lindsey, 2012). Legal disputes regarding Islamic banking handled by Shariah court (Majid and Gazal, 2012). Islamic banks have separate Shariah boards and conventional banks are allowed to have Islamic windows like Malaysia. Indonesia has some similarities with Turkey. It has a high population and Islamic banking has not received adequate support from the government at the beginning and market share is small, 3.7 percent.

Table 2.4: Basic Governance Information.

Country	Islamic Banking Market Share (%) (2014)	IB Global Market Share (%) (2014)	National Shariah Board	IB Level Shariah Board	AAOIFI
Bahrain	29.30%	1.60%	National Shariah Advisory Board	Required	Required
Kuwait	45.20%	10.10%	No specific board**	Required	Not Required
Saudi Arabia	51.20%	33%	None	Optional	Not Required
Qatar	25.80%	8.10%	None	Required	Required
UAE	21.60%	15.40%	Higher Shariah Authority	Required	Required
Oman	7.5%*	N/A	None	Required	Not Required
Malaysia	21.3%	15.5%	Shariah Advisory Council	Required	Not Required
Indonesia	3.7%	2.5%	National SB	Required	Not Required
Turkey	5.50%	5.10%	None	Optional	Not Required
UK	<1%	<1%	None	Optional	Not Required

Data derived from EY Islamic Bank Competitiveness Report 2016, World Bank
*Oman Islamic Bank market share is 2015 data.
**Fatwa Board in the Ministry of Awqaf handles Shariah related disputes

Although the GCC countries have very common economic, political and cultural attributes, they have considerably different practices for Islamic banking. There is no national Shariah board and banks are not obliged to have Shariah boards in Saudi Arabia. It does not specifically regulate Islamic banks either (Hasan, 2009).

Even with this strange framework, IBs are able to reach 51.2 percent market share and banks do have Shariah boards even though it is not necessary.

Bahrain is distinctive with its regulation oriented approach and hosting crucial Islamic finance institutions. Bahrain national board is also in advisory. The United Arab Emirates have specific privileges for banks in Dubai and Dubai Financial Services Authority is in charge of IBs legal framework in Dubai (Hasan, 2009). The Shariah governance in the UAE can be considered as most restrictive as IBs have get approval for the members of their own boards and national Shariah board.

Kuwait can be considered as less strict as AAOIFI framework is not a must and Shariah boards of banks are appointed by the bank management. Bahrain, the UAE, Kuwait and Qatar all point out Islamic law as the main legislation source but make exceptions for commercial transactions and allow interest based transactions.

Oman resisted implementing the Shariah-compliant banking for political reasons (Hasan, 2009). In May 2011, Shariah-compliant products are allowed along with conventional ones (see, Magd and McCoy, 2014) in order to bring capital from the other GCC countries and market share reached to 7 percent in 3 years.

As a non-Islamic country, the UK doesn't have a national Shariah board. There is no requirement for Islamic banks to set-up their own Shariah boards either and Islamic windows are allowed. The Financial Services Authority (FSA) allows banks to have Shariah boards as long as their role is not executive. FSA also expects Islamic banks not to adopt a Shariah governance tied to a jurisdiction out of the UK (Hasan, 2009).

The overall picture of Islamic banking and finance indicates a strong relationship among government support, Islamic banking related regulations and Islamic banking improvement. Almost all prominent countries set-up related regulations and have solid intention to enlarge Islamic banking. The only exception seems to be Saudi Arabia who is silent on interest and Islamic banking but this position is not meant to discourage Islamic banking instead allow a conventional banking existence. There are different practices regarding Shariah governance but national Shariah boards mostly perform as advisory but not obligatory and overall banking systems work with conventional banking principles.

2.3.4.2. Islamic Banking Governance and Progress in Turkey

Turkey is quite behind from prominent countries of Islamic banking in terms of governance issues. Islamic banking - so called SFHs - was governed based on cabinet notices and had no solid legal background as SFHs are excluded from a banking law between 1984 and 1999. As a result, SFHs couldn't even issue guarantee letters, they couldn't involve in any transaction requiring a "bank" legally. Related decrees and principles were issued by Foreign Trade Undersecretaries and the Turkish Central Bank. SFHs were included in a banking law scope in 1999. This change brought a more acceptable legal background for SFHs and they were defined as enterprises that collect and utilize funds with the profit-loss sharing principle without mentioning the term interest-free. With this law, SFHs obtained a legal background regarding licensing, establishment, merger, insolvency, credit limits, subsidiary limits. SFHs were subjected to audits, setting-up a SFH tied to similar requirements with a bank, fund utilized by SFHs defined as credits. Process of issuing guarantee letters become easier. However, collected funds were not considered as deposits and excluded from any deposit insurance (Battal, 2000).

Year 2001 has been a milestone for the participation banking in Turkey in many ways. Turkey experienced a very devastating economic crisis in this year. During the crisis, İhlas Finans went in a bankruptcy and the necessity of deposit insurance scheme became undeniable. This experience also showed that a significant portion of interest-free funding customers were quite risk-averse and rushed to withdraw their funds in case of a loss risk (Tunç, 2010). In 2001 the union of SFHs is established in order to bring assurance for deposits, invoicing obligation during deferred sales were abolished and further adjustments were done to make sure that SFHs guarantee letters have been acceptable by government enterprises (Halaçoğlu, 2014).

The term so called "Special Finance House" was replaced with "Participation Bank" in 2005. The term "special finance house" didn't refer to a global standard and caused significant confusion especially at international levels (Tunç, 2010). This term was indeed a phrase aiming not to irritate the prevailing secular elements of the country as much as possible. The regulations introduced in 2005 further strengthened the legal framework for participation banks. Activity area of PBs is defined wider than CBs as PBs are allowed to do leasing, PLS investments on top of banking

activities. PBs are also permitted to some real estate and commodity related transactions which are not allowed for CBs (Halaçoğlu, 2014). Deposit assurance funds of participation banks are also merged with funds of conventional banks under the name of savings deposits insurance fund. Note that 22 years after the establishment of participation banks, they finally attained a sound legal framework that they can compete with conventional banks. However there is still neither country level Shariah board nor Shariah governance standards exist in Turkey which hinders the expansion of the Islamic banking industry.

2.4. Risk Management in Islamic Banking

Risk management is one of the most crucial element of banking as their stability also important for overall economic environment. Risk management, consist of strategic and capital planning, asset-liability management, and the management of a bank's business and financial risks. Table 2.5 presents the various types of risks that banks are exposed to (Van Greuning and Iqbal, 2008).

Table 2.5: Banking Risk Exposures Source.

Financial Risks	Operational Risks	Business Risks	Event Risks
Balance Sheet Structure	Internal and External Fraud	Macro Policy	Political Contagion
Income Statement structure and profitability	Employment Practices and workplace safety	Financial and Legal infrastructure	Banking Crisis
Capital Adequacy	Clients, products and business services	Legal liability	Other exogenous risks
Credit	Damage to physical assets	Regulatory compliance	
Liquidity and Market Risk	Business disruption and system failures (technology risk)	Reputational fiduciary	
Interest Rate and Currency Risk	Execution, delivery and process management	Country risk	

Moreover, another key differentiation of risk and Islamic banking is the PLS mechanism which allows Islamic banks to reflect losses on asset side to investment depositors. Risk sharing as principle is one of the key characteristics of Islamic banking.

Below are the most critical risk exposure items and how Islamic banks experience them.

2.4.1. Financial Risk Exposures

Credit risk for an Islamic bank is that the probability of counterparty in a Murabahah contract does not pay the debts in full and in time. In salam and istisnah contracts credit risk arises from failure to supply the related product in time and in line with contract terms. In PLS contracts (mudarabah, musharakah) the risk is non-payment of profit share of bank by the client. It is important to note that Islamic banks expose extra risks due to information asymmetry in case of PLS contracts because entrepreneur/client may not provide financial information fully and banks cannot value the credit risk sufficiently.

Market risk can be also unsystematic and caused by specific asset or instruments types. "Islamic banks are further exposed to market risk due to the volatility in the value of tradable, marketable, or leasable assets. The risks relate to the current and future volatility of the market value of specific assets" (Van Greuning and Iqbal, 2008).

Liquidity risk occurs either difficulties in acquiring cash at reasonable cost from borrowings or sale of assets (Ahmed and Khan, 2007) Banks need to hold liquid or readily marketable assets and bank management decides the amount depending on asset/liability structure and market conditions. Banks mostly have asset liability mismatch meaning that bank loans are usually mid and long term (1-5 years) whereas deposits are short term (1-3 months). Depositors can withdraw their cash on deposit accounts anytime. Banks have to keep enough liquid assets to manage this maturity gap.

Islamic banks liquidity management is harder than conventional banks since they can easily borrow overnight through developed interbank markets. They are able to trade most of their asset in secondary markets. However, options of Islamic

banks are quite limited. Borrowing overnight with interest is not permissible. Shariah-compliant interbank markets are limited. Most of the asset of Islamic banks are not liquid because they are debt based and secondary market trading for debt based asset (such as Murabahah) is not possible. In practice, Islamic banks have higher ratio of demand deposits compare to conventional banks and those deposits can be withdrawn anytime by depositors though.

The developments in sukuk market provide some liquidity options for Islamic banks. However, it is important to keep in mind that not all sukuks are tradable in secondary markets. Central bank of Sudan provides Shariah compatible securities. International Islamic Financial Markets and the Liquidity Management Center are the institutions that focus on liquidity management for Islamic banks. one of the important step regarding liquidity came from Malaysia. Central bank of Malaysia introduced Islamic Interbank Money Market (IIMM) in 1994. The instruments are being traded in the market on the basis of bay' al-dayn (sale of debt) and most of the scholars outside of Malaysia consider it non-permissible.

Debt or trade based instruments have fixed rate during the contract period. Islamic banks cannot change the rates or they can't recall credits as conventional banks do which causes market risk. From Islamic law point of view, all transactions are structured buying-selling a product with deferred payment so price of the product agreed at the beginning and it is fixed. Islamic banks use LIBOR as a benchmark and this fixed price cause a risk for Islamic banks in case of interest rates escalation

Currency risk or exchange rate risk refers risks arise from change in price of one currency in relation to another. Banks can gain profit or face loss depending on their long/short position compared the price trend of foreign currency. Risks also occur for long term contracts in foreign currency depending on the exchange rate over domestic currency. Hedging required to manage currency risks but Islamic banks have fewer options for hedging which makes harder to manage currency risks.

2.4.2. Operational Risks and Shariah Risks

Operational Risks:

Islamic banks, in nature, share risk and profit which directly leads them to exposure more risks than conventional banks. In addition to the financial risks

mentioned above, Islamic banks also face additional operational risks. For example, technology risk, a common risk with conventional banks, is more significant for Islamic banks because additional risks arise in case of Islamic banks use software that are not designed to manage Islamic banking. Software developed to manage based on conventional banking increase the possibility of mistakes. Personnel are other operational risk dimension. Considering prematurity of Islamic banking education, it is more likely to encounter human errors in Islamic banks.

Shariah Risk:

Islamic banks need to comply with Islamic law and any discrepancy can jeopardize reputation of banks and damage the trust of customers who are sensitive to Shariah compliance. Lack of standardization of Shariah rulings on similar instruments also amplifies the Shariah risk.

Shariah risk can cause financial risks and other operational risks and jeopardize Islamic banks. Any violation in a transaction or contract may reduce confidence of customers and cause them not to fulfill their contract terms. This will arise a credit risk. By not fulfilling Islamic law requirements Islamic bank can be considered as misguiding customers which opens up legal consequences. There is no doubt this will affect the reputation of the institution increase withdrawals and also increase the cost of attracting deposits which is market and liquidity risks. The causes of Shariah risk can be classified as internal causes which are people, processes, systems and external causes (Ginena and Hamid, 2015).

Almost all operational risk item can cause Shariah risk for an IFI therefore an internal control system for Islamic law compliance is crucial. It is body of directors' responsibility to ensure Shariah compliance and related risks are audited and monitored. AAOIFI advices to establish an audit and governance committee to manage risks. This committee performs Shariah reporting, internal Shariah control, internal Shariah audit function, and Shariah audit (Ginena and Hamid, 2015).

2.4.3 Capital Adequacy

Capital adequacy is basically the ratio of a bank's capital to its assets. Banks have to keep certain level of capital not to reflect its losses to depositors (Schoon,

2008). The Basel Committee on Bank Supervision (BCBS) issued three sets of standards based on risk based capital requirement in order to maintain stability in banking sector. The BCBS issued Basel I (1988), Basel II (2005) and Basel III (2009). The major contribution of Basel accords is the capital adequacy calculation logic based on the risk level of the bank assets. On top of capital requirements, Basel II accord has two additional pillars; supervisory review process and market discipline. Basel III is a result of 2008 global financial crisis and increases minimum capital ratios. It thus introduces leverage and liquidity requirements to maintain liquidity during financial crisis.

Capital adequacy is a key element of bank competitiveness. It is a safety net for risks and unexpected losses, increases depositors' confidence and determines the lending capacity of the bank. Hence capital comes with a cost as shareholders expect profit. However, banks need to have strong capital level to prove their reliability and collect deposits (Van Greuning and Iqbal, 2009).

At Islamic banking side AAOIFI studied a basic standard for Islamic Finance Institutions. IFSB further improved and enriched this standard based on Basel II and issued the first capital adequacy standard for Islamic Finance industry at the end of 2006.

Applying capital adequacy rules to Islamic banks is a controversial issue. Islamic banks PLS contracts at the asset side can be considered as holding equity and assigned a high risk weight ratio.

Here is some of the key distinctions while determining risk levels of Islamic banking asset classes states by Van Greuning and Iqbal (2009).

- Asset based trade contracts carry additional risks on top of credit and market risks,
- Nonfinancial assets such as real estate, commodities, and ijarah and istisnah contracts have special risk characteristics,
- PLS assets contain higher risk,
- Islamic banks do not have well-defined instruments for mitigating and hedging risk.

IFSB calculates capital adequacy as Risk weighted assets + Operational risks – Risk weighted assets funded by PLS investment deposits. Table 2.6 (Van Greuning and Iqbal, 2009)compares Basel and IFSB capital adequacy standards for credit risk

Table 2.6: Basel II and IFSB Standards for Credit Risk Capital Adequacy.

Criteria	Basel II	IFSB
Risk weight	Calibrated on the basis of external ratings by the Basel committee	Calibrated on the basis of external ratings by the Basel Committee; varies according to contract stage and financing mode
Treatment of equity in the banking book	> 150 percent for venture capital and private equity investments	Simple risk weight method (risk weight 300 or 400 percent) or supervisory slotting method (risk weight 90–270 percent)
Credit risk mitigation techniques	Includes financial collateral, credit derivatives, guarantees, netting (on and off balance sheet)	Includes profit-sharing investment accounts (PSIA), or cash on deposits with Islamic banks, guarantees, financial collateral, and pledged assets

2.4.4. Islamic Banks Riskier or Safer

It is an open question if Islamic banks are riskier or safer compare to conventional banks. The PLS principle theoretically increases and mitigates risks at the same time. PLS also causes investment depositors to become like equity holders and they are expected to gain profit similar to shareholders as they share losses. However, making discussions on theoretical principles of Islamic banking can be misguiding. From risk management point of view above aforementioned facts can be summarized as follows

- Risky assets funded with PLS principle are minor. In practice Islamic banks' balance sheets dominated by trade or debt based (Murabahah, Ijarah) contracts. Losses are not reflected to depositors in practice.
- PLS mechanism with depositors are subject to income smoothing meaning that Islamic banks distribute less profit to investment account holders in good times and distribute more profit in bad times. There is no loss share in practice again.
- Islamic banks lack of risk management tools to mitigate risks such as credit, market, liquidity because most of those tools include interest or uncertainty

In practice, it can be said that Islamic banks cannot utilize their idiosyncratic mechanism, profit loss sharing. At the asset side they are bounded to debt based assets and at liability side they need to comply the market rates of interest rates. In

addition, they can't utilize as many the risk management tools as conventional banks do. A number of studies report that Islamic banks are better capitalized meaning that they hold more capital compare to conventional banks. It is a reasonable outcome that Islamic banks keep more capital to cope risks as they have limited access to hedging instruments.

However, it is hard to say Islamic banks are riskier as Islamic banks show better resilience to the global financial crisis in 2008. Even though conventional banks have more risk mitigation tools with derivatives, they also have access to riskier investments using the same instruments. Islamic banks with their ethical moral framework have to make sound investments based on real assets which automatically brings a risk leveling.

2.5. Discussion of Regional Practices

Islamic banking experiences haven't been able to construct a unique structure around the world which is probable. First, Islam, as a tradition, embodies different schools/jurisdictions regarding practicing Islamic law and it is common to see different opinions (fetwas) on the same issues. Considering the complexity of current financial and economic system it is not unnatural to have different opinions on financial instruments.

Second, political and social differences across countries influence the progress and practice of Islamic banking around the world. Islamic banking is not just "another way of banking" or "some special set of financial instruments". It has direct link to Islamic faith and jurisdiction which brings issues with modern government and modern law. Countries with secular sensitiveness may have concerns with Shariah governance, for example the UK and Turkey. The GCC countries deal with Shariah governance more easily and naturally as Islamic law penetrated the legal system of those countries.

Third, Islamic banking and finance is still dominated by conventional banking system within the OIC countries and Islamic banking has to comply with conventional system. Overall macro-economic management of the countries depends on interest based conventional finance and banking rules. There are attempts to Islamize the total economy such as Sudan, Pakistan and Iran, they failed though. Iran's economy in theory still runs with Islamic law but in practice it also mimics

conventional finance. Saudi Arabia does not mention the term “interest” and permit it by not naming or banning it.

Fourth, Islamic banking related institutional developments are still not mature enough to achieve a sort of standardization around the world. Institutions like AAOIFI, IFSB produce frameworks to standardize the industry but there is still much to do.

