

Empirical Performance of Islamic Stock Market Indices in 2008 Credit Crisis

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Contents

1	Introduction	7
1.1	Overview of Islamic Banking	7
1.2	Thesis Goals	9
1.3	Research Questions	9
1.4	Research Methodology	10
1.5	Thesis Outline	11
2	Development of New Products in Islamic Banking	13
2.1	Introduction	13
2.2	Development of New Products	14
2.3	Sources of Islamic Law (Shariah)	16
2.3.1	Primary Sources	16
2.3.2	Secondary Sources	17
2.3.3	Some Principles	17
2.4	Product Development and Shariah Issues in Islamic Banking .	18
2.5	Conclusion	20
3	Islamic-Banking Products	21
3.1	Introduction	21
3.2	Financing Products	22
3.3	Deposit Products:	28
3.4	Insurance Products:	30
3.5	Different Characteristics between Islamic and Conventional Banks	31
3.6	Conclusion	32
4	Pricing of Islamic Financial Products	33
4.1	Introduction	33

4.2	Pricing of Shares	34
4.3	Pricing of Sukuk	36
4.4	Alternative Pricing Method	39
4.5	Equity Premium Puzzle (EPP)	40
4.5.1	The Puzzle	40
4.5.2	Attempts to Solve The Puzzle	42
4.5.3	Implications of the Puzzle in Islamic Finance	43
4.6	Conclusion	46
5	Two Key Islamic Indices	47
5.1	Introduction	47
5.2	Literature Review	48
5.3	Dow Jones Islamic Market Index (DJIMI)	49
5.4	FTSE Shariah All-World (SAW) Index	52
5.5	Performance of the Indices in the 2008 Credit Crisis	55
5.5.1	Dow Jones Islamic Market Index	56
5.5.2	FTSE Shariah All-World Index	58
5.6	Comparison with Other Conventional Indices	60
5.6.1	DJIMI vs. Dow Jones Global Total Stock Market Index	63
5.6.2	FTSE (SAW) Index vs. FTSE Global All-Cap Index .	65
5.6.3	DJIM and FTSE (SAW) Indices vs. S&P 500 Index . .	68
5.6.4	Results and Interpretations	71
5.7	Conclusion	75
6	Designing New Index Fund	76
6.1	Introduction	76
6.2	Different Views on Index Investing and International Diversi- fication	77
6.3	Modern Portfolio Theory (MPT)	78
6.3.1	Multiple Assets	78
6.3.2	Two Assets	79
6.3.3	Optimal or Efficient Portfolio	80
6.3.4	Limitations of MPT	81
6.4	Proposed New Index	83
6.5	Performace of Proposed Index	86
6.6	Conclusion	90

7	Conclusions and Recommendations	91
7.1	Overview	91
7.2	Conclusions	92
7.3	Recommendations	95

List of Figures

1.1	Methodology Structure	10
2.1	The main 3 phases for the creation and development of new products in Islamic banking.	14
2.2	Mechanism for products development in Islamic finance.	16
3.1	Ijarah Framework	22
3.2	Istisnaa Framework	23
3.3	Mudarabah Framework	24
3.4	Murabahah Framework	24
3.5	Musharakah Framework	25
3.6	Qard-Hasan Framework	25
3.7	Salam Framework	26
3.8	Sukuk Framework	27
3.9	Wadiah Framework	29
3.10	Wakalah Framework	29
3.11	Takaful Framework	30
4.1	Tabreed 06 Sukuk	37
4.2	Historical Returns of US Market (Stocks and Bonds) in the Period 1927-2002	41
5.1	Trend of DJIM Index in the period 2004-2009	51
5.2	Log-Normal returns of DJIM Index in the period 2004-2009	51
5.3	Trend of FTSE Shariah All-World Index in the period 2007-2010	53
5.4	Log-Normal returns of FTSE Shariah All-World Index in the period 2007-2010	54
5.5	Trend of DJIM Index in 2008	56

5.6	The rate of return of DJIM Index in 2008	57
5.7	Trend of FTSE Shariah All-World index in 2008	58
5.8	The Rate of Return of FTSE Shariah All-World index in 2008	59
5.9	Trend of DJIM and DJGTSM indices in the period 2006-2009	63
5.10	Trend of DJIM and DJGTSM indices in 2008	64
5.11	Rate of Return of DJGTSM Index in 2008	64
5.12	Trend of FTSE (SAW) and FTSE (GAC) indices in the period from 2007-2010	65
5.13	Trend of FTSE (SAW) and FTSE (GAC) indices in 2008 . . .	66
5.14	Rate of Return of FTSE (GAC) index in 2008	67
5.15	Prices Trend of DJIM, FTSE (SAW) and S&P 500 indices in the period 2007-2009	68
5.16	Prices Trend of DJIM, FTSE (SAW) and S&P 500 in 2008 . .	69
5.17	Rate of Return of S&P 500 Index in 2008	70
6.1	Trend of DJIM and FTSE (SAW) indices in the period 2007- 2010	83
6.2	Trend of NEW Index in Comparison to DJIM and FTSE (SAW) indices in the Period 2007-2010	85
6.3	Trend of DJIM and FTSE (SAW) indices in comparison with S&P 500 Index throughout the Period 2007-2010	87
6.4	Trend of NEW Index in comparison with S&P 500 Index in the period 2007-2010	88
6.5	Cumulative Returns of DJIM, FTSE (SAW), NEW, and S&P 500 indices in the Period 2007-2010	88
6.6	Cumulative tracking error of DJIM, FTSE (SAW), and NEW indices throughout the Period 2007-2010	89

List of Tables

3.1	Different Features between Islamic and Conventional Banks . . .	31
4.1	Overview of Tabreed 06 Sukuk	36
4.2	Overview of the US Market in the Period 1927-2002	41
4.3	Historical Annual Return of DJIMI in the Period 2005-2009 . . .	44
4.4	Historical Rates of 6-Month LIBOR in the Period 2005-2009 . .	45
4.5	Expected Annual Returns of Tabreed 06 Sukuk in the Period 2005-2009	45
5.1	Performance Measures for Islamic Indices and Their Counter- parts	71
5.2	Rating and Ordering of Islamic Indices and their Counterparts According to its Performance	74
6.1	Average Yearly Return and Volatility of DJIM and FTSE (SAW) indices in the Period 2007-2010	84
6.2	Average Daily and Yearly Return and Volatility of DJIM, FTSE (SAW) and NEW indices in the Period 2007-2010	85
6.3	Average Tracking Error of DJIM, FTSE (SAW) and NEW Indices in the Period 2007-2010	89

Chapter 1

Introduction

1.1 Overview of Islamic Banking

History of bank or in general banking is as old as human society. Therefore, the necessity of a controlling and regulating agency or institution (e.g. bank) was naturally felt since man came to realize the importance of money as medium of exchange. There are many thoughts and opinions about the derivation of the word "BANK", but the most common one is that the word "BANK" is derived from the German word "BANCK" which means "joint stock fund". Later on, the word "BANCK" was Italianized into "BANK" when the Germans occupied major part of Italy [26].