As a result of aforementioned issues Islamic banking governance and instruments vary over regions. Malaysia and Bahrain set-up detailed framework for Islamic banking. Malaysia composed a dual banking system and with separate regulations specifically for Islamic banks. Central bank of Malaysia hosts Shariah Advisory Council and its decisions binding Islamic banks. Malaysia has developed capital markets. Malaysia is also prominent with allowing financial engineering instruments easier than other regions. Bahrain and the UAE established government level Shariah boards whereas the other GCC countries do not have this upper framework for Islamic banking. Instead banks set-up their own Shariah boards. Saudi Arabia remains silent on interest issues and leaves all governance to Islamic banks. Iran on the other hand abolished all interest operations and run on Islamic finance principles.

Saudi Arabia is distinct with having more than 50 percent Islamic banking assets. However, it is interesting recalling the fact that almost no regulation exists in Saudi Arabia specific to Islamic banking. Malaysia even though having detailed framework and mature markets and institutions its market share is less than 30 percent. Turkey is another country with very limited governance framework and its market share is around 5 percent. These facts imply that governance approaches are not directly linked to success of Islamic banks. Perception and country culture also matter. Another deep problem is overall positioning of Islamic banking. Widely used Islamic banking instruments are debt based and mostly they are asset based replicas of conventional products. Relying on too much debt based instruments limit the Islamic banking practice. However, it is hard to link with success of Islamic banks with regional practices. It is for sure that IBs urgently are in need of special regulations to exist and grow under conventional banking environment but it is not possible to name one approach as superior to others.

3. LITERATURE REVIEW

There is a large amount of studies on the determinants of bank profitability. Studies can be classified based on a unit of analysis (a single country or cross-country), on the factors they focus (internal or external determinants) or on econometric methods. Bank margin or net interest margin (NIM), return on asset (ROA) and return on equity (ROE) are the widely used dependent variables. For independent variables, bank level internal ratios (asset quality, liquidity, risk, non-interest revenue, size, ownership etc.), macroeconomic and financial variables for individual countries are also studied. Other than profitability, there are many studies specifically focusing on the determinants of NIM. Two basic models explain how banks decide their NIM: the dealership model and micro model of banking firms. The dealership model dominates the literature as the micro model is more static.

The theories explaining profitability mostly focus on market conditions and persistency of profits. These theories are not unique to banking and generally explain profitability of all firms. Structured conduct performance (SCP) hypothesis asserts that if a market is in the equilibrium, profits of companies tend to converge. However, companies (or banks) with high market shares, differentiated products can gain non-competitive profits. On the other hand, efficient structure (ES) hypothesis suggests that managerial and scale efficiencies are the key for profitability. In case of SCP, market concentration measures are critical for the bank profitability. Another effect of market concentration is that it leads persistency in profit rates. Other than market concentration, persistency can arise from regulations such as entry barriers preventing banking market to reach the equilibrium. Banks that acquired special skills and knowledge can also obtain high profit rates.

There are studies presenting the persistency of bank profits such as Berger et al., (2000), Athanasoglou et al., (2008), Goddard et al., (2004). Persistency of profit is also important for the relationship between profitability and bank growth. Sector/firm growth is closely linked with profits expectations as a source of capital and strict regulative environment of banking requires capital adequacy for bank expansion. However, bank growth and profit can be contrasting targets as banks (firms) may choose to lower their profit margins to boost growth or prefer gaining higher profits instead of more size. To some extent, growth and profits are competing

and interdependent objectives, and the management within the firm selects a preferred position along an inverse growth-profit gradient (Goddard et al., 2004).

3.1. Conventional Banking Profitability

Bank margin or net interest margin (NIM) is examined as a profitability or an efficiency element along with other parameters such as Return on Assets (ROA), Return on Equity (ROE). As previously stated, the dealership model explains how banks determine their margins. Ho and Saunders (1981) asserts the dealership model. The model assumes a bank as a risk averse dealer which maintains NIM depending on pure spread (result of deposit and loan arrivals to the bank), size of transactions, level of bank's risk aversion and variance of interest rates.

$$s = \frac{\propto}{\beta} + \frac{1}{2} R\sigma_I^2 Q \tag{3.1}$$

s: Bank Margin or spread

r: Expected risk-free interest rate

R_L: Rate of loans = (r+b)

R_D: Rate of Deposits = (r-a)

a, b: Fees added by bank to risk-free interest rate

Bank Margin or spread s is R_L - R_D = (a + b)

$\frac{\propto}{\beta}$ is risk neutral spread of a bank which is the ratio of the intercept (α) and the slope (β) of the symmetric deposit and loan arrival functions of the bank. Inelastic demand and supply functions may allow the bank to achieve monopoly power and utilize larger margins. The second term is first order risk adjustment term consists of three factors

R: Risk aversion level of bank

Q: Size of bank transactions

σ_I^2: instantaneous variance of the interest rate on deposits and loans

In short, a spread increases with higher variance of interest rates, size of transactions and risk aversion level of the bank. There are two important implications of the dealership model. Positive bank margins exist even in very competitive

markets and the size of pure spread is independent form credit inventory of the bank. On top of pure spread, there are other factors affecting NIM such as operational costs, credit or default risks etc. Two step dealership model aims to calculate the pure spread first thru a regression with the variables in the model. The constant term of this regression represents the pure spread for the given year and the bank. At the second step, pure spread is used as a dependent variable for further analysis. It is possible to add different variables at the first equation (such as implicit interest payments, opportunity costs of required reserves etc.) to calculate pure spread under control of these specific variables.

Angbazo (1997) enhances the dealership model by adding a loan default risk to test the hypothesis that banks with riskier loans and higher interest risk exposure have larger NIM. He finds that regional commercial banks are sensitive to interest rate risks but not to default risk while local commercial banks are affected from both. He also shows that off-balance sheet instruments raise NIM as they increase the risk exposure of the bank.

Saunders and Schumacher (2000) use the dealership model for six European countries and the USA for 1988-1995 period. They include market structure and interest rate volatility to investigate the impact of the structure of bank competition and interest rate volatility on interest margins. Their results show that more segmented or restricted the banking system increases NIM. Interest-rate restrictions on deposits, reserve requirements, interest-rate volatility are other positive significant determinants.

There are other studies such as Brock and Suarez (2000) on South American countries, Maudos and De Guevara (2004) and Valverde and Fernández (2007) on European Banks. Brock and Suarez (2000) show that operation costs are the most critical bank internal determinant for NIM. Maudos and De Guevara (2004) include banks in Germany, France, the UK, Italy and Spain, from 1993 to 2000 and conclude that capital in banks has the greatest impact on NIM and operating costs are becoming increasingly important factor in banks' performance. Valverde and Fernández (2007) introduce the non-interest related activities of banks to the dealership model. They show that banks with higher diversified instruments have larger margins than banks focus on lending/deposit activities.

Hawtrey and Liang (2008) use Ho and Sounders (1981) model to clarify the bank internal determinants of NIM by using a dataset consist of 14 OECD countries

between 1987-2001 using a GLS model. Implicit interest payments and operation costs have positive effect. Cost to income and size are negatively related. Opportunity cost of reserves and interaction of credit risk and market risk are insignificant.

Lopez-Espinosa et al., (2011) question the accounting standard and macro-economic variables affecting NIM between 1999-2008 for 15 economies with the dealership model. At first step they employ internal financial ratios. They find that loan loss provisions, loan/asset ratios are the positive determinants of NIM. Size is mostly negatively related with NIM. One distinction point of the study is measurement of the accounting type and NIM relations. Banks conform to International Financial Reporting Standards as accounting standards have lower NIM. For emerging economies higher portion of NIM is explained by macro variables. Interest rate volatility seems to be the most important variable and it is valid for both emerging and developing countries. Inflation has also a positive effect.

The other strand of the literature employs NIM along with ROA and ROE as a profitability measure with single step equations. Demirgüç-Kunt and Huizinga (1998) investigate that how interest margin and profitability are related with taxation, financial system structure, legal and institutional and macro indicators along with bank characteristics. Their dataset consists of 80 countries between 1988-1995 and their study employs the weighted least squares. Their results show that foreign banks in developing countries have higher interest margins but in developed countries there is no evidence that foreign banks charge larger margins. Deposit insurance reduces the interest margins but no significance effect for ROA. For concentration, there is no significant relation with NIM but positively related with ROA. GDP and inflation have no significant relationship but real interest rate is positively related with NIM and ROA. Reserves reduces NIM and ROA but taxation is reflected to customers.

Demirguc-Kunt and Huizinga (2000) explore two main points, financial development and financial structure, in their study covering 1990-1997 period for the OECD and many developing countries. Results show that financial systems tend to be more bank-based and banks are more profitable in developing countries. Overhead costs are not significant for ROA but positively related with NIM. They also show that banks in a well-developed banking market face tougher competition. Banks in countries with well-developed stock markets have greater profit

opportunities. Market structure is not significant at the bank level meaning that financial structure does not have effect on profitability alone.

Maudos and Solis (2009) utilize the Generalized Methods of Moments (GMM) to explain NIM of Mexican banks between 1993-2005. They show that major portion of NIM comes from operating costs and market power. Non-interest income is also significant but its effect is low.

Kasman et al., (2010) investigate the relationship between financial reform and NIM for new members and EU candidate countries with Generalized Least Squares (GLS). They find that the bank margin determinants of East and Central European countries are different.

Dietrich and Wanzenried (2014) utilize a large dataset consist of 118 countries and 10.165 commercial banks between 1998-2012 to explain how banking profitability and its determinants vary according to the income level of the countries. Authors classify countries as high, middle and low income and show that profitability (ROA, ROE, NIM) is varying with the income level of the country. Competitiveness increases with the income level and banks in lower income countries have higher profitability ratios and bigger interest margins. Bank concentration has significant and negative relation for all profitability ratios in total but it has positive effect of low income countries. Private banks in middle and low income countries are more profitable but not for high income countries. In low and middle-income countries, margins of state-owned banks seem to be lower than those of privately owned banks. This might also explain why state-owned banks are less profitable than privately owned banks in these countries. Foreign-owned banks have lower margins than domestic banks in high-income countries. GDP has larger effects in low and middle income countries. They also report that banks in low income countries depend on interest income heavily and have larger margins. Financial crisis overall reduces the profit (ROA and NIM) but it affects high income countries significantly.

There are also studies focusing on profitability without NIM by utilizing ROA or ROE alone. Bourke (1989) employs overhead costs, capital ratios, liquidity-credit risk and external factors (concentration, ownership, interest rates) as the determinants of profitability and find that internal factors and concentration are positive determinants. Molyneux and Thornton (1992) replicate the Bourke's study for the EU countries using ROE as a profitability measure and confirm the Bourke's

findings. They show that concentration and nominal interest rates have positive significant relationship with profitability. Goddard et al., (2004) suggest that capital to asset ratio has positive effect on EU Banks profitability. Pasiouras and Kosmidou (2007) also confirms that capital ratios have positive effects on ROA and cost to income ratio has negative effect while focusing bank ownership as foreign or domestic. GDP growth and inflation affect ROA positively for domestic banks and for negatively for foreign banks. Athanasoglou et al., (2008) examine the profitability of Greek banks with the GMM method and conclude that capital ratios, labor productivity is positively and operation cost are negatively related with ROA. Industry concentration is not significant for Greek banks meaning that SCP hypothesis does not hold for Greek banks.

To sum up, studies reviewed above assert that banks adjust their margins based on internal and external factors. Overall risk exposure (credit risk, liquidity risk, default risk), operation costs, non-interest revenues, bank size, off-balance sheet items, market power are mostly investigated items for the determinants of profitability. In terms of external factors, interest rate volatility, GDP growth, inflation, overall financial structure of the economy are critical variables. Studies with panel data (fixed effect, GLS, OLS) are in majority but GMM is also utilized.

3.2. Islamic Banking

One major difference between IBs and CBs is that profitability ratios of CBs arise from ex-ante rates whereas rates of IBs are ex-post. IBs do not promise or guarantee a certain profit rate to depositors and utilize profit-loss sharing (PLS). However, at the asset side, PLS instruments are not widely utilized. Instead debt based instruments dominate the market that mimic the interest based transactions. Therefore, it is hard to evaluate the profitability of IBs based on theoretical assumptions. As discussed above, Islamic banking practice is not a standard precise application. Countries set-up and manage Islamic banking very differently. Even Shariah compliancy of instruments may vary by regions. However, the literature is very limited in terms of studies questioning country based, instrument based and Islamic banking maturity level based effects on Islamic banks profitability.

Number of studies examine whether IBs are different or not compare with CBs. Olson and Zoubi (2008) try to distinguish if a bank is Islamic or conventional by financial ratios. They use GCC banks between 2000-2005 and by using linear and nonlinear (logit, neural network, and k-means nearest neighbor classification) techniques to determine whether banks are Islamic or not. T-test results show that Islamic banks in the GCC region is more profitable in terms of ROE. NIM has no significant differences but average NIM of Islamic banks is smaller. ROA is also significantly smaller. Moreover, Islamic banks have less loss provisions, less liability/equity ratio. The nonlinear models enable authors to determine bank type 92 percent correct, which implies that Islamic banks operate significantly different compared to conventional ones.

Beck et al., (2013) investigate that how IBs are different from CBs regarding the various business model (Fee Income/Total Operating Income, Non-deposit Funding/Total Funding, Loan/Deposit), efficiency (Operating Cost /Income, Operating Cost/ Total Asset), asset quality (Loss Reserves/Loans, Loan Loss Provisions/Total Loans, Non-performing Loan/Total Loans), stability (Maturity Matching, Z-Score, ROA, Equity/Total Asset) perspectives. Their results show that Islamic Banks are not too different from conventional banks but Islamic banks have higher loan-deposit ratios, lower cost-efficiency, lower non-performing loans and higher capitalization. Smaller Islamic banks might be more affected by the higher cost inefficiency. However, they have bigger distinction from conventional banks. Islamic banks perform better during crises in terms of capitalization and asset quality. For example, higher capitalization and better asset quality of Islamic banks allow them to perform better than conventional banks during the 2008 global financial crisis.

Khediri et al., (2014) also analyze GCC banks to determine if Islamic banks are distinctively different from conventional ones. They use Parametric and non-parametric techniques between 2003-2010 for 44 conventional 18 Islamic banks in the GCC countries. Univariate results show that Islamic banks are, on average, more profitable, more liquid, better capitalized, and have lower credit risk than conventional banks. However, profitability and liquidity ratios are not significantly different. Islamic banks may be differentiated in terms of credit and insolvency risk, operating leverage and off-balance sheet activities.

On the profitability side, the empirical literature on Islamic banking profitability is quite premature compared with the literature on conventional banking. Studies mostly focus on ROA and there is lack of studies examining NIM. For example, Bashir (2003) analyzes the determinants of profit before taxes for eight Middle East Countries between 1993-1998. Cost of capital in high income Muslim countries is higher, which reduces the bank profitability. GDP per capita, inflation, foreign ownership are positive determinants.

Hassan and Bashir (2003) investigate the profitability (ROA, ROE, Non-interest income margin) of determinants of Islamic Banks in 21 countries between 1994-2001. Islamic banks' profitability measures respond positively to the increases in capital and negatively to loan ratios. GDP growth is significant and positively related with ROA and ROE. GDP per capita is not significant.

Haron (2004) uses a panel data of five profitability measures. All types of funds (saving, investment or current account) are positively related with Islamic banks profitability. Interest rates, inflation and bank size have significant positive impacts on the profits of both conventional and Islamic banks.

Karim et al., (2010) examine the profitability of African IBs between 1999-2009 and find that bank capital and size (positive), operation cost (negative), economic growth, inflation and banking industry concentration (positive) are significant determinants of the profitability.

Noor and Ahmad (2011) investigate the relationship between ROE and efficiency factors for 78 Islamic banks in 25 countries for the period 1992-2009. The fixed effect estimation results indicate that more profitable banks have higher operations cost and higher equity to asset ratio.

Masood and Ashraf (2012) report that operating expenses, non-performing loans are negatively and banks size are positively related with ROA for 25 IBs from 12 countries.

Zeitun (2012) studies the profitability (ROA and ROE) of both IBs and CBs employing the GLS Random Effect panel data analysis for around 40 banks from the Gulf Cooperation Council (GCC) countries for the period 2002-2009. Operating costs and inflation have negative significant effects on ROA and ROE for both types of banks. Equity and GDP growth have positive effects on CBs but insignificant for IBs.

Fatnassi et al., (2014) examine GCC Islamic and conventional banks' profitability thru capital and risk level for years 2003-2011 for 65 conventional and 48 Islamic banks with the GMM method. Their results show that ROA and ROE for IBs are persistent and profitability of highly capitalized IBs are lower.

Studies focus on NIM are quite rare. For example, Sun et al., (2014) investigate the determinants of net interest margin for CBs and IBs for years between 1997-2010 using the fixed effects model for the OIC countries. Operational costs and lagged NIM are significantly positive determinants of NIM for both types of banks. However, size (positive), loan loss provisions (negative), liquidity (positive) are significant determinants of NIM Islamic Banks only. Risk aversion (negative), management efficiency (negative), implicit interest payments (positive), and Lerner index (positive) are significant determinants of CBs only. Capital adequacy is significant for both types positively.

Fatnassi et al., (2014) by using the GMM method, report that NIM of IBs are not persistent. Equity to asset, loan loss provisions are negative and loan to asset, inflation, size of total loans are positive determinants of profitability for IBs.

Sun et al., (2017) repeats the NIM study with GMM for OIC banks between 1999 and 2010. Unlike their previous research with the fixed effect, lagged NIM is no longer significant for CBs. Operation costs are also not significant for both types of banks. Only Lerner index and lagged NIM are significant variables for IBs.

It is important to note that previous studies either focus on a specific region or contain limited number of banks utilizing mostly static panel data techniques. To the best of our knowledge, there is no cross-country study with bank and country specific variables examining the issue with the dynamic panel data techniques. In addition to econometric methods, macroeconomic and financial structure variables are not adequately studied in relation to profitability or bank margins.

This dissertation substantially contributes the literature by gathering a dataset for larger number of countries and banks from a different data source and employing the dynamic panel estimation methods with a large number of new explanatory variables. For example, the relationship of commodity price indices and financial structure variables are investigated to unleash any differences or similarities between IBs and CBs. Another critical contribution of this thesis is that including Islamic finance development level of a country and instrument variety of IBs in the estimations and investigate their effects on IBs profitability. Moreover, relation

between banking profitability and utilization of self service banking channels is not adequately studied in the literature. Next chapter explains the econometric model and variable description in detail.

4. MODEL AND DATA

4.1. Econometric Model

The study employs a single step dynamic model similar to Maudos and Solis (2009) and Athanasoglou et al., (2008) to analyze the determinants of profitability for both CBs and IBs. Two equations are described: one for NIM and one for ROA. These specifications include lagged levels of depended variables in order to reflect the persistent nature of profitability.

$$NIM = \xi NIM_{it-1} + \sum_{k=1}^{k} \gamma^k BS_{it}^k + \sum_{j=1}^{j} \beta^j CS_{it}^j + \eta_i + \upsilon_{it} \quad (4.1)$$

$$ROA_{it} = \xi ROA_{it-1} + \sum_{k=1}^{k} \gamma^k BS_{it}^k + \sum_{j=1}^{j} \beta^j CS_{it}^j + \eta_i + \upsilon_{it} \quad (4.2)$$

NIM: Bank Margin, ROA: Return on Asset
NIM_{it-1} : One period Lagged NIM ROA_{it-1} : One period Lagged ROA
BS: Bank Specific Variables CS: Country Specific Variables
η_i: Bank Specific error terms υ_{it}:Error Term factor
it: bank i at time t.

Firstly the fixed effects regressions estimated to compare our results with the previous literature and this study then re-estimates the same specifications with the System General Methods of Moments (GMM). A GMM approach enables to investigate the determinants of profitability while taking care of the dynamic nature of the model and potential endogeneity of some right-hand size variables including the lagged dependent variables.

Several different specifications are employed to grasp the determinants of bank margin and ROA. First, bank internal variables and macroeconomic variables are used as explanatory variables. Then gradually financial penetration and inclusion variables, region dummies and commodity price indexes are added. Two different measures of capital adequacy -equity to asset and Basel capital adequacy- are used as robustness checks.

4.2. Theoretical Background of an Econometric Model

There are cases that time and region invariant explanatory variables need to be considered with variables changing through time and region. The effect of these region and time-invariant variables cannot be handled by a time-series or a cross-section model (Baltagi, 2005). Moreover, there is always a possibility to omit an explanatory variable which will cause omitted variable bias (Ajmani, 2009).

Panel data consist of repeated observations on the same subject over a time period and assumes individuals, firms, banks etc. as heterogeneous and can handle the aforementioned issues and produce unbiased coefficients. The advantages of panel data are summarized by Baltagi (2005) and Ajmani (2009) as follows:

- Increased sample size: Panel data allows to evaluate observations of N subjects in T time periods meaning reaching N x T observations,
- Ability to manage unobserved heterogeneity: As explained above, panel data model comprises both observed and unobserved explanatory variables,
- Panel data give more informative data, more variability, less collinearity among the variables, more degrees of freedom and more efficiency,
- Panel data are better able to study the dynamics of adjustment,
- Panel data are better able to identify and measure effects that are simply not detectable in pure cross-section or pure time-series data,
- Panel data models allow to construct and test more complicated behavioral models than purely cross-section or time-series data.

4.2.1. Panel Data Models:

A panel data regression can be written as follows.

$$y_{it} = \propto_i + X_{it}\beta + \varepsilon_{it} \tag{4.3}$$

i denotes the observed subject, *t* denotes the time. $\propto_i$ holds the unobserved heterogeneity of the subjects. There are different panel data model types based on how the heterogeneity effects are handled.

Panel data models are effective but they have limitations as well. Panels that covers annual data for a short period of time have the drawback that asymptotic arguments rely crucially on the number of individuals tending to infinity. Macro panels on countries or regions with long time series that do not account for cross-country dependence may lead to misleading inference (Baltagi, 2005). Further, problems like heteroscedasticity, autocorrelation, cross-correlation in individual units at the same point in may arise. Dynamic panel data techniques can serve as a better alternative in those cases.

4.2.2. Instrumental Variables

Exegoneity of explanatory variables is a critical assumption of linear regression to estimate unbiased coefficients. However, if one or more explanatory variables are endogenous, instrumental variable estimation can help to reach unbiased solutions.

Assume one or more variable in X is correlated with ε and there exists a set of L variables in W which are exogenous but correlated with the explanatory variables. The variables in the set W are referred to as instrumental variables (Ajmani, 2009).

$$y = X\beta + \varepsilon \tag{4.4}$$

Pre-multiplying the linear model by W gives

$$Wy = WX\beta + W\varepsilon$$

or can be re-written as

$$y^* = X^*\beta + \varepsilon^*$$

After using the method of least squares and some simplifications

$$\widehat{\beta_{IV}} = (X^T W W^T X)^{-1} X^T W W^T \tag{4.5}$$

This is the instrumental variable approach where L = k. In case L >k then instrumental variables estimator is calculated in 2 two steps which is known as two-stage least squares estimator (2SLS).

There are critical points need to be checked to validate the instrumental variables. The model should not have more instruments than it is necessary. Sargan's

hypothesis test (1958) can evaluate if the regression model has more instruments than is required. If the null hypothesis is rejected, then there can be problems with instrumental variables.

Another critical point is to make sure that selected instrumental variables don't have poor correlation with the endogenous variable or in other words to test whether instruments are weak or not.

4.2.3. Dynamic Panel Data Models

The regression models may have to include the one or more lagged values of dependent variables as explanatory variables. These models are called autoregressive models or dynamic models (Guajrati, 2009). The illustration of a dynamic model is as follows.

$$Y_t = \propto + \beta X_t + \gamma Y_{t-1} + u_t \tag{4.6}$$

Fixed effects models may not estimate unbiased coefficients in case of inclusion of lagged variables in the regression equation. The model below consists of y as the dependent variable, X as explanatory variables, u_{it} as the error term. t stands for time and i stands for the subjects.

$$y_{it} = \propto y_{it-1} + \beta X_{it} + u_i \tag{4.7}$$

$$u_{it} = v_i + v_t + \varepsilon_{it} \tag{4.8}$$

The error term u_{it} consists of v_i -location specific component-, v_i-time specific component- and e_{it} -idiosyncratic component-. However, there is a endogeneity problem because y_{it-1} includes v_i. Generalized methods of moments estimations (GMM) can be utilized to estimate coefficients in dynamic models.

GMM estimation is proposed by Arnello and Bond (1991) which is based on the independence between lagged values of the dependent variable and the disturbances. This independence allows to utilize lagged values to form valid instrument variables (Ajmani, 2009). Assuming Z as the matrix of instruments and W is the weights matrix that is chosen to minimize the asymptotic covariance of $\hat{\beta}$ then GMM estimator is

$$\hat{\beta} = (X^T Z W Z^T W)^{-1} X^T Z W Z^T y \quad (4.9)$$

This estimator is also known as GMM first-difference estimator. However, Blundell and Bond (1998) have shown that when the explanatory variables are persistent over time, lagged levels of these variables are weak instruments for the regression equation expressed in first differences. Arellano and Bover (1995) and Blundell and Bond (1998) enhance the first difference estimator by introducing lagged levels as well as lagged differences. This second estimator is known as a system GMM estimator.

System GMM is useful especially in cases when there is

- Small T and large N panel data,
- Dependent variable is related to its lagged values,
- Endogenous explanatory variables.

Panel data based on banks are often subject to aforementioned cases. There is strong evidence that bank profitability persists over time. Endogenous explanatory variables may exist such as capital and profitability relation (Athanasoglou, 2006). Therefore, the system GMM approach is the much better econometric approach to evaluate bank profitability variables compared to the fixed effects estimations, which is the widely employed estimation technique in the literature.

4.3. Data and Description of Variables

The data source for bank level financial ratios in this thesis is the Financial Times Banker Database. The Banker Database provides financial data of 5000 of the world leading banks in more than 160 countries and its data have been normalized for a regional reporting. Year end result is used in the dataset and in case of mid quarter reporting the data of the last 6 months is moved to the next year.

Our dataset consists of 74 Islamic Banks (IBs) and 354 conventional commercial banks (CBs) in the OIC and the U.K for the period of 2007-2013. This study extensively searches Country Central Banks web sites and www.zawya.com to determine the number of Islamic Banks. CBs with Islamic Banking windows are

assumed to be as conventional banks as their major assets come from interest related operations. Country level data for the macroeconomic and financial variables are obtained from the World Bank World Development Indicators database.

Central bank interest rates are retrieved from www.tradingeconomics.com and exchange rates are retrieved from www.oanda.com. A variable on Islamic Finance Development provided by Thomson Reuters is also utilized to measure the maturity of Islamic banking in a country (ICD Thomson Reuters, 2014).

This study employs Net Interest Margin (NIM) –or bank margin- and Return on Asset (ROA) as the dependent variables in the estimates. The term "NIM" is used for both types of banks even though IBs do not engage with interest operations instead they have financing revenues on hand and profit distribution to depositors.

Both bank-specific (see, Table 4.1) and country specific variables (see, Table 4.2) are used to investigate the determinants of profitability for Islamic and conventional banks. The explanatory factors are the same for both ROA and NIM, expected impacts can very well be different though. A number of researchers (Ho and Sounders, 1981; Angbozo, 1997; Maudos and Solis, 2009) show that banks are in need of adding some margin to compensate their risk (credit risk, liquidity risk, and solvency risk) and their operating costs. Similarly, the factors listed above affect ROA as well. For example, high operating costs are likely to reduce the profitability and expected relationship with ROA is negative. However, banks may take into account their overhead costs while considering the bank margin and previous studies suggest a positive association with NIM.

This study employs Loan Loss Provision (LLP) for Credit Risk, Loan to Asset Ratio for Liquidity, Bank Size, Risk Weighted Assets for bank's general risk aversion level, Operation Cost to Total Asset Ratio for Operation Costs. Two variables are employed for bank capitalization, equity to asset ratio and BIS Capital Adequacy Ratio to see how the Basel criteria affects bank profitability. Non interest margin, Lerner index, Foreign/Local ownership and lagged NIM/ROA are other internal determinants. Non-interest margin is excluded from the ROA estimates as non-interest revenue is a direct portion of ROA. Finally, Non-Murabahah Asset Ratio is a bank level variable for IBs showing with what percentage an IB involves non-murabahah instruments. Data is collected from the Islamic Banks Information System (IBIS). Table 4.1 summarizes the variables and expected relationships with dependent variables.

Table 4.1: Bank Specific Variables.

Variable	Measured Effect	Definition -Calculation	Expected Impact	
			NIM	ROA
Net interest margin (NIM) Return on Asset (ROA)	Dependent Variable	IB NIM: (Financing Revenue - Financing Expense) / Total Asset CB NIM: (Interest Revenue -Interest Expense) / Total Asset ROA: Total Profit Before Tax / Total Asset		
Lagged Profitability	Previous Year's Effect	Lagged NIM or Lagged ROA	CB: **(+)** IB : **(+)**	CB: **(+)** IB : **(+)**
Equity to Asset	Capital Adequacy	Total Equity / Total Asset	CB: **(+)** IB : **(NS)**	CB: **(+)** IB : **(+)**
BIS Capital Adequacy Ratio	Capital Adequacy	(Tier1 Capital +Tier2 Capital) / Risk Weighted Asset	CB: **(+)** IB : **(+)**	CB: **(+)** IB : **(+)**
Loan Loss Provision	Credit Risk	Provision, Impairment charges for loan loss / Total Loans	CB: **(+)** IB : **(+)**	CB: **(-)** IB : **(-)**
Loan to Asset Ratio	Liquidity	Total Loan / Total Asset	CB: **(+)** IB : **(NS)**	CB: **(+)** IB : **(+)**
Operations Cost to Total Asset	Operation Cost	Staff and Administration Expenses / Total Asset	CB: **(+)** IB : **(+)**	CB: **(-)** IB : **(-)**
Size	Size	Log(Total Assets)	CB: **(+)** IB : **(+)**	CB: **(+)** IB : **(+)**
Risk Weighted Asset to Total Asset	Overall Riskiness	Total Risk Weighted Asset as defined by Basel Committee / Total Asset	CB: **(+)** IB : **(NS)**	CB: **(+)** IB : **(+)**
Non-Interest Margin	Effect of Income Fees and Charges	Non Interest & Non Finance Income/ Total Asset	CB: **(-)** IB : **(-)**	Excluded
Bank Lerner Index	Market Power	(Total Income – Operation Costs) / Total Income	CB: **(+)** IB : **(NS)**	CB: **(+)** IB : **(NS)**
Foreign Ownership	Foreign Ownership	Dummy variable takes 1 if bank is a foreign subsidiary	CB: **(+)** IB : **(NS)**	CB: **(+)** IB : **(NS)**
Non-Murabahah Asset Ratio	Islamic Banking Instruments	Ratio of Non-Murabahah (non-cost plus sales) assets to total assets	IB : **(+)**	IB : **(+)**

(+): Positive relationship expected (-):Negative Relationship expected (NS): No significant relationship expected

For the country specific variables, the study employs inflation rate, GDP growth rate, three different measures of interest rate volatility, exchange rate volatility and regulatory quality as overall economic-financial indicators. Table 4.2 summarizes the country specific variables.

Table 4.2: Country Specific Variables.

Variable	Measured Effect	Definition -Calculation	Expected Impact	
			NIM	ROA
Inflation: Consumer Price Index	Inflation Effect	Annual Inflation Rate	CB: (+) IB : (+)	CB: (+) IB : (+)
GDP Growth	Macroeconomic Effect	Annual percentage growth rate of GDP at market prices based on constant local currency	CB: (+) IB : (+)	CB: (+) IB : (+)
Regulatory Quality	Regulation	Ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development.	CB: (-) IB : (-)	CB: (-) IB : (-)
Country Dummies	Regional Effects	Dummy variable takes 1 for GCC, Malaysia and UK banks	NS	NS
Ratio of Borrowers to Savers	Overall Financial Structure	The ratio of population borrowed from a financial institution to population saved in a financial institution in past 12 months.(Data derived from Findex Database)	CB: (+) IB: (NS)	Positive For both
Banking Service Coverage	Financial Service Penetration	Dummy variable takes "1" if more than 50% of people (% age 15+) have bank account or credit/debit cards (Data derived from World Bank Findex Database)	CB: (-) IB : (-)	CB: (-) IB : (-)
Banking Branches, POS and ATM Machines	Financial Service Penetration	Dummy variable takes "1" if Average number of banks, POS and ATM machines per 100.000 people is high. (Data derived World Bank Findex Database. Countries with bigger value than median take "1")	CB: (-) IB : (-)	CB: (-) IB : (-)
Usage of Self Service Banking Channels	Self-service Banking prevalence	Ratio of population who make electronic payments or mobile banking transactions for the last year. (Data derived from World Bank Findex Database)	CB: (NS) IB : (NS)	CB: (+) IB: (NS)
Islamic Finance Development Indicator	Islamic Banking Development	Composite weighted index measuring the overall development of the Islamic finance provided by Thomson Reuters.	CB: NS) IB : (+)	CB:(NS) IB : (+)
Price Indices for Crude Oil, Agriculture Metal&Minerals	Global Prices	Agriculture, 2010=100, nominal$ Crude oil, Dubai, $/bbl, nominal$ Metals and minerals, 2010=100, nominal$ reported in World Bank database	CB: (NS) IB : (-)	CB:(NS) IB : (-)

(+): Positive relationship expected (-):Negative relationship expected (NS):No significant relationship expected

Furthermore, this thesis utilizes a large number of variables for the country level financial inclusion and infrastructure. Ratio of borrowers to savers is the ratio of population borrowed from a financial institution to population saved in a financial institution in past 12 months. Banking service coverage is a dummy variable takes "1" if more than 50 percent of people (percentage of age 15+) have bank account or credit/debit cards (data derived from the World Bank Findex Database). Number of banking branches, POS and ATM Machines is a dummy variable takes "1" if average number of banks, POS and ATM machines per 100.000 people is larger than the median of the dataset.

Usage of self service banking channels is the ratio of population who make electronic payments or mobile banking transactions for the last year. This variable is not a bank level variable as data on each and every bank's internet channel is unavailable. Instead, the overall internet-mobile banking penetration of the country is used. Price indices of crude oil, agriculture and metal and minerals utilized to observe how Islamic and conventional banks' profitability and margins respond to commodity price changes.

This study introduces several new variables that are not used in bank profitability studies. Table 4.3 (Findex, various years) provides the summary of these variables along with the number of IBs/CBs in that country.

Data are derived from Findex 2011 or 2014, whichever available. As shown in Table 4.3, banking service coverage is low in most of the OIC countries and majority of the population does not have a bank account. However, the number of bank branches and ATMs are not considerably low as most of the OIC countries are above the median of Findex dataset. Usage of self-service channels are generally less than 20 percent. The UK has the highest statistics as a developed country. Ratio of borrowers to savers is varying among the countries. Malaysia and the GCC countries are leading in the Islamic finance development indicator.

Table 4.3: Country-specific variables and Number of Banks.