Now since bank or in general banking is as old as human society, then is it new to Islam which first appeared around 1400 years ago? The answer is NO; because in Muslim communities limited banking activity, such as acceptance of deposits, goes back to the time when the Prophet Muhammad (Peace Be Upon Him) was still alive. At that time, people deposited money with the Prophet who used to be a businessman serving as a trader for Khadija (a businesswoman who got married to the prophet later on). The Prophetic example was the very epitome (prototype) of fair-trade refraining from usury (i.e. an exorbitant or unlawful rate of interest), ensuring transparency in transactions, and total honesty which all entitled the prophet to be characterized as Al-Amin (the trustworthy) in pre Islam.

It is clear from the above brief historical narration that banking is not new to Islam and it was a concept used even before Islam but with different

objectives and implementation. This leads us to introduce briefly the idea behind what is so-called "interest-free or Islamic banking". The foundation of Islamic banks requires compliance with Shariah (i.e. The Quran & Sunnah) as a basis for all aspects of life. This compliance covers not only religious worship but also business practices. Islamic banking is distinguished from the Conventional banking by many factors derived from the Quran and the Sunnah [6]:

1. Interest (Riba)
2. Uncertainty (Gharar)
3. Speculation/Gambling (Maysir)
4. Prohibited activities/commodities (e.g.):
 - (a) Pork
 - (b) Pornography
 - (c) Tobacco
 - (d) Alcohol

In simple words we can say that Islamic Banking is an asset-based compared to Conventional Banking which is a currency-based.

This chapter consists of the following sections; §1.2 Thesis Goals, §1.3 Research Questions, §1.4 Research Methodology, and §1.5 Thesis Outline.

1.2 Thesis Goals

The main aim of this thesis is to have a better understanding and insight into the concept of Islamic Banking by investigating the performance of the Islamic stock indices in the 2008 credit crisis.

In addition, the desired objectives of this research are:

1. To understand the basic principle and function of Islamic banking.
2. To realize how different is Islamic banking from the conventional banking in terms of products and services offered.
3. To identify whether or not Islamic investments are significantly different from conventional ones; especially in the recent financial crisis.
4. To propose a suitable and acceptable technique to have more effective Islamic index funds.

1.3 Research Questions

The thesis investigates and addresses the following research questions:

1. How are Islamic financial products developed, structured, and priced?
2. How significantly different are Islamic stock indices from their counterparts in the 2008 credit crisis?
3. What could be the suitable and acceptable tool/technique for designing an effective new index fund?

1.4 Research Methodology

The research methodology used in this thesis is called the Managerial Problem-Solving Method (MPSM)¹ [20] that consists of 7 main steps which are: Problem Identification, Problem Solving Method, Problem Analysis, Alternative Solutions, Decision, Implementation, and Evaluation. In addition, the normal Research Cycle takes place between the 3rd and 4th steps of the MPSM as shown in the following diagram (Figure 1.1):

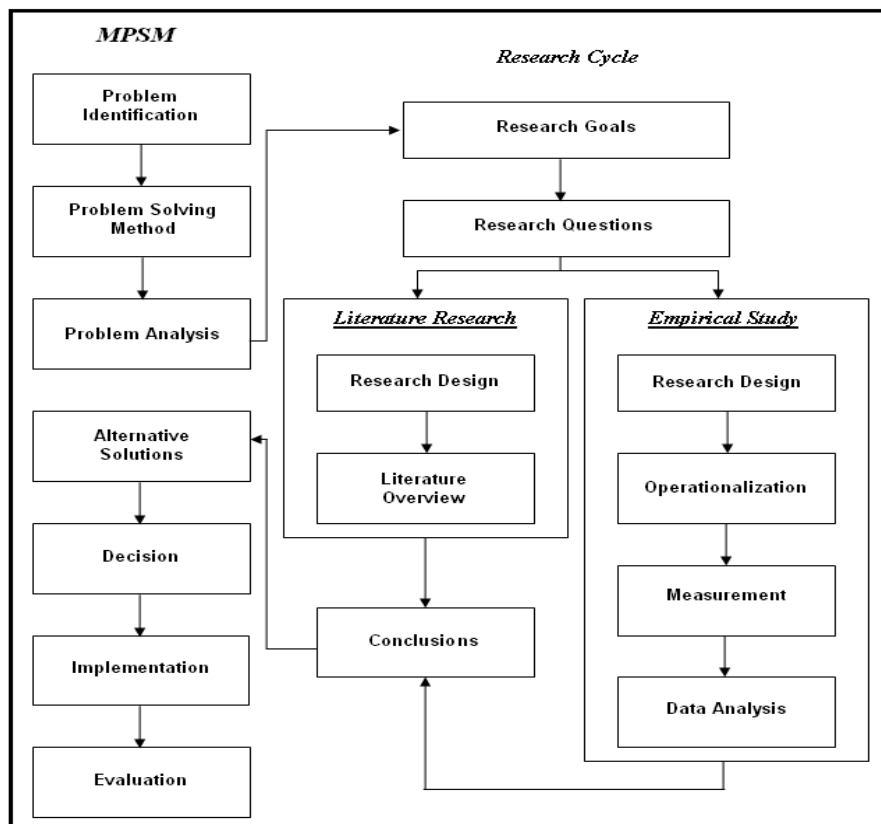


Figure 1.1: Methodology Structure

¹The MPSM is introduced by Dr Hans Heerkens, Lecturer at the University of Twente, Enschede, The Netherlands.

1.5 Thesis Outline

In addition to this chapter which describes the thesis and its goals, the dissertation consists of other six main chapters which are:

- Chapter 2 explains briefly how new products in Islamic banking are developed. The development process consists of 3 phases (identification of Shariah options, finalization of Shariah structure, and review of legal documentation). Such process requires full understanding of Islamic law (Shariah) which has primary sources (Quran and Sunnah), and secondary sources (Ijma, Qiyas, Ijtihad, and Rai). The chapter ends up with a brief overview of the common issues occurred in the development process and Shariah.
- Chapter 3 gives an overview of the common Islamic financial products which are classified into financing, deposit, and insurance products. Those products share almost the same concept with conventional products, but they differ in principles. Examples of the differences are the sharing of risk, the base of each banking system (i.e. asset or currency), and the business activities involved in each type of banking.
- Chapter 4 presents some techniques for pricing Islamic financial products. The methods used for pricing Shares and Sukuk are studied briefly through literatures and a case study. Then, the chapter figures out the puzzle of equity premium since it might be part of assets pricing. Some of the most interesting attempts to solve the puzzle are presented, and also personal views on the implications of explaining the historical phenomenon of having high equity premium according to Islamic finance are interpreted.
- Chapter 5 is the main chapter of this thesis as it investigates the empirical performance of Islamic stock indices (i.e. Dow Jones Islamic Market and FTSE Shariah All-World) in 2008 credit crisis. The chapter also compares the performance of the Islamic indices with their counterparts (i.e. Dow Jones Global Total Stock Market and FTSE Global All-Cap) in the same period. The S&P 500 Index is used as a reference (proxy) for all indices and the analysis is done by employing many well-known performance measures which are Sharpe Ratio, Capital Asset Pricing Model (CAPM), Jensen's Alpha, Market Timing

Ability, Appraisal Ratio, Treynor Ratio, and Modigliani & Modigliani Measure.

- Chapter 6 proposes one possible way to design a new index fund by using the Modern Portfolio Theory (MPT). The simple idea of MPT is to minimize the variance to the least possible level and at the same time maximizing the expected return corresponded to that risk level. The proposed new index is a result of combining the Dow Jones Islamic Market and FTSE Shariah All-World (SAW) indices. The performance of the proposed new index is investigated through volatility, tracking error, and transaction costs; since all these measures are important indexing investments.
- Chapter 7 summarizes the main findings of all chapters within the thesis through brief points. In addition, the chapter points out some problems within the Islamic finance industry which are mainly because of the absence of standardization. Consequently, some general solutions are recommended to overcome those problems in order to advance in this industry and face future challenges.

Chapter 2

Development of New Products in Islamic Banking

2.1 Introduction

The Islamic-Banking industry is in the beginning and emerging stages of development. Therefore, it is very demanding and challenging for its market participants to maintain a market leading and competitive positioning. Consequently, this requires undertaking a high degree of product innovation in order to respond to the increasingly competitive environment, and also to address emerging customer needs. Product development in Islamic banking refers to the process of developing assets, through innovation and research, in the form of products and services to satisfy the customers' demands and needs in the most compliant and suitable way within Shariah and other governing regulations and legalizations. It also includes re-engineering of existing products in accordance with Islamic finance principles and the changing requirements of businesses. As a result, it helps banks to create more business opportunities and provides a competitive advantage over other market players. Effective product development creates synergy between the customers and the bank, and therefore, it assists the bank in understanding the needs of its customers better [6].

This chapter is divided into the following sections; §2.2 Development of New Products, §2.3 Sources of Islamic Law (Shariah), §2.4 Product Development and Shariah Issues in Islamic Banking, and §2.5 Conclusion.

2.2 Development of New Products

Nowadays, most conventional products, whether in banking, capital markets, or asset management can be replicated in a Shariah-compliant manner. But how could this be done? According to many Islamic banks and consultancies, there are three main phases for the creation and development of new products in Islamic banking. These phases are as follows:

1. Phase 1: Identifying Shariah Options.
2. Phase 2: Finalizing Shariah Structure.
3. Phase 3: Reviewing Legal Documentation.

The activities and deliverables involved in each phase is presented and illustrated by the following diagram (Figure 2.1):

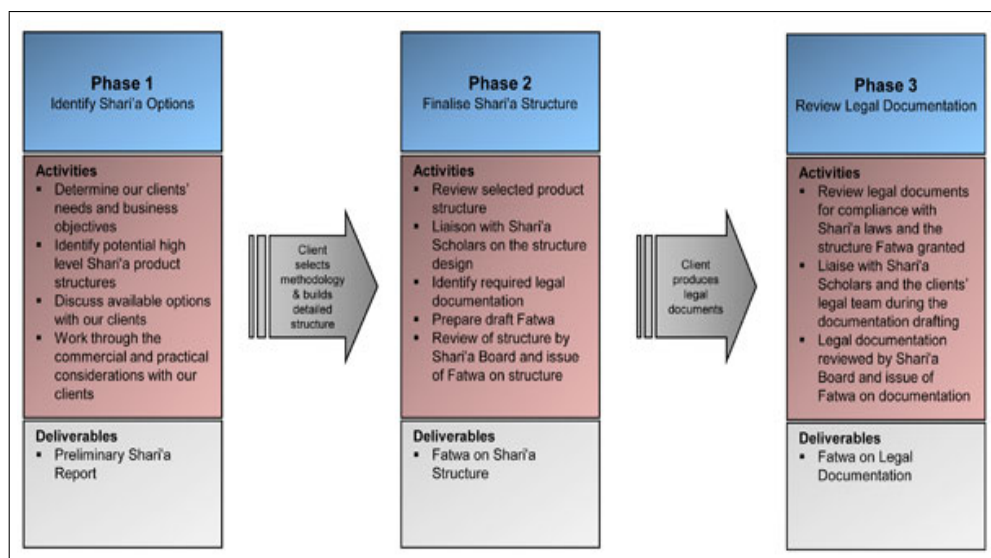


Figure 2.1: The main 3 phases for the creation and development of new products in Islamic banking.

N.B. This diagram is copyrighted to Dar Al-Istithmar (global leader in Islamic financial innovation). Website: "<http://www.daralistithmar.com/>".

It is clear from the above diagram that product development requires and involves the followings:

1. Assessment of customer's needs.
2. Generation of ideas.
3. Discussion with the Shariah Advisory Committee to decide detailed procedures for the operation and implementation of the product.
4. Development of the procedures (preparation of an operational manual for guidance of staff members).
5. Final approval by the Shariah Department of the bank/financial institution.

Throughout the process of product development, the Risk Management Team should carefully analyze all possible risks, and also find all possible hedging strategies to manage the risks. In addition, the team should be involved to take into consideration the operational, market and credit risks, accounting, taxation, regulatory and legal issues at the stage of product development. Deciding factors in this regard are: market survey; Shariah compliance (in terms of mode, nature of assets involved, process and documentation); risk profile of depositors; cash flow of clients on the assets side; risk mitigation measures; legal matters and managing mismatch (i.e. liquidity versus profitability), see [6].

Another important activity that has to be involved from the beginning of creating ideas till the moment of transacting and delivering the product to the customer is the Periodic Shariah Monitoring. This simply means reviewing the transactions and outcomes of each phase throughout the development process at periodic intervals to determine whether Shariah compatibility has been followed. Once the Shariah monitoring is completed successfully, an "Opinion on Shariah Compliance" (also known as "Fatwa") for each monitoring period is signed and issued by the Shariah Advisory Committee (see Figure 2.2).

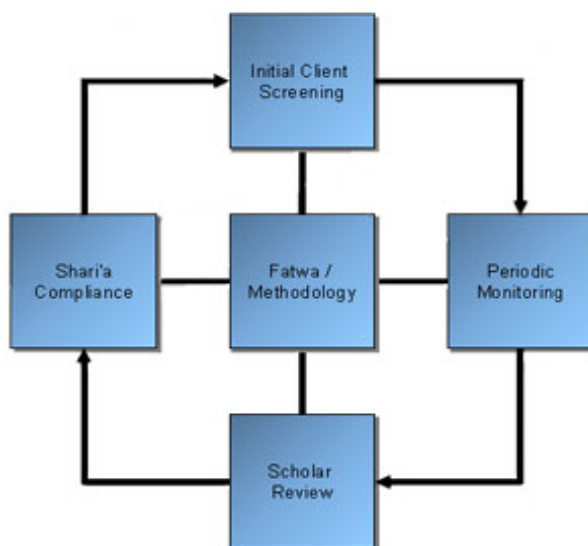


Figure 2.2: Mechanism for products development in Islamic finance.

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2.3 Sources of Islamic Law (Shariah)

Islamic Law (Shariah) is based on primary sources (e.g. Quran and Sunnah) and also on secondary sources (e.g. Ijma, Qiyas, Ijtihad and Rai). These sources are briefly presented below [6] and [51]:

2.3.1 Primary Sources

1. Quran (the holy book of Muslims): The sacred writings and teachings of Islam revealed by God to the prophet Muhammad (PBUH) during his life. Quran is considered to be the central religious text of Islam.
2. Sunnah (statements & practices of prophet Mohammed [PBUH]): The prophet Muhammad's way of life viewed and prescribed as a model for Muslims; recorded in the so-called "Hadiths". These could be teachings and practices of the prophet Muhammad and also interpretations of the holy Quran.