Country Name	Banking Service Coverage (1 if high)	Ratio of Borrowers to Savers (%)	Usage of Self Service Banking Channels (%)	Banking Branches, POS and ATM Machines (1 if high)	Islamic Finance Development Indicator	# of IBs	#of CBs
Albania	0	136.73	14.69	1	4.77	1	14
Azerbaijan	0	353.82	1.29	1	4.07	1	27
Bahrain	1	61.52	17.51	1	76.41	11	18
Bangladesh	0	132.72	16.71	0	24.92	5	31
Egypt	0	154.50	1.16	0	20.43	4	29
Guinea	0	68.12	3.41	0	1.47	2	7
Indonesia	0	49.45	3.84	1	27.57	7	73
Iran	1	145.91	24.45	1	16.84	17	
Iraq	0	118.84	4.98	0	4.40	1	2
Jordan	0	361.33	2.41	0	36.39	3	10
Kuwait	1	55.17	19.45	1	38.00	4	7
Lebanon	0	89.09	2.99	1	17.42		18
Malaysia	0	57.79	11.78	1	93.18	15	48
Pakistan	0	45.81	3.40	0	34.39	5	24
Qatar	0	49.46	10.97	1	39.58	4	7
Saudi Arabia	0	78.39	17.75	1	30.64	5	10
Senegal	0	53.52	6.25	0	5.73	1	11
Sudan	0	56.11	26.00	0	27.83	18	
Tunisia	0	77.52	4.78	1	14.95	2	23
Turkey	0	219.29	9.63	1	13.50	4	44
UAE	1	48.10	20.00	1	57.44	7	19
UK	1	40.39	49.35	1	16.16	3	96
Yemen, Rep.	0	48.67	0.96	0	11.07	3	5

Our empirical estimations employ 74 Islamic banks and 354 conventional banks. The size of the sample is limited by the data availability. For example, data for Islamic banks are not fully available for countries: Albania, Azerbaijan, Brunei Darussalam, Iraq, Lebanon, Senegal and Tunisia. For conventional banks, Guinea, and Sudan are also excluded. However, all key countries for Islamic banking are included in the analysis though.

Descriptive statistics are summarized in Tables 4.4 and 4.5. T-tests of internal variables are summarized in Table 4.6.

Table 4.4: Descriptive Statistics: Conventional Banks.

Variable	Obs	Mean	Std. Dev.	Min	Max
Bank Margin	1243	3.14	2.12	-3.10	33.32
ROA	1241	1.48	2.35	-29.97	19.68
Non interest Margin	1243	1.51	1.37	-9.94	13.38
BIS Capital Adequacy Ratio	1221	19.74	12.91	0.56	204.19
Equity to Asset	1243	10.87	7.10	-10.25	73.32
Loan Loss Provision	1243	1.20	2.67	-29.62	46.24
Loan to Asset	1243	61.39	18.23	0.44	155.41
Operation Costs	1243	2.27	1.58	-3.83	17.62
Size	1243	3.73	0.82	1.75	6.44
Risk Weighted Asset Ratio	1243	69.09	21.75	12.50	205.53
Bank Lerner Index	1243	49.10	46.26	-586.78	793.67

Table 4.5: Descriptive Statistics: Islamic Banks.

Variable	Obs	Mean	Std. Dev.	Min	Max
Bank Margin	226	2.86	1.83	-4.74	14.96
ROA	225	0.84	3.78	-34.31	5.43
Non interest Margin	226	1.34	1.84	-14.68	13.18
BIS Capital Adequacy Ratio	224	19.65	11.60	4.05	86.35
Equity to Asset	226	13.62	10.56	1.60	75.84
Loan Loss Provision	226	2.35	12.82	-2.47	191.25
Loan to Asset	226	66.23	15.53	7.95	91.75
Operation Costs	226	2.13	1.57	0.53	13.11
Size	226	3.69	0.60	1.68	4.90
Risk Weighted Asset Ratio	226	75.55	25.06	5.95	227.57
Bank Lerner Index	226	78.74	317.99	-351.38	3971.28

According to t-test results in Table 4.6, NIM of CBs are larger at the 5 percent significance level. ROA of CBs are also larger on average. Non-interest margin, Basel capital adequacy ratio, loan loss provisions, operation costs, Lerner index have equal means according to t-test results. Islamic banks have 25 percent more equity to asset ratio implying that they are better capitalized, which is consistent with Fatnassi et al., (2013), Beck et al., (2013), and Sun et al., (2014). Islamic banks have significantly larger loan to asset, risk weighted asset and loan loss provisions ratios.

Table 4.6: T-Tests.

	Difference T-test	
Variable	t Value	p Value
Bank Margin	2.06 **	0.040
ROA	2.45 **	0.015
Non interest Margin	1.31	0.191
BIS Capital Adequacy Ratio	0.098	0.922
Equity to Asset	-3.75 ***	0.000
Loan Loss Provision	-1.3457	0.180
Loan to Asset	-4.18***	0.000
Operation Costs	1.224	0.222
Size	0.76	0.450
Risk Weighted Asset Ratio	-3.636***	0.000
Bank Lerner Index	-1.398	0.163

Two sided p-value reported The test allows for the variance to be different between the two groups **: Means are not equal at %5 Level ***: Means are not equal at %1 Level

It is important to note that while Islamic banks have significantly higher equity to asset ratio, Basel capital adequacy ratio shows equal means. Simple explanation would be that Islamic banks have riskier assets. Islamic banks' risk weighted asset ratio is significantly larger as well. However, it is important to keep in mind that classification of banking assets and calculation the risk level is a conventional finance methodology. There are debates and discussion regarding how to assign a risk level to Islamic banking assets. As Abedifar et al., (2012) claim that Islamic banking is less risky because the religious motives of customers should reduce the default possibility. On the other hand, PLS contracts increase the risk as they do not guarantee the principal amount. Al Amine (2008) asserts that Basel criteria can be adopted to Islamic banking. However, the necessary risk management structure should asses the risk factors arise from intrinsic properties of Islamic banking contracts.

Overall descriptive statistics and t-tests imply that Islamic banks are better capitalized but have riskier assets. Overall profitability of Islamic banks is lower both in term of ROA and NIM.

5. EMPIRICAL RESULTS

As mentioned in the previous section, panel data techniques are used to examine the cross-sectional unbalanced data. This section includes the regressions of NIM and ROA determinants with the fixed effects and GMM techniques along with discussion of the results.

5.1. Fixed Effects Results

Fixed effects regressions include both bank-level variables and macroeconomic variables including commodity price indices. Dummy variables are not included in the fixed effects estimations due to the nature of fixed effects technique. Regarding bank-level variables, there are two different proxies for capital adequacy: equity to asset and BIS Basel capital adequacy ratio. Therefore, there are two sets of regressions in each table; one using equity asset as capital adequacy proxy and the other one using Basel capital adequacy ratio. Hausman test results are in favor of fixed effects implying that the results are robust.

5.1.1. Fixed Effects Results for Net Interest Margin

Table 5.1 presents the fixed effect results for CBs NIM. Lagged NIM is not significant meaning that NIM is not persistent over time. Loan to asset, operation costs, risk weighted asset have significantly positive coefficients. While equity to asset is not significant in affecting NIM, BIS capital adequacy ratio is significantly related. Loan loss provision and non-interest margin have significantly negative effect on NIM. For macroeconomic variables, GDP growth and regulatory quality have significantly negative and interest rate volatility has significantly positive relationships with NIM. These results are mostly in line with López-Espinosa et al., 2011, Demirgüç-Kunt and Huizinga (1998), Demirgüç-Kunt and Huizinga (2000). However, the insignificant coefficient on lagged NIM is in contrast with Sun et al., (2014).

Based on the fixed effects results, regulatory quality, operation costs and interest rate volatility are the variables with largest coefficients. Higher cost and

volatility lead to higher margins as expectedly. Increase in non-interest revenues reduces the margins, which is also in-line with the expectations. As a robustness check, the significances and signs of other variables do not meaningfully change regarding the variables used for capital adequacy.

Table 5.1: Fixed Effects Results: NIM for CBs.

	Coef	t	p	Coef	t	p
Lagged NIM	0.072	1.18	0.239	0.066	1.15	0.250
Non Interest Margin	-0.134	-2.2 **	0.029	-0.128	-2.11 **	0.036
Loan Loss Provision	-0.037	-1.84 *	0.067	-0.035	-1.76 *	0.080
Loan to Asset	0.009	2.06 **	0.041	0.010	2.19 **	0.029
Size	0.320	0.62	0.536	0.583	1.06	0.289
Operation costs	0.468	2.76 ***	0.006	0.456	2.65 ***	0.008
Equity to Asset	0.034	1.16	0.248			
BIS Capital Adequacy Ratio				0.038	2.27 **	0.024
Bank Lerner Index	0.002	1.17	0.243	0.002	1.11	0.269
Risk Weighted Asset to Total Assets	0.015	3.52 ***	0.000	0.021	4.02 ***	0.000
Inflation	0.002	0.11	0.912	-0.008	-0.46	0.643
GDP Growth	-0.023	-2.49 **	0.013	-0.023	-2.5 **	0.013
Interest Rate Volatility	0.279	2.68 ***	0.008	0.299	3.01 ***	0.003
Exchange Rate Volatility	0.000	0.4	0.686	0.000	0.28	0.783
Regulatory Quality	-0.470	-2.46 **	0.014	-0.499	-2.49 **	0.013
Crude Oil Prices Index	0.000	-0.24	0.812	-0.001	-0.46	0.647
Agriculture Prices Index	-0.003	-0.87	0.383	-0.002	-0.72	0.473
Metal&Minerals Prices Index	0.002	1.32	0.189	0.002	1.29	0.198
R^2 overall	0.5481			0.5193		
# of Clusters	356			353		
# of Observations	1138			1115		

Significant at *** 0.01 Level, ** 0.05 Level, * 0.1 Level

The theory suggests that banks add their risks to NIM. Interest rate volatility is a part of pure spread and higher volatility leads to higher NIM. Moreover, banks tend to add their operation costs to NIM to gain more profits. On the other hand, better financial and economic conditions reduce the margins.

Fixed effects results for CBs confirm the expectations above. Loan to asset – liquidity risk-, risk weighted asset –overall risk level of assets- have positive relationships. CBs seem to substantially reflect their operation costs to NIM. Better

regulatory quality and higher GDP growth lower margins. CBs in the OIC are able to manage their risks and costs by adding them to NIM on top of interest rate volatility. Revenues from non-financing activities have also association with NIM. Banks with higher non-interest income have lower NIM meaning that CBs utilize non-interest income to reduce financing margins for the competitive advantage.

Table 5.2 and Table 5.3 present the fixed effects results of NIM of IBs. Regressions in Table 5.2 use the same explanatory variables as in Table 5.1. Table 5.3 presents the estimation results including the non-Murabahah asset ratio in the regressions, which has smaller number of observations due to the data availability. Non-Murabahah assets is basically the ratio of non-Murabahah assets to total assets and it is not available for the most of the banks and 21 percent of the observations are thus lost.

Table 5.2: Fixed Effect Results: NIM for IBs

	Coef	t	p	Coef	t	p
Lagged NIM	-0.273	-1.94 *	0.057	-0.274	-1.91 *	0.06
Non Interest Margin	-0.512	-2.58 **	0.012	-0.514	-2.78 ***	0.007
Loan Loss Provision	-0.006	-0.08	0.933	0.012	0.17	0.864
Loan to Asset	0.011	0.91	0.365	0.011	0.81	0.419
Size	-2.037	-0.95	0.343	-1.539	-0.8	0.427
Operation costs	0.387	2.11 **	0.039	0.381	2.2 **	0.032
Equity to Asset	-0.037	-0.79	0.432			
BIS Capital Adequacy Ratio				-0.021	-0.47	0.641
Bank Lerner Index	-0.001	-2.34 **	0.022	-0.001	-2.63 **	0.011
Risk Weighted Asset to Total Assets	0.003	0.23	0.815	0.001	0.11	0.917
Inflation	-0.006	-0.22	0.828	-0.009	-0.3	0.767
GDP Growth	0.014	0.52	0.603	0.006	0.21	0.833
Interest Rate Volatility	-0.663	-1.99 **	0.050	-0.627	-1.88 *	0.064
Exchange Rate Volatility	0.001	0.16	0.874	0.000	0.09	0.932
Regulatory Quality	-2.238	-3.29 ***	0.002	-2.310	-3.08 ***	0.003
Crude Oil Prices Index	-0.007	-1.02	0.309	-0.009	-1.29	0.203
Agriculture Prices Index	0.008	0.6	0.549	0.011	0.9	0.371
Metal Minerals Prices Index	-0.010	-1.27	0.210	-0.011	-1.3	0.197
R^2 overall	0.0458			0.0581		
# of Clusters	66			66		
# of Observations	187			185		

Significant at *** 0.01 Level, ** 0.05 Level, * 0.1 Level

According to the results in Table 5.2, lagged NIM, Lerner index, non-interest margin are negatively and operation costs is positively significant. Regulatory quality and interest rate volatility have negative significant coefficients. Estimation results considerably differ with inclusion of non-Murabahah assets. Lerner index, interest rate volatility remain to be unchanged. However, the other significant variables now become insignificant. Instead, loan to asset and agriculture price index are positively, inflation and crude oil prices are negatively and significantly related with NIM.

Table 5.3: Fixed Effect Results with Non-Murabahah Assets Ratio: NIM for IBs

	Coef	t	p	Coef	t	p
Lagged NIM	-0.012	-0.22	0.827	-0.012	-0.220	0.827
Non Interest Margin	-0.068	-0.64	0.528	-0.068	-0.64	0.528
Loan Loss Provision	0.076	0.63	0.529	0.076	0.63	0.529
Loan to Asset	0.015	2.23 **	0.030	0.015	2.23 **	0.030
Size	0.695	0.46	0.648	0.695	0.46	0.648
Operation costs	0.321	1.66*	0.102	0.321	1.66*	0.102
Equity to Asset	-0.006	-0.22	0.829			
BIS Capital Adequacy Ratio				-0.006	-0.22	0.829
Bank Lerner Index	0.000	-1.82 *	0.075	0.000	-1.82 *	0.075
Risk Weighted Asset to Total Assets	0.001	0.08	0.939	0.001	0.08	0.939
Inflation	-0.067	-1.82 *	0.074	-0.067	-1.82 *	0.074
GDP Growth	0.003	0.09	0.930	0.003	0.09	0.930
Interest Rate Volatility	-0.667	-2.56 **	0.013	-0.667	-2.56 **	0.013
Exchange Rate Volatility	0.003	0.73	0.467	0.003	0.73	0.467
Regulatory Quality	-0.391	-0.47	0.641	-0.391	-0.47	0.641
Non Murabahah Asset Ratio	0.018	1.33	0.188	0.018	1.33	0.188
Crude Oil Prices Index	-0.015	-1.78 *	0.081	-0.015	-1.78 *	0.081
Agriculture Prices Index	0.021	1.68 *	0.099	0.021	1.68 *	0.099
Metal Minerals Prices Index	-0.006	-0.8	0.425	-0.006	-0.8	0.425
R^2 overall	0.144			0.144		
# of Clusters	56			56		
#of Observations	147			147		

Significant at *** 0.01 Level, ** 0.05 Level, * 0.1 Level

Fixed effects results for IBs reveal that operation costs happen to be an important determinant of NIM implying that IBs reflect their operation costs to NIM. However, the negative and significant coefficient of Lerner index indicates that monopoly power of IBs do not lead them to raise their intermediation margins. Non-interest margin negatively and significantly affects NIM meaning that increase in non-financing activities allow IBs to operate with lower margins. Price indices are significant in only one case. There is some evidence that higher oil prices reduce the margin of IBs and higher agriculture prices increase NIM.

5.1.2. Fixed Effects Results for Return on Asset

The determinants of ROA are examined in the same way with NIM. Note that non-interest margin is excluded since it is a direct portion of ROA. Tables 5.4, 5.5 and 5.6 summarize the fixed effects results for ROA.

Table 5.4 presents the estimations for CBs. Loan loss provisions, GDP growth and interest rate volatility have significant effects on ROA. Loan loss provisions and GDP growth negatively affect profitability whereas interest rate volatility affects positively. Expected persistency is not visible as lagged ROA appears to have insignificant coefficients. All remaining bank internal variables, macroeconomic variables and price indices have insignificant coefficients.

Table 5.5 present the fixed effects estimations for IBs. The findings regarding ROA determinants of IBs are similar with the CBs. Loan loss provisions, Lerner index and GDP growth have negative and significant effect on the profitability of IBs. Loan loss provisions appears to be the most important determinant of profitability for both bank types. Fixed effects estimations also reveal that the effects of almost all bank internal variables on profitability are not significant. The dominant effect of provisions indicates that there is a profit smoothing for the OIC banks. For both CBs and IBs, ROA has fewer significant determinants compare to NIM.

Table 5.4: Fixed Effect Results: ROA for CBs

	Coef	t	p	Coef	t	p
Lagged ROA	0.013	0.41	0.685	0.014	0.43	0.668
Loan Loss Provision	-0.515	-6.73 ***	0.000	-0.514	-6.69 ***	0.000
Loan to Asset	0.002	0.29	0.773	0.002	0.29	0.775
Size	-0.070	-0.06	0.953	0.337	0.29	0.774
Operation costs	0.109	0.87	0.383	0.118	0.91	0.364
Equity to Asset	0.008	0.18	0.859			
BIS Capital Adequacy Ratio				0.021	0.92	0.358
Bank Lerner Index	0.000	0.04	0.964	0.000	0.00	0.996
Risk Weighted Asset to Total Assets	-0.001	-0.13	0.895	0.002	0.19	0.850
Inflation	-0.013	-0.45	0.653	-0.020	-0.65	0.513
GDP Growth	-0.028	-1.73 *	0.085	-0.027	-1.64*	0.102
Interest Rate Volatility	0.524	2.89 ***	0.004	0.519	2.88 ***	0.004
Exchange Rate Volatility	0.000	-0.43	0.665	0.000	-0.40	0.693
Regulatory Quality	-0.171	-0.66	0.507	-0.232	-0.85	0.396
Crude Oil Prices Index	0.002	0.40	0.690	0.001	0.16	0.873
Agriculture Prices Index	-0.009	-1.14	0.256	-0.008	-0.95	0.343
Metal Minerals Prices Index	0.007	1.35	0.179	0.007	1.25	0.211
R^2 overall	0.349			0.387		
# of Clusters	354			351		
# of Observations	1140			1117		

Significant at *** 0.01 Level, ** 0.05 Level, * 0.1 Level

Table 5.5: Fixed Effect Results: ROA for IBs

	Coef	t	p	Coef	t	p
Loan Loss Provision	-0.194	-14.62 ***	0.000	-0.194	-12.84 ***	0.000
Loan to Asset	-0.036	-1.27	0.209	-0.037	-1.29	0.200
Size	-9.581	-1.18	0.243	-10.072	-1.13	0.262
Operation costs	-0.182	-0.71	0.483	-0.175	-0.71	0.480
Equity to Asset	-0.012	-0.32	0.748			
BIS Capital Adequacy Ratio				-0.035	-0.92	0.360
Bank Lerner Index	0.000	-1.67 *	0.098	0.000	-1.64*	0.106
Risk Weighted Asset to Total Assets	-0.028	-0.69	0.491	-0.032	-0.74	0.462
Inflation	-0.060	-1.32	0.192	-0.061	-1.40	0.166
GDP Growth	-0.051	-0.62	0.540	-0.054	-0.68	0.497
Interest Rate Volatility	0.157	0.65	0.520	0.176	0.69	0.490
Exchange Rate Volatility	-0.001	-0.53	0.600	-0.001	-0.49	0.624
Regulatory Quality	-0.094	-0.11	0.909	-0.106	-0.12	0.904
Non Murabahah asset						
Crude Oil Prices Index	0.049	1.54	0.128	0.050	1.50	0.139
Agriculture Prices Index	-0.033	-1.33	0.189	-0.034	-1.31	0.195
Metal Minerals Prices Index	-0.006	-0.58	0.566	-0.005	-0.51	0.615
R^2 overall	0.003			0.0014		
# of Clusters	74			74		
# of Observations	228			226		

Significant at *** 0.01 Level, ** 0.05 Level, * 0.1 Level

Table 5.6: Fixed Effect Results with Non-Murabahah Assets: ROA for IBs.