2.3.2 Secondary Sources

1. Ijma (consensus of the scholars): A consensus or agreement of opinions by the community of Muslims (or followers of Islam) related to interpretation of the Shariah.
2. Qiyas (drawing analogy from Quran and Sunnah): A derivation of the law by analogical reasoning of an existing rule of the Quran and Sunnah. The aim of this analogy is to extend the given rule to a new case, on grounds of an effective cause that is common to both the new and the original cases.
3. Ijtihad (scholar's own interpretation): The effort and personal judgment applied to the Shariah by a qualified Islamic jurist to interpret or reinterpret sources of Islamic law in cases where no clear directives and interpretations exist.
4. Rai (expert private interpretation): A personal opinion in adapting Shariah law often used in contradistinction to a clear injunction/command (i.e. an explicit and known textual ruling).

2.3.3 Some Principles

In the case where the rule is not straightforward stated by the primary and secondary sources, there are some principles which are commonly used in deducing the right Islamic Judgement/Verdict. These principles are as follows [6] and [51]:

1. Istihsan (juristic preference): The Judicial preference for one possible legal outcome (or analogy) of Islamic law over another, often in view of public interest (i.e. considerations of human welfare are so demanding).
2. Istislah (seeking the good for public interest): The object and purpose of Islamic law for which Muslim jurists seek the best solution for confusing or puzzling problems that find no clear answer in sacred religious texts in order to serve the general interest of the Muslim community.

3. Urf (custom): A knowledge or generally accepted practice of a given society that is used as a way or a source of Shariah ruling when there is no explicit primary texts of the Quran and Sunnah specifying the ruling. Obviously it becomes part of Islamic law if it does not violate any condition of Shariah.
4. Darura (necessity): A necessity or emergency that makes unlawful things lawful. This is an exceptional condition in which some aspects of Shariah may be suspended in order to preserve life, or to assure safety of human welfare.

2.4 Product Development and Shariah Issues in Islamic Banking

New products and service innovations in Islamic banking require an approval from a Shariah committee in order to be released in the market. However, there is an absence of a uniform and unique interpretation of Islamic law; especially when the ruling is not straightforward stated in the primary sources of Shariah (i.e. Quran and Sunnah). As a consequence, what is viewed as a permissible activity varies from one scholar to another, from one location to another, and also from one time to another. Therefore, many product development and Shariah issues in Islamic banking arise. The followings are some of these issues with suggested recommendations to solve them:

1. Diversity in Shariah opinion exists due to diversity in jurisprudence (also known as "Fiqh") rulings. One way to overcome this problem is by standardizing the processes involved in advising, supervising, and monitoring Shariah compatibility which should also include how a ruling is determined. This allows all participants in the system to understand the basis on which decisions have been reached. In addition, it provides Islamic bankers with a way of differentiating themselves vis-à-vis competitors in terms of the Islamicity or purity of their activities. See [13]
2. Different scholars' views on the topic of commodity futures, but in general, it is considered to be forbidden with a proof from Sunnah in which one Hadith says "*Do not sell what is not with you*". Such

verdict let Islamic financial institutions to lose the potential benefits of futures trading for hedging and other lawful purposes. A possible solution which has already been done by some scholars is to study and investigate the legitimacy of futures under Islamic law on the following five grounds:

- (a) The goods do not exist at the time of contract.
- (b) The goods are not owned at the contract date.
- (c) There is no physical delivery (in most cases), with open positions invariably closed out.
- (d) Deferment in the transaction is tantamount to the sale of one debt for another.
- (e) Futures involve speculation.

Consequently, their conclusions recommend that commodities futures transactions should be ruled as valid, on the grounds that they are not in violation of any Shariah principle (i.e. free of interest (Riba), gambling (Maysir), and excessive speculation (Gharar), all of which are prohibited activities). See [28]

3. In general, the validity of combining contracts is not an issue under Islamic law because of the freedom of contracting in Shariah as a general principle. However, the nature of the contracts involved might be an issue. Therefore, each component of a hybrid structure has to be examined to identify the possibility of a prohibited feature existing, while the overall combination needs to be assessed on the basis of terminology, objectives, and the degree of uncertainty and ambiguity. This assures that the search for competitive financial products in global finance should not undermine the purpose and principles of Islamic law. See [5].
4. The Islamic insurance (Takaful) industry as a whole has not obtained a market presence like other products in Islamic banking and finance; despite of being an important part of the Islamic financial system. One reason behind the slow growth of Takaful is that the concept of Takaful is not widely understood. In addition, the nature of the operations of Takaful companies as a topic has been relatively neglected compared

with Islamic banking. Moreover, the idea of insurance business with its emphasis on uncertainties and risk of loss does not appear to conform well to the Islamic ethic. Therefore, many types of insurance have long been disliked within the Muslim community. In order to solve this problem and hence achieve the vision of having a strong Takaful market, the business models that have been employed in the industry needs to be improved, and also the models used in the conventional system can be adjusted to be Shariah-compliant. This urges the need for a closer dialogue between the Shariah scholars and the industry practitioners to work on the unresolved problems. See [1].

2.5 Conclusion

This chapter discussed briefly the phases included in the development of new products in Islamic banking which are Identifying Shariah Options, Finalizing Shariah Structure, and Reviewing Legal Documentation. All these phases require a comprehensive knowledge in the sources of Islamic law (Shariah) in order to make sure that all the activities associated with each phase are done according to Shariah. The sources of Islamic law are divided into primary and secondary sources; and there are many principles used to deduce the right Islamic judgement in case the rule is not stated directly and clearly in any of the sources. The overall product development and shariah compliance in Islamic banking have many issues, such as diversity in Shariah opinion and different scholars' views on different topics involved in the development process.

Chapter 3

Islamic-Banking Products

3.1 Introduction

Almost all Islamic-banking products nowadays have very similar concepts that exist in conventional-banking products, but they differ mainly in the principles used. Therefore, many special types of financial instruments and depository accounts allow Islamic financial institutions to engage and involve in some conventional-banking activities. In general, any risk-bearing instrument reflecting a real asset and earning a variable rate of return which is relatively tied to the performance of the asset is considered to be applicable and consistent with Islamic law. In addition, the use of financial instruments with returns specified before investment is not permitted, but sharing of the returns by the agreed formula after the fact (i.e. an event that has occurred) is acceptable. For instance, some financial activities may have some sort of generated rate of return that could be created by the purchase and resale of the trading goods at trading margins influenced by standard practices or competitions in the market [23]. In this chapter, we discuss some of the common Islamic-banking products in terms of financing, deposit and insurance.

This chapter consists of the following sections; §3.2 Financing Products, §3.3 Deposit Products, §3.4 Insurance Products, §3.5 Different Characteristics Between Islamic and Conventional Banks, and §3.6 Conclusion.