	Coef	t	p	Coef	t	p
Loan Loss Provision	-0.194	-39.58 ***	0.000	-0.192	-40.67 ***	0.000
Loan to Asset	0.006	0.34	0.733	0.010	0.51	0.615
Size	2.396	0.93	0.354	2.965	1.19	0.238
Operation costs	-0.202	-0.87	0.389	-0.290	-1.15	0.255
Equity to Asset	-0.019	-0.64	0.526			
BIS Capital Adequacy Ratio				0.010	0.50	0.619
Bank Lerner Index	-0.002	-3.92 ***	0.000	-0.002	-4.17 ***	0.000
Risk Weighted Asset to Total Assets	0.012	1.17	0.249	0.014	1.41	0.164
Inflation	-0.037	-1.03	0.305	-0.048	-1.40	0.167
GDP Growth	0.069	2.41 **	0.019	0.064	2.30 **	0.025
Interest Rate Volatility	-0.271	-0.98	0.332	-0.386	-1.23	0.222
Exchange Rate Volatility	0.000	0.26	0.799	0.001	0.65	0.521
Regulatory Quality	-0.090	-0.10	0.917	-0.109	-0.13	0.899
Non Murabahah asset	0.013	0.64	0.522	0.012	0.62	0.539
Crude Oil Prices Index	-0.003	-0.26	0.799	-0.005	-0.34	0.732
Agriculture Prices Index	0.002	0.10	0.924	0.005	0.26	0.793
Metal Minerals Prices Index	-0.002	-0.19	0.853	-0.003	-0.31	0.760
R^2 overall	0.765			0.726		
# of Clusters	61			61		
# of Observations	176			174		

Significant at *** 0.01 Level, ** 0.05 Level, * 0.1 Level

5.2. GMM Results

As discussed in the previous chapter, GMM is a superior alternative to evaluate panel data especially if there is persistency. Bank profitability can be highly correlated with previous years' results. Berger et al., (2000) report that in case causality turns out to be two way regressors and error term can be correlated with it. Arellano and Bond (1991) provide dynamic panel estimators using the Generalized Method of Moments (GMM), which provides a solution to the above problem.

The GMM estimator takes into account of potential endogeneity of the explanatory variables by utilizing the panel nature of the data. This estimation is sensitive to the instrument proliferation; the Hansen test of overidentifying restrictions is still the best option to check instrument validity for researchers. The problem and extensity of potentially weak internal instruments in small samples has been identified by the literature. Thus, if instruments are weak, the significance of estimated coefficients must be interpreted cautiously Therefore, for the instrumentation, all bank-specific variables are treated as potentially endogenous variables.

GMM regressions are carried out in four steps in order to capture how country level variables alter the results and provide robustness checks. First, bank internal variables and key macroeconomic variables are included in the GMM regressions. Second, financial inclusion and infrastructure variables are added. Third, several measures of price indices are included. Finally, regional dummies are included. For IBs, non-Murabahah asset ratio is added as the fifth step. At each step there are two regressions available by using two alternative capital adequacy proxies.

With respect to both NIM and ROA, the GMM estimations are robust and consistent because AR test and Hansen test results are robust enough. Note that because of smaller sample size especially for IBs, due to the instrument proliferation problem using full IVs in estimations is impossible. Thus, to obtain robust results, one solution to instrument proliferation is to use “collapse” option in the GMM estimations (Roodman, 2009). The insignificant AR (2) tests suggest that error terms don’t have the second-order autocorrelation. Insignificant Hansen test of overidentifying restrictions (with high p values) implies that the models are correctly specified, considering that there are no evidences of correlation between instruments and errors.

5.2.1 GMM Results for NIM

5.2.1.1 Conventional Banks

Tables 5.7 to 5.10 present the estimations results of CBs NIM. Lagged NIM, loan loss provision, operation costs, Lerner index, foreign ownership, GDP growth

have significant coefficients in all estimated equations. GDP growth and loan loss provision negatively affect NIM whereas Lagged NIM, operation costs, Lerner index, foreign ownership have positive effects. The statistically significant and positive estimated coefficients on lagged NIM clearly indicate the persistency of NIM for CBs. Lagged NIM and operation costs are the variables with largest coefficients implying that NIM of CBs are mostly related to previous year results and operation costs are reflected to margin. Overall GMM results for NIM of CBs are mostly in-line with theoretical expectations and with the empirical literature.

Table 5.7: GMM Results with Macroeconomic variables: NIM for CBs.

	Coef	t	p	Coef	t	p
Lagged NIM	0.334	2.76 ***	0.006	0.345	2.69 ***	0.007
Non Interest Margin	0.088	0.60	0.547	0.056	0.42	0.675
Loan Loss Provision	-0.058	-3.16 ***	0.002	-0.052	-2.93 ***	0.004
Loan to Asset	0.018	2.10 **	0.037	0.012	1.50	0.133
Size	0.321	1.24	0.216	0.317	1.20	0.230
Operation costs	0.387	2.53 **	0.012	0.457	2.45 **	0.015
Equity to Asset	0.000	0.02	0.986			
BIS Capital Adequacy Ratio				-0.010	-0.63	0.528
Bank Lerner Index	0.006	2.45 **	0.015	0.006	3.55 ***	0.000
Risk Weighted Asset to Total Asset	0.000	0.03	0.976	-0.001	-0.12	0.906
Foreign Ownership	1.151	1.95 *	0.053	1.522	2.11 **	0.035
Inflation	-0.028	-1.26	0.209	-0.047	-1.78 *	0.076
GDP Growth	-0.036	-2.90 ***	0.004	-0.045	-3.38 ***	0.001
Regulatory Quality	-0.667	-3.40 ***	0.001	-0.710	-3.28 ***	0.001
Interest Rate Volatility	0.198	1.46	0.144	0.175	1.27	0.203
Exchange Rate Volatility	0.000	0.36	0.719	0.000	-0.13	0.894
AR(1)	0.007			0.011		
AR(2)	0.326			0.373		
Hansen Test	0.153			0.393		
# of Instruments	223			223		
# of Groups	356			353		
# of Observations	1138			1115		

Significant at *** 0.01 Level, ** 0.05 Level, * 0.1 Level

Adding country level variables or using different capital adequacy variables, as in Table 5.8, do not alter the results. It means that our results are robust to the inclusion of financial inclusion and infrastructure variables. Only exceptions are loan

to assets and inflation. Loan to assets has the significant coefficient in the estimations where equity asset is used as a capital adequacy proxy. In contrast, inflation appears to be significant in the equations with Basel capital adequacy ratio. Regulatory quality has negatively significant effects on NIM in all cases but the coefficients become insignificant when regional dummies added to the estimations.

Table 5.8: GMM Results with Financial inclusion & infrastructure variables: NIM for CBs

	Coef	t	p	Coef	t	p
Lagged NIM	0.307	2.41 **	0.016	0.326	2.44 **	0.015
Non Interest Margin	0.035	0.20	0.841	0.048	0.36	0.717
Loan Loss Provision	-0.055	-2.91 ***	0.004	-0.056	-3.43 ***	0.001
Loan to Asset	0.014	1.62	0.107	0.012	1.43	0.153
Size	0.269	1.12	0.263	0.250	0.98	0.329
Operation costs	0.345	2.19 **	0.029	0.404	2.29 **	0.023
Equity to Asset	-0.007	-0.30	0.762			
BIS Capital Adequacy Ratio				-0.009	-0.55	0.582
Bank Lerner Index	0.005	2.45 **	0.015	0.006	2.12 **	0.035
Risk Weighted Asset to Total Asset	0.002	0.26	0.797	-0.003	-0.35	0.725
Foreign Ownership	1.212	2.11 **	0.036	1.494	2.11 **	0.036
Inflation	-0.031	-1.21	0.226	-0.042	-1.71 *	0.087
GDP Growth	-0.031	-2.63 ***	0.009	-0.030	-2.63 ***	0.009
Regulatory Quality	-0.689	-2.11 **	0.036	-0.776	-2.40 **	0.017
Interest Rate Volatility	0.163	1.40	0.162	0.126	1.04	0.299
Exchange Rate Volatility	0.000	0.93	0.351	0.000	0.36	0.722
Ratio of Borrowers to Savers	0.002	1.20	0.232	0.002	1.46	0.144
Banking Service Coverage	0.403	1.24	0.216	0.592	1.41	0.158
# of Banking Branches, POS and ATM Machines	0.179	0.63	0.532	0.191	0.75	0.455
Usage of Self Service Banking Channels	-0.010	-0.85	0.397	-0.010	-0.99	0.324
Islamic Finance Development Indicator	-0.006	-1.74 *	0.083	-0.006	-1.44	0.150
AR(1)	0.008			0.016		
AR(2)	0.458			0.45		
Hansen Test	0.223			0.441		
# of Instruments	228			228		
# of Groups	355			352		
# of Observations	1133			1110		

Significant at *** 0.01 Level, ** 0.05 Level, * 0.1 Level

The relevant theory suggests that banks consider their risk factors and operation costs and raise NIM to compensate them. Moreover, higher capitalization also increases NIM by reducing the financing costs of the banks. The GMM estimations show that risk factors are not significant. Risk weighted assets ratio (proxy of overall risk aversion) is insignificant. Another distinction from the theory is that capital adequacy appears to be insignificant in affecting NIM. The insignificance of capitalization ratios is confirmed by using two different variables, equity to asset and Basel capital adequacy ratio. Insignificant relation of capital adequacy ratios and risk weighted assets with NIM can be plausible because the latest crisis might push all banks to have similar capital and risk levels. However, significantly positive coefficient on operation costs indicates that CBs reflect their overhead costs to NIM and it is in-line with the expectations.

Foreign ownership has a significantly positive coefficient in almost all estimations implying that foreign banks in the OIC operate with larger NIM compare to local banks. Similarly, all estimated equations show that Lerner index has positive impact on NIM meaning that market power of CBs leads to higher NIM.

Another outcome is that key macroeconomic factors (GDP growth, inflation, regulatory quality) are negatively correlated with CBs NIM. However, bank level variables are all positively correlated except loan loss provisions. Improvements in general economic environment seem to decrease the NIM of CBs. On the other hand, bank level variables tend to increase it.

Estimations in Tables 5.8 to 5.10 present that financial inclusion and infrastructure variables, regional dummies, price indices have all insignificant coefficients. The effects of those variables on NIM are not significant. Islamic finance development indicator has negative coefficients but significant in only two cases. Maturity level of Islamic finance in a country might affect margin of CBs from competition point of view. However, it is not strong, which can be explained by the lower market share of Islamic banking.

Table 5.9: GMM Results with price indices: NIM for CBs.

	Coef	t	p	Coef	t	p
Lagged NIM	0.328	2.58 ***	0.010	0.326	2.44 **	0.015
Non Interest Margin	0.078	0.51	0.609	0.048	0.36	0.719
Loan Loss Provision	-0.061	-3.21 ***	0.001	-0.056	-3.42 ***	0.001
Loan to Asset	0.017	1.95 *	0.053	0.012	1.43	0.153
Size	0.255	1.01	0.313	0.250	0.98	0.330
Operation costs	0.321	2.05 **	0.041	0.404	2.29 **	0.023
Equity to Asset	0.006	0.26	0.792			
BIS Capital Adequacy Ratio				-0.009	-0.55	0.585
Bank Lerner Index	0.006	2.51 **	0.013	0.006	2.13 **	0.034
Risk Weighted Asset to Total Asset	-0.001	-0.18	0.856	-0.003	-0.34	0.731
Foreign Ownership	0.981	1.67 *	0.096	1.493	2.09 **	0.037
Inflation	-0.032	-1.40	0.161	-0.042	-1.71 *	0.089
GDP Growth	-0.033	-2.38 **	0.018	-0.031	-2.64 ***	0.009
Regulatory Quality	-0.574	-1.77 *	0.078	-0.774	-2.40 **	0.017
Interest Rate Volatility	0.170	1.51	0.132	0.127	1.05	0.295
Exchange Rate Volatility	0.000	0.93	0.351	0.000	0.36	0.718
Ratio of Borrowers to Savers	0.001	0.92	0.357	0.002	1.45	0.147
Banking Service Coverage	0.256	0.79	0.432	0.586	1.39	0.166
# of Banking Branches, POS ,ATM Machines	0.069	0.23	0.816	0.189	0.74	0.459
Usage of Self Service Banking Channels	-0.011	-1.00	0.319	-0.010	-0.98	0.327
Islamic Finance Development Indicator	-0.007	-2.27 **	0.024	-0.006	-1.47	0.144
Crude Oil Prices Index	0.000	0.05	0.964	0.000	0.16	0.870
Agriculture Prices Index	-0.001	-0.19	0.853	0.001	0.14	0.886
Metal Minerals Prices Index	0.001	0.56	0.578	0.000	0.10	0.922
AR(1)	0.013			0.016		
AR(2)	0.503			0.453		
Hansen Test	0.227			0.439		
# of Instruments	228			228		
# of Groups	355			352		
# of Observations	1133			1110		

Significant at *** 0.01 Level, ** 0.05 Level, * 0.1 Level

Table 5.10: GMM Results with Regional Dummies: NIM for CBs.

	Coef	t	p	Coef	t	p
Lagged NIM	0.330	2.54 **	0.012	0.321	2.36 **	0.019
Non Interest Margin	0.085	0.56	0.573	0.046	0.35	0.726
Loan Loss Provision	-0.061	-3.22 ***	0.001	-0.057	-3.38 ***	0.001
Loan to Asset	0.017	2.05 **	0.041	0.011	1.42	0.157
Size	0.254	1.02	0.309	0.243	0.99	0.324
Operation costs	0.340	2.07 **	0.039	0.437	2.27 **	0.024
Equity to Asset	0.009	0.36	0.716			
BIS Capital Adequacy Ratio				-0.009	-0.56	0.573
Bank Lerner Index	0.006	2.46 **	0.014	0.005	2.10 **	0.036
Risk Weighted Asset to Total Asset	-0.004	-0.65	0.516	-0.005	-0.65	0.519
Foreign Ownership	0.805	1.41 *	0.160	1.402	1.87 *	0.063
Inflation	-0.035	-1.53	0.126	-0.044	-1.79 *	0.074
GDP Growth	-0.043	-3.47 ***	0.001	-0.038	-3.32 ***	0.001
Regulatory Quality	-0.226	-0.64	0.521	-0.445	-1.22	0.223
Interest Rate Volatility	0.168	1.38	0.167	0.129	0.90	0.370
Exchange Rate Volatility	0.001	1.58	0.116	0.000	1.17	0.243
Ratio of Borrowers to Savers	0.001	0.42	0.672	0.002	0.99	0.321
Banking Service Coverage	-0.077	-0.32	0.748	0.116	0.37	0.709
# of Banking Branches, POS, ATM Machines	-0.054	-0.16	0.874	0.008	0.03	0.980
Usage of Self Service Banking Channels	0.016	0.76	0.449	0.017	0.73	0.466
Islamic Finance Development Indicator	-0.007	-0.96	0.336	-0.010	-1.10	0.273
Crude Oil Prices Index	0.001	0.35	0.725	0.000	0.22	0.826
Agriculture Prices Index	-0.001	-0.38	0.706	-0.001	-0.16	0.870
Metal Minerals Prices Index	0.002	0.84	0.403	0.002	0.71	0.481
GCC Dummy	-0.197	-0.54	0.591	0.211	0.47	0.639
Malaysia Dummy	-0.379	-0.61	0.543	-0.022	-0.03	0.975
UK Dummy	-1.678	-1.59	0.114	-1.415	-1.10	0.272
AR(1)	0.008			0.015		
AR(2)	0.537			0.551		
Hansen Test	0.246			0.481		
# of Instruments	231			231		
# of Groups	355			352		
# of Observations	1133			1110		

Significant at *** 0.01 Level, ** 0.05 Level, * 0.1 Level

Compare to the fixed effects, the GMM results slightly differ. Persistency of NIM is captured with the GMM regressions. The effects of risk weighted assets, non interest margin, Basel capital adequacy ratio and interest rate volatility on NIM become insignificant. Lerner index turn out to be significant. Loan loss provisions, loan to asset, operation costs and GDP growth show significant relation with NIM in both fixed effects and GMM methods.

5.2.1.2. Islamic Banks

Tables 5.11 to 5.15 present the GMM results of IBs NIM. There are much fewer number of observations for IBs. The GMM results show no significance for lagged NIM. Thus, lagged NIM is excluded from the estimates to keep the number of observations at 225 level.

Estimation results in Table 5.11 show that significant variables do not vary based on capital adequacy variable or country level variables meaning that our results are robust. Only the significance of bank size changes as it has a significant coefficient in regressions that Basel capital adequacy ratio used.

Loan loss provisions and risk weighted assets have significantly negative coefficients in all regressions. Size is significantly and positively related with NIM in regressions when Basel capital adequacy ratio is used. Positive relationship of bank size implies that there is still a room for scale economies for IBs. The negative estimated coefficient on risk weighted asset means that IBs cannot generate more profit for riskier assets. This result is worth to be studied in detail as risk profile and scoring of IBs should be different than CBs and using same methodology can cause problems for IBs.

Macroeconomic variables, namely GDP Growth, regulatory quality, interest rate volatility, exchange rate volatility, appears to be insignificant in affecting NIM of IBs. Only exception is inflation which has significantly positive coefficient. IBs tend to add inflation to their NIM.

Table 5.11: GMM Results for IBs with Macroeconomic Variables: NIM for CBs

	Coef	t	p	Coef	t	p
Non Interest Margin	-0.088	-1.04	0.301	-0.103	-1.15	0.252
Loan Loss Provision	-0.023	-3.21 ***	0.002	-0.022	-4.12 ***	0.000
Loan to Asset	0.016	1.17	0.248	0.013	1.22	0.228
Size	1.425	2.39 **	0.020	1.534	2.26 **	0.027
Operation costs	0.061	0.49	0.624	0.057	0.46	0.648
Equity to Asset	0.013	0.41	0.684			
BIS Capital Adequacy Ratio				0.026	1.12	0.266
Bank Lerner Index	0.000	-0.89	0.374	0.000	-0.98	0.332
Risk Weighted Asset to Total Asset	-0.021	-3.04 ***	0.003	-0.017	-3.13 ***	0.002
Foreign Ownership	-0.619	-0.53	0.601	-0.501	-0.50	0.619
Inflation	0.063	2.07 **	0.042	0.057	1.79 *	0.077
GDP Growth	0.017	0.60	0.550	0.013	0.60	0.549
Regulatory Quality	-0.106	-0.22	0.823	-0.190	-0.64	0.524
Interest Rate Volatility	0.324	0.40	0.689	0.306	0.48	0.634
Exchange Rate Volatility	-0.001	-0.31	0.759	-0.001	-0.29	0.771
AR(1)	0.342	0.269				
AR(2)	0.315			0.319		
Hansen Test	0.34			0.761		
# of Instruments	72			67		
# of Groups	74			74		
# of Observations	225			223		

Significant at *** 0.01 Level, ** 0.05 Level, * 0.1 Level

Table 5.12 presents the results after including financial inclusion and infrastructure variables. All financial inclusion and infrastructure variables have insignificant coefficients. Similar to CBs, NIM of IBs also is not affected by Financial inclusion and infrastructure variables.

Table 5.12: GMM Results for IBs with Financial inclusion & infrastructure Variables: NIM for CBs

	Coef	t	p	Coef	t	p
Non Interest Margin	-0.088	-0.85	0.399	-0.108	-1.05	0.295
Loan Loss Provision	-0.023	-3.37 ***	0.001	-0.023	-4.56 ***	0.000
Loan to Asset	0.009	0.66	0.513	0.008	0.68	0.498
Size	1.485	1.47	0.145	1.570	1.81 *	0.074
Operation costs	0.032	0.21	0.837	0.010	0.06	0.949
Equity to Asset	0.012	0.36	0.723			
BIS Capital Adequacy Ratio				0.017	0.65	0.516
Bank Lerner Index	0.000	-0.41	0.686	0.000	-0.55	0.583
Risk Weighted Asset to Total Asset	-0.019	-3.76 ***	0.000	-0.016	-2.62 **	0.011
Foreign Ownership	-0.497	-0.34	0.738	-0.642	-0.42	0.675
Inflation	0.051	1.92 *	0.059	0.051	1.74 *	0.086
GDP Growth	0.021	0.74	0.463	0.018	0.63	0.529
Regulatory Quality	0.026	0.05	0.960	0.063	0.20	0.844
Interest Rate Volatility	-0.160	-0.30	0.768	-0.184	-0.42	0.674
Exchange Rate Volatility	0.001	1.00	0.321	0.001	1.25	0.216
Ratio of Borrowers to Savers	-0.002	-0.37	0.709	-0.001	-0.19	0.846
Banking Service Coverage	-0.032	-0.07	0.946	-0.119	-0.25	0.801
# of Banking Branches, POS , ATM Machines	-1.095	-1.04	0.304	-1.191	-1.26	0.211
Usage of Self Service Banking Channels	-0.013	-0.64	0.527	-0.011	-0.50	0.618
Islamic Finance Development Indicator	-0.005	-0.46	0.645	-0.003	-0.27	0.789
AR(1)	0.41			0.465		
AR(2)	0.309			0.312		
Hansen Test	0.481			0.577		
# of Instruments	72			72		
# of Groups	74			74		
# of Observations	225			223		

Significant at *** 0.01 Level, ** 0.05 Level, * 0.1 Level

Table 5.13 and Table 5.14 present the estimations including price indices and regional dummies. Estimation results in both Tables 5.13 and 5.14 imply that significant relationship of crude oil and agriculture price indices with NIM is a noticeable outcome. Crude oil prices affect NIM negatively whereas the effect of agriculture prices is positive. This is important since the OIC countries are mostly the net importers of agriculture products. Increases in agricultural prices might increase the financing requirements of companies and individuals which may allow Islamic banks to charge larger margins. In contrast for crude oil, considering the global

dominance of GCC banks in Islamic banking, increases in oil prices can reduce the financing requirements and cause IBs to operate with lower margins. It is worth to highlight that IBs margin seems to be related to price indices rather than GDP growth, regulatory quality.

Table 5.13: GMM Results with price indices: NIM for IBs.

	Coef	T	p	Coef	t	p
Non Interest Margin	-0.088	-0.85	0.399	-0.108	-1.05	0.295
Loan Loss Provision	-0.023	-3.37 ***	0.001	-0.023	-4.56 ***	0.000
Loan to Asset	0.009	0.66	0.513	0.008	0.68	0.498
Size	1.485	1.47	0.145	1.570	1.81 *	0.074
Operation costs	0.032	0.21	0.837	0.010	0.06	0.949
Equity to Asset	0.012	0.36	0.723			
BIS Capital Adequacy Ratio				0.017	0.65	0.516
Bank Lerner Index	0.000	-0.41	0.686	0.000	-0.55	0.583
Risk Weighted Asset to Total Asset	-0.019	-3.76 ***	0.000	-0.016	-2.62 **	0.011
Foreign Ownership	-0.497	-0.34	0.738	-0.642	-0.42	0.675
Inflation	0.051	1.92 *	0.059	0.051	1.74 *	0.086
GDP Growth	0.021	0.74	0.463	0.018	0.63	0.529
Regulatory Quality	0.026	0.05	0.960	0.063	0.20	0.844
Interest Rate Volatility	-0.160	-0.30	0.768	-0.184	-0.42	0.674
Exchange Rate Volatility	0.001	1.00	0.321	0.001	1.25	0.216
Ratio of Borrowers to Savers	-0.002	-0.37	0.709	-0.001	-0.19	0.846
Banking Service Coverage	-0.032	-0.07	0.946	-0.119	-0.25	0.801
# of Banking Branches, POS,ATM Machines	-1.095	-1.04	0.304	-1.191	-1.26	0.211
Usage of Self Service Banking Channels	-0.013	-0.64	0.527	-0.011	-0.50	0.618
Islamic Finance Development Indicator	-0.005	-0.46	0.645	-0.003	-0.27	0.789
Crude Oil Prices Index	-0.018	-3.16 ***	0.002	-0.019	-3.70 ***	0.000
Agriculture Prices Index	0.026	2.31 **	0.024	0.025	2.72 ***	0.008
Metal Minerals Prices Index	-0.011	-1.62	0.110	-0.010	-1.52	0.132
AR(1)	0.41			0.465		
AR(2)	0.309			0.312		
Hansen Test	0.481			0.577		
# of Instruments	72			72		
# of Groups	74			74		
# of Observations	225			223		

Significant at *** 0.01 Level, ** 0.05 Level, * 0.1 Level

Table 5.14 shows regional dummies are mostly insignificant except one case of the GCC dummy. There is no sign of a variation in NIM based on the region of IBs.

Table 5.14: GMM Results with Regional Dummies: NIM for IBs.

	Coef	t	p	Coef	t	p
Non Interest Margin	-0.116	-0.76	0.451	-0.129	-1.17	0.245
Loan Loss Provision	-0.024	-3.19 ***	0.002	-0.023	-3.82 ***	0.000
Loan to Asset	0.012	0.58	0.561	0.013	1.26	0.213
Size	1.440	0.99	0.324	1.597	1.74 *	0.086
Operation costs	0.012	0.06	0.950	0.016	0.15	0.880
Equity to Asset	0.013	0.29	0.776			
BIS Capital Adequacy Ratio				0.031	1.35	0.181
Bank Lerner Index	0.000	-0.48	0.629	0.000	-0.65	0.521
Risk Weighted Asset to Total Asset	-0.020	-3.27 ***	0.002	-0.015	-2.02 **	0.047
Foreign Ownership	-0.147	-0.09	0.928	-0.280	-0.23	0.822
Inflation	0.027	0.79	0.433	0.021	0.53	0.598
GDP Growth	0.013	0.41	0.686	0.007	0.17	0.866
Regulatory Quality	0.555	0.81	0.420	0.579	0.65	0.518
Interest Rate Volatility	-0.203	-0.36	0.721	-0.281	-0.50	0.615
Exchange Rate Volatility	0.000	0.19	0.852	0.000	0.02	0.986
Ratio of Borrowers to Savers	-0.007	-1.02	0.310	-0.007	-1.10	0.273
Banking Service Coverage	-0.808	-1.12	0.268	-0.718	-0.76	0.452
# of Banking Branches, POS,ATM Machines	-0.326	-0.33	0.741	-0.370	-0.34	0.738
Usage of Self Service Banking Channels	0.051	1.04	0.302	0.045	0.94	0.351
Islamic Finance Development Indicator	0.015	0.47	0.639	0.015	0.27	0.784
Crude Oil Prices Index	-0.018	-2.33 **	0.023	-0.017	-2.37 **	0.020
Agriculture Prices Index	0.025	1.97 *	0.053	0.025	2.77 ***	0.007
Metal Minerals Prices Index	-0.010	-1.59	0.117	-0.012	-1.74 *	0.086
GCC Dummy	-2.322	-1.65	0.104	-2.800	-2.82 ***	0.006
Malaysia Dummy	-3.482	-1.57	0.120	-3.477	-1.07	0.288
UK Dummy	-4.676	-1.31	0.194	-4.371	-0.89	0.375
AR(1)	0.504			0.548		
AR(2)	0.327			0.327		
Hansen Test	0.38			0.483		
# of Instruments	75			75		
# of Groups	74			74		
# of Observations	225			223		

Significant at *** 0.01 Level, ** 0.05 Level, * 0.1 Level

Table 5.15 presents the GMM estimations with the inclusion of non-murabahah asset ratio for NIM for IBs. There is no significant relationship with Islamic finance development level of a country and IBs NIM. However, non-murabahah asset ratio shows a significantly positive relationship with it. This is an interesting outcome implying that while overall Islamic banking development level does not affect margin of IBs, bank-level asset variety does.

Table 5.15: GMM Results with Non-Murabahah Asset Ratio: NIM for IBs.

	Coef	t	p	Coef	t	p
Non Interest Margin	-0.305	-1.98 *	0.052	-0.238	-1.61	0.113
Loan Loss Provision	-0.023	-2.59 **	0.012	-0.020	-2.10 **	0.040
Loan to Asset	0.009	0.51	0.610	0.017	1.48	0.144
Size	1.093	0.97	0.337	1.696	2.23 **	0.030
Operation costs	0.124	1.04	0.304	0.113	1.07	0.290
Equity to Asset	0.007	0.30	0.763			
BIS Capital Adequacy Ratio				0.011	0.75	0.457
Bank Lerner Index	-0.001	-1.89 *	0.064	0.000	-1.73 *	0.090
Risk Weighted Asset to Total Asset	-0.005	-0.36	0.717	0.000	0.03	0.977
Foreign Ownership	0.231	0.15	0.885	0.726	0.42	0.678
Inflation	0.024	0.78	0.440	0.037	1.64	0.107
GDP Growth	0.020	0.62	0.539	0.025	0.90	0.373
Regulatory Quality	1.013	1.68 *	0.099	0.784	1.33	0.189
Interest Rate Volatility	0.113	0.24	0.810	0.118	0.31	0.757
Exchange Rate Volatility	-0.001	-0.80	0.425	-0.001	-0.95	0.346
Ratio of Borrowers to Savers	-0.003	-0.44	0.662	-0.004	-0.79	0.433
Banking Service Coverage	0.035	0.04	0.966	0.084	0.09	0.928
# of Banking Branches, POS ,ATM Machines	-1.128	-1.43	0.158	-1.461	-1.80 *	0.077
Usage of Self Service Banking Channels	0.013	0.13	0.894	-0.012	-0.12	0.908
Islamic Finance Development Indicator	-0.030	-1.04	0.304	-0.014	-0.59	0.556
Crude Oil Prices Index	-0.020	-3.71 ***	0.000	-0.024	-3.56 ***	0.001
Agriculture Prices Index	0.025	1.99 *	0.051	0.031	2.20 **	0.032
Metal Minerals Prices Index	-0.007	-0.91	0.365	-0.011	-1.28	0.206
GCC Dummy	-0.424	-0.45	0.651	-0.612	-0.65	0.518
Malaysia Dummy	0.106	0.05	0.960	-0.534	-0.25	0.804
UK Dummy	-2.649	-0.61	0.544	-0.880	-0.21	0.832
Non Murabahah Asset Ratio	0.027	1.88 *	0.064	0.027	1.63	0.109
AR(1)	0.028			0.034		
AR(2)	0.87			0.888		
Hansen Test	0.513			0.511		
# of Instruments	56			56		
# of Groups	60			60		
# of Observations	172			170		

Significant at *** 0.01 Level, ** 0.05 Level, * 0.1 Level

For IBs, compare to the fixed effects, the GMM estimation results are considerably different. Lagged NIM, non-interest margin, operation costs, Lerner index, interest rate volatility turn out to be insignificant in the GMM regressions. Only crude oil and agriculture price indices are significant in both methods. These sharp differences imply that the empirical results of previous studies are sensitive to the method used for the determinants of NIM for IBs.

5.2.1.3. Comparison of the Determinants of NIM for Conventional and Islamic Banks

There are clear differences in terms of the determinants of NIM for both bank types. NIM of CBs is persistent over time. CBs are mostly able to add significant portion of their operation costs to their bank margins. Foreign conventional banks charge higher margins and market power – measured by Lerner index- lead to larger margins. Macroeconomic variables have negative relationship with NIM whereas price indices do not have.

NIM of IBs, on the other hand, is not persistent over time. Operation costs are not reflected in margins. Moreover, foreign ownership or market power does not lead to larger margins. IBs NIM is related to risk weighted assets and bank size. There are fewer number of the significant determinants for IBs. At least, two factors can cause these dissimilarities. First reason is the PLS structure of IBs. IBs have strong PLS bound with depositors and higher financing profits should be balanced with higher profit distribution to depositors or vice versa. Second, it is mostly argued that Islamic banking in practice is different from the theory and most of the instruments mimic the conventional products with similar ratios. Market share of IBs in domestic economies are generally low and in order to compete with CBs they may need to adjust their ratios according to conventional competitors, which means that the main determinant of margin of IBs can be the profitability levels of CBs.

5.2.2. GMM Results for Return on Asset

The other dependent variable used in empirical part of the thesis is ROA. ROA is one of the most common ratio to evaluate efficiency or profitability of the firms.

Similar estimation methodologies are used with NIM. First, bank internal variables and then macroeconomic variables are employed as explanatory variables. Afterwards, financial inclusion and infrastructure proxies added and then price indices and regional dummies included in the right-hand side of the estimations.

5.2.2.1 Conventional Banks:

Tables 5.16 to 5.19 show the GMM results of CBs ROA. ROA -similar to NIM- is persistent as its lagged values are statistically significant in all regressions. Loan loss provision is the most important variable with its large coefficient value and significance level. As expected, it affects ROA negatively. All remaining bank internal variables have insignificant coefficients. These results imply that ROA is mainly determined based on the previous year results and the provision amount. High absolute value of the coefficient on provisions brings "profit smoothing" to the mind. Firms –and banks of course- may have tendency to keep their profitability at a certain level and balance the amount of profit via provisions.

As Table 5.16 presents, macroeconomic variables have significantly negative effect on ROA except the interest rate volatility. Inflation, GDP growth, and regulatory quality have the significantly negative coefficients and inflation has the significantly positive coefficient.

However, as it is reported in Table 5.17 to 5.19, the effects of inflation and GDP on ROA become insignificant after additional country levels are introduced. Interest rate volatility is on the other hand has positive significant coefficient almost in all estimations meaning that CBs take advantage of volatility and increase their profitability. It is important to note that dataset consist of years after 2008 crisis and interest rates mostly have a tendency to decrease in most countries. Those variables have mostly significant relationship with NIM as well and combining the results of both ROA and NIM estimations have the following implications. Regulatory quality has negative relationship with both ROA and NIM. Results can be interpreted as better regulatory quality leads lower margins and reducing the overall profitability. GDP growth and inflation have negative relationship with NIM meaning GDP growth and inflation lead to lower margins. However, their effects on ROA are

mostly insignificant implying that CBs can recover the lower margins caused by inflation and GDP growth with other instruments

Table 5.16: GMM Results with Macroeconomic variables: ROA for CBs.