3.2 Financing Products

Similar to conventional banking, several financing products and instruments also exist in Islamic banking. In fact, there is a high similarity in the concept since most of the products in Islamic finance are modified conventional products to make them Shariah-compliant. Some of the common financing products used in Islamic finance are briefly presented below:

1. Bai Muajjal (deferred-payment sale): A contract between Islamic bank (seller) and client (buyer) under which the seller can sell a product purchased per order and specification of the buyer on the basis of a deferred payment in installments or in a lump sum payment. The price of the product is agreed between the buyer and the seller at the time of the sale and cannot include any charge for deferring payments [23].
2. Ijarah (leasing): A leasing agreement between Islamic bank (lessor) and a customer (lessee) in which the item, building, or other facility bought by the lessor is rented out to the lessee and for specific period and agreed leasing amount. In case of leasing-purchase agreement (i.e. Ijarah wa Iqtina), the ownership of the leasing good is transferred to the lessee by the end of the rental period (see Figure 3.1). As an example of such product is leasing a car or apartment [23].

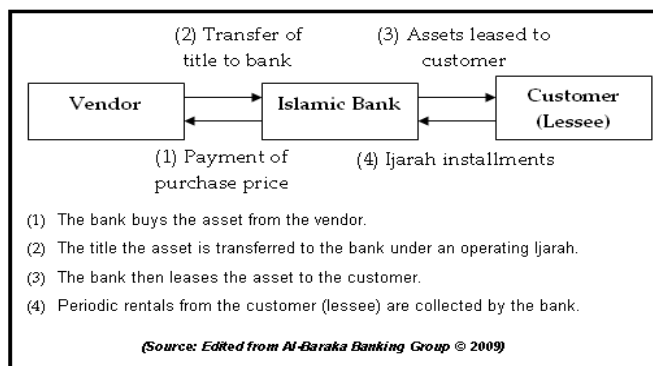


Figure 3.1: Ijarah Framework

- Istisnaa (manufacturing contract): A contract of exchange/sale with deferred delivery (i.e. a commodity is transacted before it comes into existence). The Islamic bank orders a commodity required for a manufacturing project according to the choice of the client and delivers it to him. The client agrees in return to pay the upon-agreed amount in installments at specified dates. Note that Istisnaa differs from Ijarah in that the manufacturer must procure his own raw materials (see Figure 3.2). For example in construction projects [23].

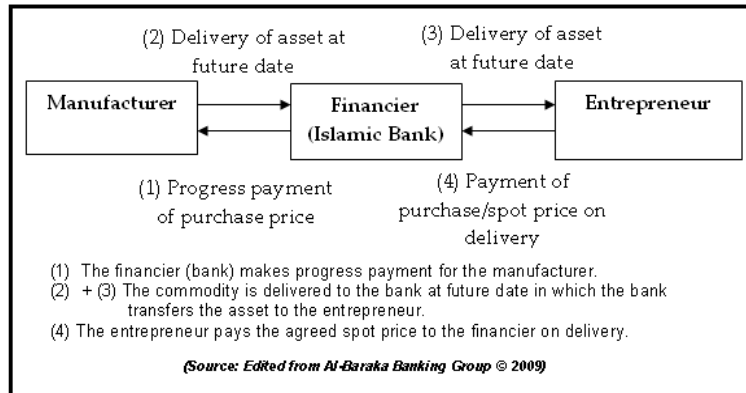


Figure 3.2: Istisnaa Framework

- Mudarabah (profit sharing): A contract between Islamic bank and entrepreneur (investor) under which the bank provides the entire capital needed for financing a project, while the entrepreneur offers his labor and expertise. The profits (or losses) from the project are shared between the bank and the entrepreneur at a certain fixed ratio. Financial losses are borne exclusively by the bank. The liability of the entrepreneur is limited only to his time and efforts. However, the entrepreneur may be held responsible for the financial losses incurred; if his negligence or mismanagement can be proven (see Figure 3.3). For example in investment projects [30].

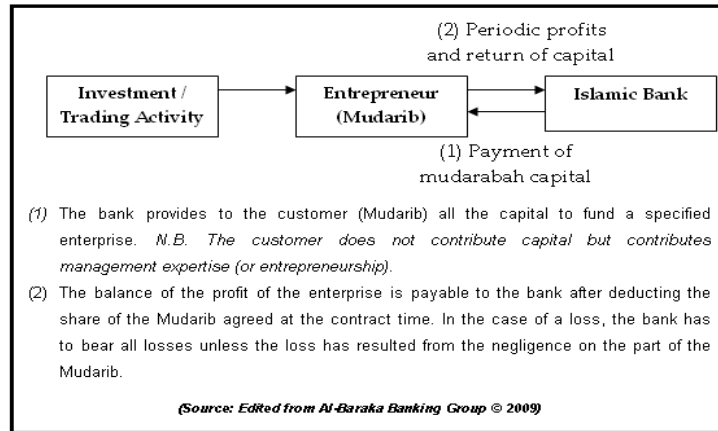


Figure 3.3: Mudarabah Framework

5. Murabahah (cost plus mark-up): A contract between Islamic bank (seller) and client (buyer) under which the seller informs the buyer of his cost of acquiring or producing a specified product as well as the agreed profit margin (or mark-up). The total cost is usually paid in installments and the profit can be either a percentage of the product cost or a fixed sum (see Figure 3.4). Real estate and retail personal-financing are examples of such contract [30].

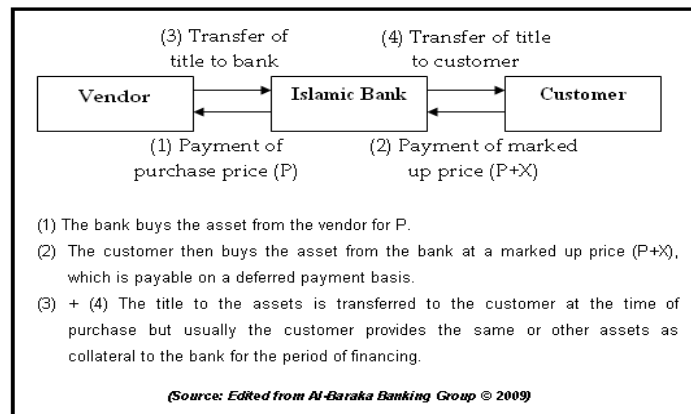


Figure 3.4: Murabahah Framework

6. Musharakah (joint venture): An agreement between Islamic bank and one or more partners (e.g. banks, entrepreneurs) in which they all contribute to the joint capital of an investment. Profits (and losses) are shared strictly in relation to the respective capital contributions (i.e. participation ratios) [30]. (see Figure 3.5).

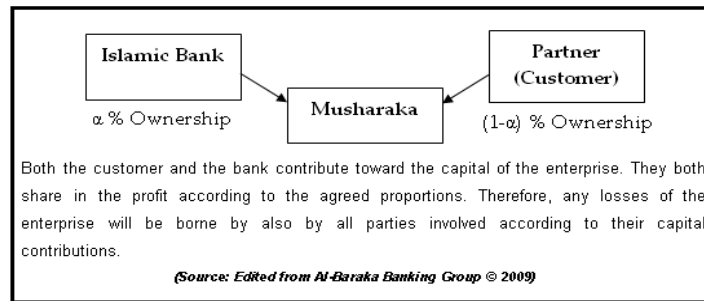


Figure 3.5: Musharakah Framework

7. Qard Hasan (benevolent loan): A return-free loan that is made to needy individuals or for some social purposes. However, Islamic banks are allowed to charge the borrowers a service fee to cover the administrative expenses of handling the loan, provided that the fee is not related to the amount or maturity of the loan (see Figure 3.6). For example a wedding loan [23].