	Coef	t	p	Coef	t	p
Lagged ROA	0.073	1.81 *	0.071	0.065	1.85 *	0.066
Loan Loss Provision	-0.515	-7.75 ***	0.000	-0.494	-8.32 ***	0.000
Loan to Asset	0.012	0.94	0.350	0.007	0.67	0.504
Size	0.138	0.33	0.742	0.209	0.60	0.549
Operation costs	-0.213	-0.83	0.406	-0.115	-0.47	0.641
Equity to Asset	-0.002	-0.03	0.974			
BIS Capital Adequacy Ratio				-0.010	-0.47	0.637
Bank Lerner Index	0.005	1.21	0.226	0.004	0.67	0.501
Risk Weighted Asset to Total Asset	-0.014	-1.38	0.168	-0.010	-0.93	0.352
Foreign Ownership	1.048	1.34	0.182	1.185	1.39	0.167
Inflation	-0.061	-1.84 *	0.067	-0.063	-1.95 *	0.052
GDP Growth	-0.027	-1.68 *	0.095	-0.031	-1.92 *	0.055
Regulatory Quality	-0.942	-3.53 ***	0.000	-0.922	-4.15 ***	0.000
Interest Rate Volatility	0.620	2.93 ***	0.004	0.548	3.30 ***	0.001
Exchange Rate Volatility	-0.001	-0.60	0.551	-0.001	-0.73	0.468
AR(1)	0.013			0.01		
AR(2)	0.334			0.34		
Hansen Test	0.298			0.526		
# of Instruments	202			202		
# of Groups	354			351		
# of Observations	1140			1117		

Significant at *** 0.01 Level, ** 0.05 Level, * 0.1 Level

Table 5.17 reports the estimations when financial inclusion and infrastructure variables are added. The estimated coefficients on inflation and GDP growth are insignificant whereas the estimated coefficient of foreign ownership is significantly positive, when equity asset is utilized as capital adequacy proxy. Recalling the result of NIM, foreign banks have larger margins, conventional banks in the OIC seem to raise their profitability with charging larger margins. However, the effect is not very strong. Unlike NIM results, Table 5.17 indicates that ROA has some relationship with financial inclusion and infrastructure variables. Ratio of borrowers to savers has a significantly positive coefficient as expectedly. Banking service accessibility and usage of Self Service Banking Channels show significant and positive relationship

with ROA in most regressions. CBs take advantage of wider service network in terms of both physical facilities (branches, ATMs) and online services.

Table 5.17: GMM Results with financial inclusion & infrastructure variables: ROA for CBs.

	Coef	t	p	Coef	t	p
Lagged ROA	0.065	1.77 *	0.078	0.060	1.78 *	0.077
Loan Loss Provision	-0.524	-7.46 ***	0.000	-0.501	-7.87 ***	0.000
Loan to Asset	0.005	0.44	0.657	0.002	0.20	0.844
Size	0.152	0.37	0.715	0.223	0.61	0.539
Operation costs	-0.213	-0.91	0.365	-0.160	-0.66	0.512
Equity to Asset	-0.010	-0.20	0.841			
BIS Capital Adequacy Ratio				-0.014	-0.63	0.531
Bank Lerner Index	0.006	1.26	0.210	0.004	0.79	0.432
Risk Weighted Asset to Total Asset	-0.015	-1.56	0.120	-0.014	-1.16	0.248
Foreign Ownership	1.397	1.43	0.154	1.489	1.99 **	0.047
Inflation	-0.050	-1.46	0.144	-0.051	-1.59	0.113
GDP Growth	-0.001	-0.04	0.971	-0.003	-0.20	0.844
Regulatory Quality	-1.494	-3.52 ***	0.000	-1.609	-3.97 ***	0.000
Interest Rate Volatility	0.481	2.27 **	0.024	0.390	2.11 **	0.035
Exchange Rate Volatility	0.000	-0.03	0.977	0.000	0.08	0.935
Ratio of Borrowers to Savers	0.005	2.82 ***	0.005	0.005	2.41 **	0.017
Banking Service Coverage	0.848	1.76 *	0.080	0.906	2.20 **	0.029
# of Banking Branches, POS and ATM Machines	0.251	0.72	0.470	0.288	0.88	0.378
Usage of Self Service Banking Channels	0.018	1.29	0.197	0.023	1.74 *	0.084
Islamic Finance Development Indicator	0.000	0.13	0.898	0.002	0.54	0.592
AR(1)	0.023			0.014		
AR(2)	0.3			0.313		
Hansen Test	0.365			0.47		
# of Instruments	207			207		
# of Groups	353			350		
# of Observations	1135			1112		

Significant at *** 0.01 Level, ** 0.05 Level, * 0.1 Level

Based on the results in Table 5.18 and Table 5.19 significant relationships found between commodity price indices and ROA. Crude oil prices have

significantly positive, and agriculture prices have significantly relationships with ROA. In terms of regional dummies only the UK dummy has a significantly negative coefficient. UK banks have lower profitability than those of the OIC region.

Table 5.18: GMM Results with price indices: ROA for CBs.

	Coef	t	p	Coef	t	p
Lagged ROA	0.065	1.77 *	0.078	0.060	1.78 *	0.077
Loan Loss Provision	-0.524	-7.46 ***	0.000	-0.501	-7.86 ***	0.000
Loan to Asset	0.005	0.44	0.658	0.002	0.20	0.842
Size	0.152	0.37	0.714	0.220	0.61	0.545
Operation costs	-0.213	-0.91	0.365	-0.161	-0.66	0.511
Equity to Asset	-0.010	-0.20	0.841			
BIS Capital Adequacy Ratio				-0.014	-0.63	0.532
Bank Lerner Index	0.006	1.26	0.210	0.004	0.79	0.431
Risk Weighted Asset to Total Asset	-0.015	-1.56	0.119	-0.014	-1.16	0.248
Foreign Ownership	1.395	1.43	0.153	1.491	1.99 **	0.047
Inflation	-0.050	-1.46	0.144	-0.051	-1.60	0.111
GDP Growth	-0.001	-0.04	0.967	-0.004	-0.22	0.829
Regulatory Quality	-1.495	-3.52 ***	0.000	-1.607	-3.96 ***	0.000
Interest Rate Volatility	0.481	2.27 **	0.024	0.390	2.12 **	0.035
Exchange Rate Volatility	0.000	-0.03	0.977	0.000	0.08	0.937
Ratio of Borrowers to Savers	0.005	2.81 ***	0.005	0.005	2.41 **	0.016
Banking Service Coverage	0.847	1.76 *	0.079	0.909	2.19 **	0.029
# of Banking Branches, POS ATM Machines	0.251	0.72	0.469	0.282	0.87	0.384
Usage of Self Service Banking Channels	0.018	1.29	0.197	0.023	1.73 *	0.085
Islamic Finance Development Indicator	0.001	0.13	0.894	0.002	0.50	0.619
Crude Oil Prices Index	0.006	2.29 **	0.023	0.005	1.62	0.105
Agriculture Prices Index	-0.014	-1.83 *	0.068	-0.012	-1.43	0.154
Metal Minerals Prices Index	0.007	1.14	0.254	0.006	0.97	0.334
AR(1)	0.023			0.014		
AR(2)	0.3			0.313		
Hansen Test	0.364			0.474		
# of Instruments	207			207		
# of Groups	353			350		
# of Observations	1135			1112		

Significant at *** 0.01 Level, ** 0.05 Level, * 0.1 Level

Table 5.19: GMM Results with Region Dummies: ROA for CBs.

	Coef	t	p	Coef	t	p
Lagged ROA	0.069	1.87 *	0.063	0.065	1.90 *	0.058
Loan Loss Provision	-0.532	-7.89 ***	0.000	-0.510	-8.56 ***	0.000
Loan to Asset	0.009	0.74	0.461	0.004	0.41	0.683
Size	0.089	0.22	0.827	0.093	0.26	0.797
Operation costs	-0.182	-0.69	0.493	-0.126	-0.46	0.649
Equity to Asset	-0.007	-0.13	0.895			
BIS Capital Adequacy Ratio				-0.015	-0.58	0.561
Bank Lerner Index	0.006	1.30	0.196	0.004	0.80	0.424
Risk Weighted Asset to Total Asset	-0.024	-2.10 **	0.037	-0.021	-1.34	0.180
Foreign Ownership	1.252	1.42	0.155	1.479	1.46	0.145
Inflation	-0.044	-1.07	0.285	-0.047	-1.30	0.194
GDP Growth	-0.026	-1.45	0.147	-0.032	-1.88 *	0.062
Regulatory Quality	-0.834	-2.03 **	0.043	-0.827	-2.35 **	0.020
Interest Rate Volatility	0.470	2.09 **	0.037	0.345	1.62	0.107
Exchange Rate Volatility	0.001	1.02	0.310	0.001	1.25	0.211
Ratio of Borrowers to Savers	0.004	2.74 ***	0.006	0.004	2.46 **	0.014
Banking Service Coverage	-0.214	-0.47	0.639	-0.113	-0.26	0.795
# of Banking Branches, POS ,ATM Machines	0.037	0.10	0.919	-0.084	-0.21	0.836
Usage of Self Service Banking Channels	0.079	2.55 **	0.011	0.088	2.97 ***	0.003
Islamic Finance Development Indicator	0.001	0.12	0.907	-0.001	-0.10	0.918
Crude Oil Prices Index	0.006	2.04 **	0.042	0.005	1.73 *	0.084
Agriculture Prices Index	-0.016	-1.77 *	0.077	-0.012	-1.59	0.112
Metal Minerals Prices Index	0.009	1.35	0.179	0.008	1.43	0.153
GCC Dummy	0.347	0.42	0.678	0.333	0.49	0.625
Malaysia Dummy	-0.972	-0.90	0.371	-0.781	-0.83	0.408
UK Dummy	-3.203	-1.94 *	0.054	-3.531	-2.02 **	0.044
AR(1)	0.017			0.013		
AR(2)	0.309			0.317		
Hansen Test	0.173			0.515		
# of Instruments	210			210		
# of Groups	353			350		
# of Observations	1135			1112		

Significant at *** 0.01 Level, ** 0.05 Level, * 0.1 Level

Note that the fixed effects results and GMM results do not vary much because loan loss provisions, interest rate volatility, GDP growth are common significant coefficients. Major distinction in GMM results is the persistency of profitability though.

5.2.2.2. Islamic Banks:

Table 5.20 to 5.24 present the GMM results of IBs ROA. Similar to NIM, lagged values of ROA are insignificant. Therefore, regressions are re-estimated without lagged ROA to keep number of observations at reasonable levels.

Table 5.20 presents the estimations with macroeconomic variables. Loan loss provisions is the most important variable, which always has a negative and significant coefficient in all estimations. Other than loan loss provisions, Lerner index is the only bank internal variable that has significant relationship with ROA. Lerner index is a proxy of market power and expected to have positive relationship with profitability. However, it seems that market power of IBs does not increase the overall profitability. The PLS mechanism may cause this difference. Similar to CBs, IBs show the strong signs of profit smoothing. Except loan loss provisions and Lerner index, all bank internal variables have insignificant coefficients in all estimations.

Significance of the estimated coefficients of bank internal and macroeconomic variables do not alter after adding financial inclusion and infrastructure variables, price indices and regional dummies as shown in Tables 21 to 24.

Table 5.20: GMM Results with Macroeconomic variables: ROA for IBs.

	Coef	t	p	Coef	t	p
Loan Loss Provision	-0.193	-11.57 ***	0.000	-0.194	-12.20 ***	0.000
Loan to Asset	-0.010	-0.32	0.748	-0.014	-0.42	0.673
Size	0.683	0.41	0.681	0.851	0.68	0.498
Operation costs	-0.762	-0.97	0.334	-0.803	-1.27	0.207
Equity to Asset	0.003	0.04	0.966			
BIS Capital Adequacy Ratio				-0.004	-0.11	0.916
Bank Lerner Index	-0.001	-2.82 ***	0.006	-0.001	-3.93 ***	0.000
Risk Weighted Asset to Total Asset	-0.007	-0.15	0.880	-0.003	-0.16	0.875
Foreign Ownership	2.281	0.88	0.381	2.761	0.98	0.330
Inflation	-0.006	-0.05	0.960	0.008	0.12	0.902
GDP Growth	0.064	1.50	0.139	0.063	1.38	0.171
Regulatory Quality	-1.030	-0.62	0.539	-0.934	-2.15 **	0.035
Interest Rate Volatility	-0.311	-0.19	0.850	-0.280	-0.38	0.706
Exchange Rate Volatility	0.002	0.51	0.615	0.001	0.24	0.809
AR(1)	0.181			0.172		
AR(2)	0.534			0.501		
Hansen Test	0.186			0.417		
# of Instruments	60			60		
# of Groups	74			74		
# of Observations	228			226		

Significant at *** 0.01 Level, ** 0.05 Level, * 0.1 Level

Table 5.21: GMM Results with Financial inclusion & infrastructure variables: ROA for IBs.

	Coef	t	p	Coef	t	p
Loan Loss Provision	-0.193	-15.03 ***	0.000	-0.194	-14.01 ***	0.000
Loan to Asset	-0.022	-0.82	0.417	-0.027	-0.92	0.362
Size	1.230	0.50	0.619	0.604	0.25	0.806
Operation costs	-0.602	-0.85	0.400	-0.719	-1.19	0.236
Equity to Asset	0.001	0.01	0.993			
BIS Capital Adequacy Ratio				-0.028	-0.42	0.677
Bank Lerner Index	-0.001	-4.15 ***	0.000	-0.001	-3.95 ***	0.000
Risk Weighted Asset to Total Asset	-0.001	-0.04	0.969	-0.002	-0.09	0.928
Foreign Ownership	2.878	0.55	0.582	3.607	1.14	0.259
Inflation	-0.026	-0.63	0.527	-0.015	-0.26	0.796
GDP Growth	0.044	1.19	0.237	0.038	0.87	0.389
Regulatory Quality	-1.234	-1.29	0.201	-1.525	-1.20	0.234
Interest Rate Volatility	0.202	0.40	0.692	-0.052	-0.13	0.894
Exchange Rate Volatility	0.002	0.51	0.610	0.000	0.10	0.921
Ratio of Borrowers to Savers	-0.009	-0.56	0.580	-0.013	-1.23	0.222
Banking Service Coverage	-1.267	-1.28	0.206	-1.275	-1.24	0.218
# of Banking Branches, POS and ATM Machines	0.527	0.24	0.812	1.005	0.34	0.736
Usage of Self Service Banking Channels	0.054	0.68	0.502	0.083	1.14	0.257
Islamic Finance Development Indicator	-0.002	-0.10	0.922	-0.011	-0.45	0.655
AR(1)	0.21			0.205		
AR(2)	0.558			0.547		
Hansen Test	0.574			0.533		
# of Instruments	65			65		
# of Groups	74			74		
# of Observations	228			226		

Significant at *** 0.01 Level, ** 0.05 Level, * 0.1 Level

Table 5.22: GMM Results with price indices: ROA for IBs

	Coef	t	p	Coef	t	p
Loan Loss Provision	-0.193	-15.03 ***	0.000	-0.194	-14.01 ***	0.000
Loan to Asset	-0.022	-0.82	0.417	-0.027	-0.92	0.362
Size	1.230	0.50	0.619	0.604	0.25	0.806
Operation costs	-0.602	-0.85	0.400	-0.719	-1.19	0.236
Equity to Asset	0.001	0.01	0.993			
BIS Capital Adequacy Ratio				-0.028	-0.42	0.677
Bank Lerner Index	-0.001	-4.15 ***	0.000	-0.001	-3.95 ***	0.000
Risk Weighted Asset to Total Asset	-0.001	-0.04	0.969	-0.002	-0.09	0.928
Foreign Ownership	2.878	0.55	0.582	3.607	1.14	0.259
Inflation	-0.026	-0.63	0.527	-0.015	-0.26	0.796
GDP Growth	0.044	1.19	0.237	0.038	0.87	0.389
Regulatory Quality	-1.234	-1.29	0.201	-1.525	-1.20	0.234
Interest Rate Volatility	0.202	0.40	0.692	-0.052	-0.13	0.894
Exchange Rate Volatility	0.002	0.51	0.610	0.000	0.10	0.921
Ratio of Borrowers to Savers	-0.009	-0.56	0.580	-0.013	-1.23	0.222
Banking Service Coverage	-1.267	-1.28	0.206	-1.275	-1.24	0.218
# of Banking Branches, POS and ATM Machines	0.527	0.24	0.812	1.005	0.34	0.736
Usage of Self Service Banking Channels	0.054	0.68	0.502	0.083	1.14	0.257
Islamic Finance Development Indicator	-0.002	-0.10	0.922	-0.011	-0.45	0.655
Crude Oil Prices Index	0.002	0.12	0.907	-0.003	-0.21	0.835
Agriculture Prices Index	0.004	0.13	0.901	0.009	0.42	0.674
Metal Minerals Prices Index	-0.004	-0.35	0.730	-0.006	-0.54	0.594
AR(1)	0.21			0.205		
AR(2)	0.558			0.547		
Hansen Test	0.574			0.533		
# of Instruments	65			65		
# of Groups	74			74		
# of Observations	228			226		

Significant at *** 0.01 Level, ** 0.05 Level, * 0.1 Level

Usage of Self Service Banking Channels has a positive impact on IBs profitability as Table 5.23 shows. IBs need to pay adequate attention on mobile technologies. However, the effect is not significant in all estimations.