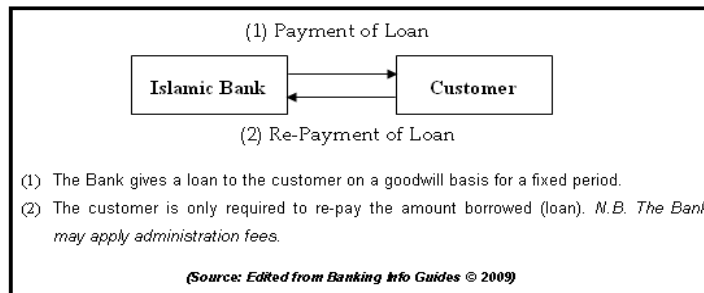


Figure 3.6: Qard-Hasan Framework

8. Salam/Salaf (deferred-delivery purchase/forward sale): A contract of purchase with deferred delivery (i.e. a commodity is transacted before it comes into existence). The Islamic bank orders a commodity with specified quality and quantity according to the choice of the client and makes full prepayments to the seller for future delivery on a specified date. The client agrees in return to pay the upon-agreed amount in installments at specified dates [34]. This only applies to products whose quality and quantity can be fully specified at the time the contract is made (see Figure 3.7). Note that Salam differs from Istisnaa by the followings:

- (a) the subject matter of the contract is not always a made-to-order item.
- (b) the delivery date needs to be fixed in advance.
- (c) full advance payment is required.
- (d) the istisnaa contract can be cancelled but only before the seller starts manufacturing the agreed item(s).

As an example of such contract is its use in agricultural products.

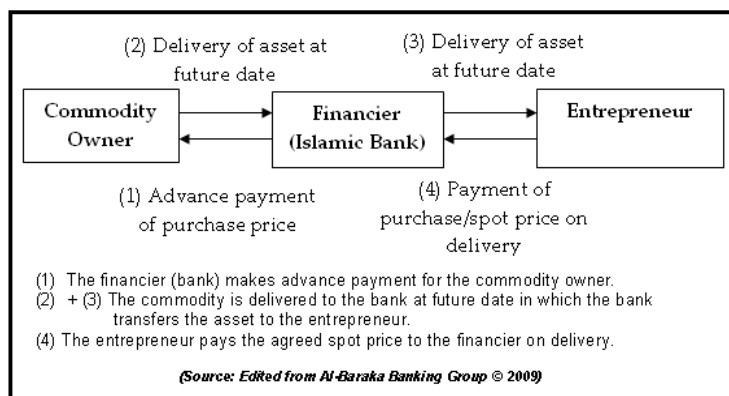


Figure 3.7: Salam Framework

9. Sukuk (Islamic bond): An Islamic financial certificate which has similar characteristics to that of a conventional bond with the key difference being that they are asset-backed. Therefore, any Sukuk represents proportionate beneficial ownership in the underlying asset. The asset will be leased to the client to yield the return on the Sukuk [7]. Sukuk can be structured alongside different techniques (see Figure 3.8). While a conventional bond is a promise to repay a loan, Sukuk constitutes partial ownership in a debt (Sukuk Murabaha), asset (Sukuk Al Ijara), project (Sukuk Al Istisna), business (Sukuk Al Musharaka), or investment (Sukuk Al Istithmar).

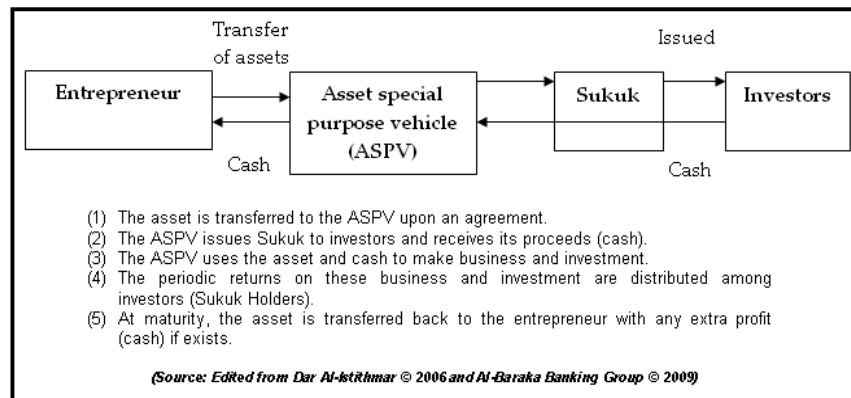


Figure 3.8: Sukuk Framework

3.3 Deposit Products:

In addition to financing products, many depositing products and instruments also exist in Islamic banking. These products share almost the same concept with similar conventional products, but they differ in principle. That is why most of the products in Islamic finance are modified conventional products to make them Shariah compliant. Some of the common depositing products offered under Islamic finance are as follows:

1. Mudarabah (profit sharing): A contract between Islamic bank and investors under which the bank as a silent partner, invests the deposits in a commercial activity that earns both the bank and investors an agreed-upon portion of the profits on the venture. Financial losses are borne exclusively by the investors who provide the capital [30]. Saving account is an example.
2. Qard Hasan (benevolent loan): Zero-return conventional deposit and transfer accounts for safekeeping and transferable checking. These deposits are usually considered part of the resources of the Islamic bank. However, the bank is required to guarantee the face value (principal) of the deposits [23]. Current account is an example.
3. Wadiah (safekeeping): An agreement between Islamic bank and clients under which the bank plays a role as a keeper and trustee of the funds. The bank has to guarantee the entire amount of deposits. Under this agreement, the bank might pay Hibah (gift) to the depositors as an appreciation for the use of the deposits by the bank. However, this gift is not considered as an interest (Riba) because the bank does not officially guarantee to pay out the gift [14]. (see Figure 3.9). Current account is also an example of such product.

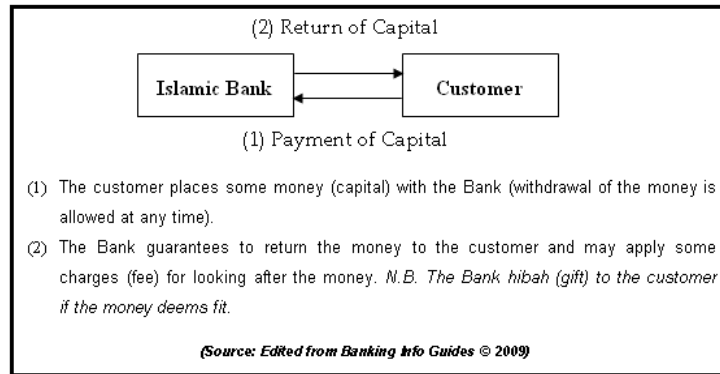


Figure 3.9: Wadiah Framework

4. Wakalah (agency contract): A contract between Islamic bank (agency) and investor, which usually includes in its terms a fee for the expertise of the agent. The investor owns the capital invested, and appoints the bank as his agent and pays a fee for the agent expertise [14]. (see figure 3.10). As an example: Investment Deposit.