Table 5.23: GMM Results with Regional Dummies: ROA for IBs

	Coef	t	p	Coef	t	p
Loan Loss Provision	-0.192	-16.01 ***	0.000	-0.192	-12.57 ***	0.000
Loan to Asset	-0.003	-0.13	0.895	-0.008	-0.31	0.758
Size	1.570	0.47	0.641	1.452	0.50	0.615
Operation costs	-0.605	-0.96	0.342	-0.804	-1.03	0.308
Equity to Asset	-0.003	-0.03	0.974			
BIS Capital Adequacy Ratio				0.004	0.05	0.956
Bank Lerner Index	-0.001	-4.50 ***	0.000	-0.001	-3.89 ***	0.000
Risk Weighted Asset to Total Asset	0.003	0.18	0.860	0.002	0.11	0.913
Foreign Ownership	3.066	0.59	0.560	3.001	0.90	0.372
Inflation	-0.044	-0.67	0.506	-0.043	-0.62	0.537
GDP Growth	0.012	0.22	0.829	0.010	0.14	0.885
Regulatory Quality	-0.363	-0.31	0.754	-0.338	-0.22	0.824
Interest Rate Volatility	0.384	0.67	0.504	0.137	0.26	0.798
Exchange Rate Volatility	0.001	0.32	0.747	0.001	0.39	0.695
Ratio of Borrowers to Savers	-0.015	-0.69	0.495	-0.016	-1.11	0.269
Banking Service Coverage	-2.341	-1.03	0.305	-2.540	-1.34	0.185
# of Banking Branches, POS and ATM Machines	0.404	0.29	0.773	0.497	0.21	0.832
Usage of Self Service Banking Channels	0.172	1.60	0.113	0.191	1.97 *	0.053
Islamic Finance Development Indicator	0.035	0.38	0.704	0.028	0.36	0.724
Crude Oil Prices Index	-0.002	-0.13	0.894	-0.005	-0.31	0.761
Agriculture Prices Index	0.013	0.37	0.716	0.022	0.58	0.561
Metal Minerals Prices Index	-0.008	-0.52	0.604	-0.015	-0.71	0.482
GCC Dummy	-2.871	-0.73	0.470	-3.049	-1.00	0.318
Malaysia Dummy	-5.883	-0.68	0.499	-6.098	-0.82	0.413
UK Dummy	-7.057	-1.63	0.108	-7.950	-1.56	0.122
AR(1)	0.178			0.156		
AR(2)	0.455			0.476		
Hansen Test	0.69			0.14		
# of Instruments	68			68		
# of Groups	74			74		
# of Observations	228			226		

Significant at *** 0.01 Level, ** 0.05 Level, * 0.1 Level

Islamic finance development indicator has an insignificant coefficient in almost all regressions. However, Table 5.24 indicates that non-murabahah asset ratio has some positive relationship with profitability.

Table 5.24: GMM Results with Non-Murabahah Asset Ratio: ROA for IBs

	Coef	t	p	Coef	t	p
Loan Loss Provision	-0.190	-30.10 ***	0.000	-0.187	-64.37 ***	0.000
Loan to Asset	-0.036	-1.52	0.134	-0.026	-1.15	0.254
Size	-0.453	-0.24	0.810	-0.193	-0.13	0.899
Operation costs	-0.536	-2.27 **	0.027	-0.540	-1.97 *	0.053
Equity to Asset	-0.045	-1.19	0.240			
BIS Capital Adequacy Ratio				-0.052	-1.57	0.121
Bank Lerner Index	-0.002	-3.88 ***	0.000	-0.002	-3.61 ***	0.001
Risk Weighted Asset to Total Asset	0.007	0.38	0.705	0.008	0.50	0.621
Foreign Ownership	0.174	0.05	0.956	0.938	0.35	0.730
Inflation	-0.031	-0.63	0.531	-0.038	-0.86	0.392
GDP Growth	0.055	1.24	0.219	0.042	1.03	0.306
Regulatory Quality	1.874	1.42	0.161	1.719	1.55	0.126
Interest Rate Volatility	-0.316	-0.69	0.496	-0.265	-0.66	0.509
Exchange Rate Volatility	0.001	0.72	0.472	0.000	0.38	0.708
Ratio of Borrowers to Savers	-0.003	-0.29	0.773	-0.005	-0.46	0.651
Banking Service Coverage	-0.983	-1.29	0.202	-0.827	-1.24	0.220
# of Banking Branches, POS and ATM Machines	-0.942	-0.63	0.529	-1.224	-1.01	0.318
Usage of Self Service Banking Channels	0.232	2.35 **	0.022	0.222	2.76 ***	0.008
Islamic Finance Development Indicator	-0.070	-1.52	0.134	-0.074	-1.88 *	0.065
Crude Oil Prices Index	-0.010	-0.77	0.442	-0.011	-1.14	0.260
Agriculture Prices Index	0.008	0.38	0.709	0.015	0.85	0.399
Metal Minerals Prices Index	-0.001	-0.10	0.922	-0.003	-0.29	0.771
GCC Dummy	-1.234	-0.50	0.616	-0.807	-0.39	0.696
Malaysia Dummy	1.240	0.39	0.697	1.896	0.75	0.459
UK Dummy	-13.383	-2.11 **	0.039	-12.439	-2.16 **	0.035
Non Murabahah Asset Ratio	0.025	1.36	0.180	0.034	2.08 **	0.042
AR(1)	0.147			0.123		
AR(2)	0.565			0.923		
Hansen Test	0.246			0.529		
# of Instruments	52			52		
# of Groups	61			61		
# of Observations	176			174		

Significant at *** 0.01 Level, ** 0.05 Level, * 0.1 Level

Similar effects are captured for NIM results as well. These results imply that bank level instrument variety is more important than country level Islamic finance industry development. IBs should increase their asset variety with using fewer murabahah schemes.

The GMM results differ from the fixed effects results for IBs. Loan loss provisions is the only common significant variable. However, both methods come-up with very few number of significant variables. It seems that loan loss provisions are the most significant determinant of ROA. This is a sign of profit smoothing and it seems that IBs have much more smoothing mechanism. This result is in-line with the criticisms regarding the rates offered by IBs. IBs rates both asset and liability side are quite similar with CBs. Considering the fact that most of assets of IBs are debt based which mimics conventional banks with some restrictions, it can be said that IBs profitability depends on mostly the CBs level and IBs adjust their rate and provisions to align with CBs. Lower market share of IBs may also amplify this effect.

5.2.2.3. Comparison of the Determinants of ROA for Conventional Banks and Islamic Banks

Similar to the results for NIM, the determinants of ROA differ for IBs and CBs. ROA of CBs is persistent. Foreign banks tend to be more profitable. CBs profitability has significant relationship with macroeconomic and financial infrastructure variables. On the other hand, IBs do not show these relationships.

The most important common factor for CBs and IBs is the dominant role of loan loss provisions. These results imply that both types of banks engage in profit smoothing. However, the effect seems to be more dramatic for IBs. Usage of self service banking channels is significant for both banks. Mobile technologies are important to keep banks profitable. Thus, especially IBs need to be eager to enhance in internet banking.

The results also show that CBs have stronger links with macroeconomic variables. This result can be interpreted different ways. It is a fact that IBs have showed better resilience in the 2008 financial crisis. The way in which IBs operate

may make them immune to macroeconomic fluctuations. Another fact is that instruments used by IBs mimic the conventional banks, meaning that the practices of PLS banking are far from the level needed. Hence the interaction with real sectors is less than expected. Considering the lower market shares of IBs, overall economic direction of a country may not affect IBs very much.

5.3 Conclusion

The remarkable increase in Islamic finance practice, especially in Islamic banking as the flagship sector of the industry, brought about questions regarding the determinants of the profitability of Islamic banks. Although, in theory, Islamic banking relies upon the profit-loss sharing structure of finance, in practice there is an ongoing argument that Islamic banks usually mimic conventional banks. Dominant usage of Murabahah type of financing supports those arguments and lead to the urgent need of a comparative analysis of the determinants of IBs and CBs. The main purpose of this dissertation is to try to provide a reasonable answer to the question above by using a dynamic panel data approach for a sample of 74 IBs and 354 CBs in the Organization of Islamic Countries (OIC) and the UK. for the period between 2007 and 2013.

The empirical model in this chapter analyzes and compares the profitability of Islamic Banks with conventional banks by employing two different measures of profitability (net interest margin and return on asset). This dissertation makes a couple of contributions to the literature. First, the dynamic panel data techniques are utilized with relatively larger datasets for Islamic Banks compared to the fixed effects estimation which has been widely used in the literature. Second, a large number of new variables such as effect of financial inclusion/penetration, usage of self-service banking channels, commodity price indices and the level of Islamic finance development of the countries are utilized in the estimations to better understand the determinants of profitability of both Islamic and conventional banks. Finally, since the dataset used in empirical part of the thesis covers the post-crisis years, estimations enable to compare the CBs with IBs in the OIC region by utilizing interest rate volatility, exchange rate volatility and two alternative measures of capital adequacy.

Estimations results for the CBs are mostly consistent with the previous findings in the literature. Profitability of CBs is persistent. CBs seem to reflect their risk and operation costs to NIM. Foreign banks work with larger margins and hence make more profits. There are fewer number of significant variables for ROA. ROA is mostly determined by loan loss provisions implying the profit smoothing activities. The results for NIM are considerably different from the GMM results compare to the fixed effects. However, ROA results are pretty much the same as loan loss provisions are the major significant determinant of ROA.

NIM results of IBs are considerably different from the previous findings as most of the previous studies utilize the fixed effect methods. Thus, it can be safely concluded that empirical conclusions of the previous studies are very much sensitive to the estimation methods used. As it is stated in the previous chapter, GMM is a superior alternative for models with lagged dependent variables. Fixed effects models may not estimate unbiased coefficients if lagged variables exist in the regression equation. As Baltagi (2005) explains, fixed effect estimator can wipe out the fixed effects by taking first differences but lagged dependent variable will be still correlated with the error term. However, the system GMM estimator can handle dynamic models with taking first differences and utilizing lagged values of variables to form valid instruments.

Moreover, almost all determinants of profitability for CBs and IBs are different implying that profitability of IBs relies on the different dynamics than those of CBs. Profitability of IBs (both NIM and ROA) is not persistent over time and does not have any significant relationship with the country specific macroeconomic variables. This can be a reason why IBs perform better in the latest global financial crises and their profitability mostly related with real industry prices rather than financial inclusion variables. However, the profitability of CBs mostly responds negatively to most of the macroeconomic and financial variables except the case for the interest rate volatility. The profitability of CBs is found to increase together with interest rate volatility due to the usage of alternative instruments to manage the associated risks. Furthermore, CBs tend to reflect their operational costs to their customers by increased margins. In case of CBs, foreign ownership is related with higher margins whereas the impact of foreign ownership turned to be insignificant for IBs. At ROA side, loan loss provisions are the major significant variable. Similar to CBs, estimation results show that IBs also engage in the profit smoothing.

In addition to the commonly used variables in the estimates for bank profitability, this study introduces several new or rarely used variables to measure the effect of financial inclusion/penetration, self-service banking, and the level of Islamic finance development of the countries. Better and more diffused financial infrastructure raises the profitability of CBs. However, there is no such relationship with IBs. On the other hand, usage of self service banking channels improves profitability of the both types of banks, implying that the importance of self service banking for the higher profitability. Future studies utilizing bank-level data on self-service banking and financial penetration (number of branches, number of POS, etc.) levels would be the worthwhile effort to investigate the profitability of Islamic and conventional banks.

An instrument/asset breakdown of Islamic banks is employed to examine how debt based (murabahah) asset ratio affects profitability in order to investigate the impact of product structures which promotes more risk-sharing on the overall profitability. The thesis concludes that the level of non-murabahah assets positively impact the level of ROA for IBs. This result has a very important implication that more usage of financing structures based more on the concept of risk sharing will positively be linked with the performance of IBs. However, IBs operating in a country with relatively higher level of Islamic Finance development do not necessarily have higher profits. It can be concluded that any improvements in the Islamic banking level of a country are not likely to be sufficient to boost the profitability of IBs if these banks mostly rely on murabahah (debt-based) assets. Multi-standard application of Islamic banking and continuing governance issues might be another reason for lower profitability.

Capital adequacy measured by two different measures has no significant relationship with the profitability of both CBs and IBs, which contradicts most of the previous studies. This can be an after-crisis effect as most of the banks have increased their capital ratios in order to reduce risk levels due to the Basel criteria. Further studies would be beneficial to understand how post 2008 financial crisis conditions affect the banking profitability.

To sum up, the thesis employs the GMM approach as compared to the fixed effect models widely used in the literature. The results for IBs suggest that estimations focusing on the determinants of Islamic bank performance might be sensitive to the model selection. Moreover, this thesis can safely conclude that the

dynamics affecting the performance of IBs may be different that those of CBs. This provides a significant evidence against the argument that IBs mimic the practice of CBs. Moreover, there is a room for IBs to enhance their profitability via providing alternative products and channels for their customers. Finally, the result presented above empirically supports the view that more usage of non-murabahah structures is expected to contribute to the overall performance of Islamic banks

6. CONCLUSION

6.1. Research Results and Current Islamic Banking Practice

Profitability of 74 Islamic Banks (IBs) and 354 conventional commercial banks (CBs) in the Organization of Islamic Countries (OIC) and the U.K empirically examined by employing NIM and ROA as dependent variables for the period of 2007-2013 along with various bank- specific and country-specific variables with the fixed effects and GMM estimation methods. Here is the summary of key findings of the empirical study.

- The determinants of bank spread or NIM for CBs and IBs are considerably different implying that margin of IBs relies on different dynamics.
- The profitability of IBs does not have significant relationships with most of the country specific macroeconomic variables.
- Better and more diffused financial infrastructure raises the profitability of CBs while there is no significant relationship with profitability of IBs.
- Usage of self service banking channels increases profitability of the both types of banks.
- IBs with the higher non-murabahah asset ratio have higher profitability. However, IBs operating in a country with relatively higher level of Islamic Finance development do not necessarily have higher profits.
- Regional dummies are insignificant for IBs.
- Islamic banks (also conventional banks) seem to engage in profit smoothing.

Overall estimation results for Islamic banks are as follows. ROA is dominated by loan loss provisions, which implies that IBs strongly adjust their profit ratios based on the market conditions. It is a reasonable outcome given the very low market share of IBs.

Moreover, insignificance of regional dummies and Islamic finance development indicator comply with standardization and governance issues of Islamic

banking. All countries utilize idiosyncratic way of banking governance and no matter how the regulative structure is composed, Islamic banks happen to operate in an environment with conventional finance rules. These facts can be the reasons of insignificant coefficients on regional and Islamic banking development dummies.

Nature of Islamic banking may become more visible with PLS based instruments and it is for sure that they are not widely used at the moment. Murabahah, the instrument which strongly mimics the conventional loans, is in complete majority. Estimation results imply the positive relationship of non-murabahah assets with bank profitability. Regarding the current practice of Islamic banking, this result explicitly reinforces the importance of new instruments for IBs.

Islamic banks differ from conventional banks in theory by having a Shariah board and the PLS structure. Islamic banks thus cannot involve in all transactions that conventional banks can do. Global practices indicate that Islamic banks utilize Shariah boards even though the relevant regulations do not force them to have these boards. Although PLS instruments are in minority at the asset side, Islamic banks distribute the profits to depositors based on the PLS principle. Shariah screening and PLS bounds differentiate especially the bank spread/NIM determinants of Islamic bank from those of CBs.

The determinants of CBs are mostly in-line with the literature. Both NIM and ROA persist over time. Operations costs are reflected to NIM and macroeconomic variables negatively affect both profitability measures for CBs.

Usage of self service banking channels have the positive relationship for both bank types. It is for sure that IBs are in fierce competition with CBs and efficiency issues matter also for them. General trend of technology can be both an opportunity and a threat for IBs. The disruptive effect of financial technologies is rising in financial markets altering the rules of the banking globally. IBs have to figure out how to adapt the new technology trends. An effective and timely reaction can boost the performance of IBs.

6.2. Problems of Turkish Participation Banking System and Solutions

Islamic banking or so-called as “participation banking” in Turkey started in 1985 with the name of Special Finance Houses (SFHs) without making any reference of Islamic requirements due to a secular political culture of the country. Islamic banking stayed at the crawling stage for a long time due to the laicist attitudes by the Turkish establishment. After 2002, Justice and Development Party which has strong bounds with Islamic heritage, wins majority of the parliament and then Islamic banking as well as economic situation is started to normalize and to improve. In 2005, a new banking law has brought a sound legal framework. Recently two state banks established participation banking subsidiaries with very ambitious targets.

Although both political and economic situation have substantially improved for the last 15 years, these improvements have not reflected in the market shares of PBs that is around 5.5 percent level and quite small compared to countries such as 21 percent in Malaysia, 26 percent in Qatar, 45 percent in Kuwait. Thus, Islamic banking in Turkey still remains as a “big potential”.

It seems that Turkish participation banking inherit the problems of global IBs more severe way. Reasons for the low market share and possible solutions as follows:

- Lack of standardization in Shariah governance causes misperceptions.
- Lack of instrument variety pushes PBs to operate almost solely on murabahah transactions.
- Perception of a participation banking is very weak within the society. A significant portion of society thinks that PBs are not necessarily interest free and choose banks based on cost-benefit considerations.
- Operational efficiency of PBs is lower compared to CBs and more importantly the gap is not closing.
- Lack of academic researches and educational institutions to study aforementioned problems aggravates the problems above.

PBAT issued a strategy document in 2015 highlighting all the dimensions above except for efficiency. There are 84 actions regarding coordination, instrument

variety, advisory boards, education/HR/certification. There are a large number of proposed tasks meant to improve especially sukuk and to raise intellectual efforts on Islamic banking. However, topics on efficiency improvements, technological developments, and coordination among PBs are largely omitted. It is important to note that internal efficiency and utilization of advanced technology must not be underestimated. Furthermore, the strategy report does not sufficiently focus on the domains of PLS instruments and perception-related issues. It is extremely crucial for PBs in Turkey to understand the sensitivity and the expectations of the public correctly and to take necessary steps.

Since there is no overall standard practice of Islamic banking globally, Shariah-compliancy and governance of Islamic banking widely vary among countries. Therefore, Turkish PBs have to properly understand the sensitiveness and expectations of the public and take necessary steps. Given the very strong political support from the top policymakers and the widespread acceptance from the public on the interest-free banking, complaining from the past attitudes can no longer justify the very low market share of PBs. A reasonable Shariah governance, enhanced instrument variety, and the adaptation of latest financial technologies are more likely to boost the growth in the sector.

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