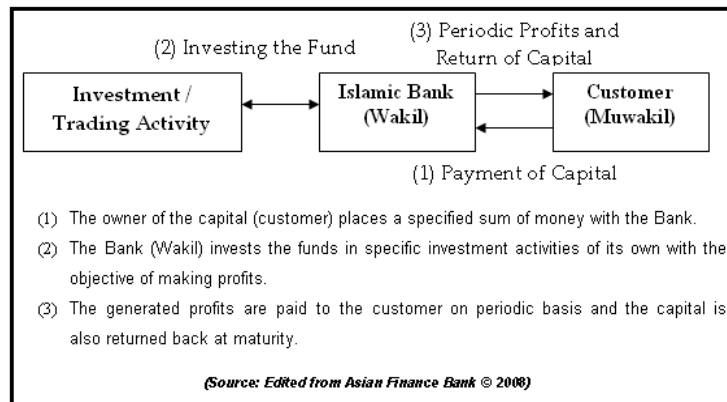


Figure 3.10: Wakalah Framework

3.4 Insurance Products:

There are three types of insurance products in Islamic finance which are Takaful, Tadamun, and re-Takaful. Takaful is the most widely used nowadays since it is the primary product in Islamic insurance. However, the idea of Tadamun and re-Takaful is derived from the concept of Takaful which can be implemented in three ways: Mudharabah Model, Wakalah Model, or Combination of both.

Takaful (Islamic insurance): A cooperative agreement between Islamic bank (insurer) and clients (insured) under which the insurer financially protects the insured participants from unexpected future risks and losses. The insured participants pay the upon-agreed amount as a contribution (premium) to the insurer throughout the agreement period. However, if no losses occurred to the insured participants during that period, then they are eligible to get back all the paid-premiums as well as part of the profits made by the insurer for using that cumulated paid-premiums under the principle of Mudarabah. The key difference from conventional insurance is that the surplus/profit generated in the policyholders' fund of the Takaful arrangement belongs only to the policyholders, not to the shareholders. In addition, the risk is shared among the policyholders in Takaful, while the risk in conventional insurance is passed from the policyholder to the insurer in exchange for the payment of a premium (see Figure 3.11). Life and car insurances are examples of such product [31].

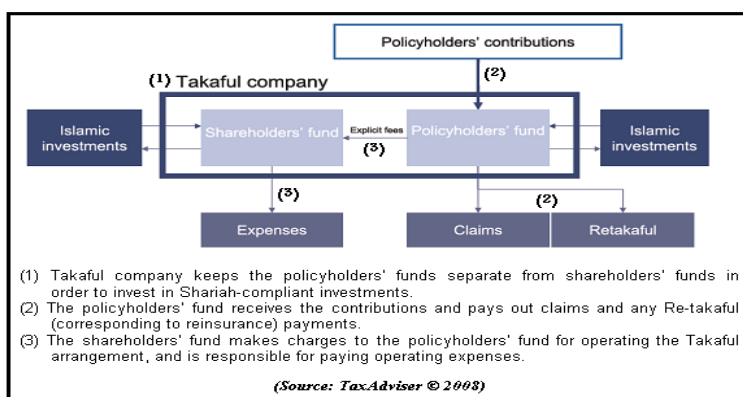


Figure 3.11: Takaful Framework

3.5 Different Characteristics between Islamic and Conventional Banks

From the explanations of the different products available in Islamic Banking, we can distinguish briefly the difference in some features of Islamic and conventional banks as shown in the following table [47]:

Features	Conventional Banking	Islamic Banking
Guarantee of the capital value of: - Demand deposits - Investment deposits	Yes Yes	Yes No
Rate of return on deposits	Certain and guaranteed.	Uncertain, not guaranteed for investment deposits. Demand deposits are never remunerated or compensated.
Mechanism to regulate final returns on deposits	Irrespective of bank performance/profits from investment.	Depending on bank performance/profits from investment.
Profit-and-loss (PLS) principle applies	No	Yes
Use of Islamic modes of financing: - PLS and non-PLS modes	Non-applicable	Yes
Use of discretion by banks with regard to collateral	Yes, always.	Generally not allowed to reduce credit risk in PLS modes. By way of exception, may be allowed to lessen moral hazard in PLS modes. Allowed in non-PLS modes.

Table 3.1: Different Features between Islamic and Conventional Banks

3.6 Conclusion

This chapter presented the different types of products in Islamic finance which are financing, deposit and insurance products. Almost all the products under each type share many similarities with conventional products especially in the concept, but they differ in principles since all products in Islamic finance must be Shariah-compliant. Therefore, the majority of Islamic products were originally conventional products that have been modified to make them Shariah-compliant. However, there are many differences between Islamic and conventional products, such as sharing risk and profit, the base of each one (i.e. asset or currency), and the business activities involved in each banking system (e.g. interest and speculation).

Chapter 4

Pricing of Islamic Financial Products

4.1 Introduction

Pricing of financial products according to Islamic rules is an open game settled by the forces of demand and supply (i.e. no restrictions on fixing prices or profit margins for traders). Therefore, the competitive price mechanism is allowed to balance the demand and supply of products and services in order to achieve the highest level of society benefits & economic justice as well as the best allocation of resources. As a consequence, traders may use different methods for pricing the products. However, all this has to be done deliberately with honesty in dealing and transparency in features or qualities of the products. For example, almost all Islamic financial institutions use the conventional interest-based benchmarks like the London Inter-Bank Offered Rate (LIBOR) as the reference for pricing their products (normally a "mark-up" over the benchmarked interest). On one hand, this gives Islamic Banks the advantage of competing with their conventional peers. On the other hand, it raises the doubt that there is actually no difference between Islamic banking products and the conventional banking products since they both use the same interest-based benchmark [6].

This chapter consists of the following sections; §4.2 Pricing of Shares, §4.3 Pricing of Sukuk, §4.4 Alternative Pricing Method, §4.5 Equity Premium Puzzle, and §4.6 Conclusion.

4.2 Pricing of Shares

According to Bahrain Monetary Agency (BMA)¹, Islamic financial institutions employ different methods and techniques for pricing the shares of funds they own and manage. Consequently, they use different formulas taking into account many variables/factors which are as follow:

1. Value of the fund's assets.
2. Opportunity cost (as stated by profitability ratios).
3. Duration of the fund.
4. Remaining period of the fund.
5. Other relevant variables/factors.

The most common and relevant variables/factors that are taken into consideration when pricing financial products are costs and risks. Pricing the costs and risks is quite a complicated process since a detailed analysis or evaluation has to be done accurately and comprehensively. For instance, the following list indicates some forms of cost and risk which can be identified [10]:

- Accounting: How do Islamic Banks gain the true/realized return on a profit-sharing investment? (Avoiding Taxes or Underestimating Profits).
- Competitive risks: Is it easy for competitors to copy a new product introduced by an Islamic Bank? (Copy Right or Intellectual Property).
- Country: What is the status of most Islamic environments/clients? (Emerging Markets or Politically Unstable Zones).
- Liquidity: How do Islamic Banks realize their assets to meet demands from investors? (Commodity or Price Stability).

¹The Bahrain Monetary Agency (BMA) is part of the Central Bank of Bahrain (CBB) which is the controller and regulator of the entire banking and finance industry in the Kingdom of Bahrain.

BMA: <http://www.bma.gov.bh/>

CBB: <http://www.cbb.gov.bh/>

- Operational: Are the internal controls adequate? (Revenues or Overheads).
- Shariah: Could the transactions be deemed Haram (forbidden) after initially deemed Halal (permissible)? (Principles' Change or Scholars' Paradox).

Since the regulations do not specify any specific pricing system, every financial institution has the power of accepting one or more different pricing models for Islamic collective investment schemes. For example, Bahrain Stock Exchange (BSE)² indicates that the indexing methodology used in creating the different indices which include Islamic and conventional shares and stocks is as follows:

$$Index\ Value = \left(\frac{Market\ Capitalization}{Base\ Value} \right) \cdot Multiplier$$

Where:

- *Index Value*: The comprehensive and averaged value of all underlying assets (stocks) embedded in the index.
- *Market Capitalization*: The total current market capitalization (book value) of all assets in the index.
- *Base Value*: The total base-period market capitalization (market value) of all assets in the index.
- *Multiplier*: A factor/constant used to balance or adjust the index value.

N.B. The BSE uses value-weighted price/return in the calculation of indices as well as a multiplier of 1000. In addition, it should also be noted that financial institutions may use LIBOR in the determination of the dividends amount for their shares and stocks.

²Bahrain Stock Exchanges (BSE): <http://www.bahrainstock.com/>

4.3 Pricing of Sukuk

Since no standard or universal method for pricing Islamic financial product is available, we try in this section to give an overview of how pricing of Sukuk is done in practice through a case study on "Tabreed 06 Sukuk" [29].

Accounting and Auditing Organisation for Islamic Financial Institutions (AAOIFI) Standard 17 defines Investment Sukuk as being:

"Certificates of equal value representing after closing subscription, receipt of the value of the certificates and putting it to use as planned, common title to shares and rights in tangible assets, usufructs and services, or equity of a given project or equity of a special investment activity".

Tabreed, also known as National Central Cooling Company (PJSC), is the Abu Dhabi (UAE) based district cooling company. The areas of target are residential, commercial and industrial entities. Although Tabreed initiated in the UAE, it has recently become a multinational company with branches all over the GCC countries. On July 20th, 2006, Tabreed priced and issued Trust Certificates (floating rate notes) named "Tabreed 06 Sukuk" which has the following facts³:

Certificates Amount	US\$200,000,000
Issuer (SPV)	Tabreed 06 Financing Corporation
Issue Date	July 2006
Expiry Date	July 2011
Issue Price	100% of the certificates amount
Duration	5 years
Rating	(BBB-/Stable/-) by S&P
Periodic Payments	Semi-annually (every 6 months)

Table 4.1: Overview of Tabreed 06 Sukuk

³Available in the prospectus of Tabreed 06 Financing Corporation.

Website: <http://www.londonstockexchange.com/specialist-issuers/islamic/tabreed06-prospectus.pdf>

The interesting feature of "Tabreed 06 Sukuk" is that it is classed as Hybrid Sukuk which is considered to be an innovative approach in creating Sukuk; since it incorporates two types of Sukuk (Istisnaa and Ijarah) in its structure as shown in Figure 4.1 [29]:

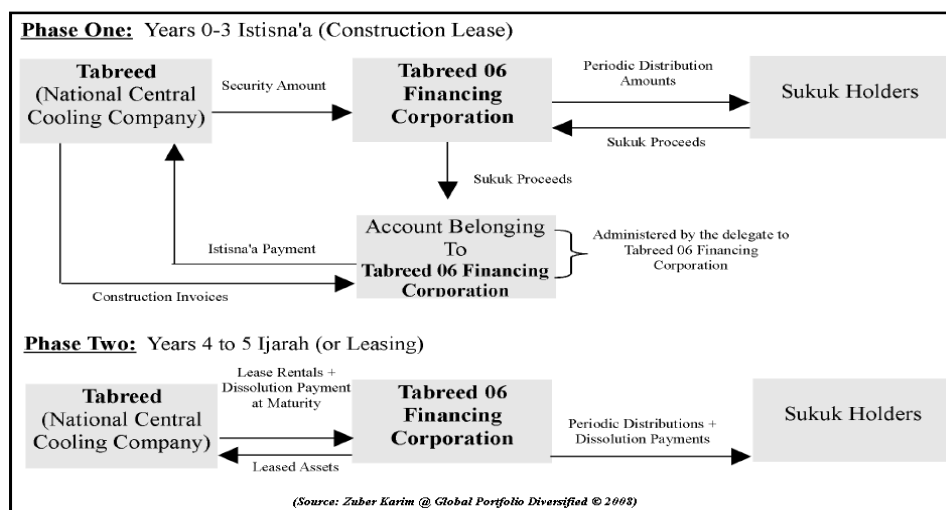


Figure 4.1: Tabreed 06 Sukuk

As shown in the diagram, "Tabreed 06 Sukuk" consists of two phases which are as follow:

- **Phase One: Istisnaa (Construction) Agreement [Years 0 to 3]:**

1. Sukuk holders forward their proceeds to the SPV (Tabreed 06).
2. These proceeds are placed into an account administrated by the SPV.
3. The SPV forwards the proceeds to (Tabreed) as Istisna payment.
4. Tabreed as a contractor pays fixed security amounts to the SPV on the date of periodic payments until the completion of the plants.
5. The SPV pays periodic payments to the Sukuk holders from proceeds received from (Tabreed) through Istisna agreement.

N.B. At the end of the Istisnaa agreement, the SPV buys the plants from (Tabreed) in order to enter the second phase of "Tabreed 06 Sukuk".

• **Phase Two: Ijarah (Leasing) Agreement [Years 4 to 5]:**

1. The SPV (Tabreed 06) leases the plants to (Tabreed).
2. (Tabreed) pays rental amounts to the SPV through Ijarah agreement.
3. The SPV pays periodic payments to the Sukuk Holders.

N.B. At the end of the Ijara agreement, (Tabreed) pays a dissolution payment to the Sukuk Holders via the SPV which in return transfers the ownership of the leased assets (the plants) to (Tabreed) at the maturity of "Tabreed 06 Sukuk".

The periodic payments and the rental amounts which are paid to the Sukuk Holders and the SPV respectively can be calculated by the following formula:

$$\frac{A(L + M)D}{360}$$

where:

A: The issue price or principal amount (US\$200,000,000).

L: LIBOR for the return accumulation period (6-months).

M: Margin (1.25% per annum).

D: Number of days in return accumulation period (180 days).

At maturity, the periodic payments and the rental amounts are calculated by almost the same formula except that amortisation (dissolution) payment is added to it as follows:

$$\text{Amortisation Payment} + \frac{A(L + M)D}{360}$$

4.4 Alternative Pricing Method

Pricing method or strategy is a powerful and crucial technique in marketing, simply because it determines how products and services are priced. Therefore, it can be used to improve the overall competitiveness of financial institutions; especially the Islamic ones since interests are not allowed. However, many researches have found that the majority of customers do not use religion as the main factor when establishing a relationship with Islamic banks, yet they complain that financing from Islamic banks is more expensive than loans given by the conventional banks [18].

As mentioned earlier, the use of conventional interest benchmarks (e.g. LIBOR) as the reference for pricing in Islamic finance raises the doubt that there is actually no difference between Islamic and conventional banks since they both use the same interest based benchmarks. Therefore, we try to briefly suggest an alternative method of pricing that Islamic banks can use in order to wipe away the doubts as well as to enhance their competitive advantage. The suggested method is called "Hedonic Pricing Model"⁴ which is used to value real assets, such as houses.

The basic idea of the Hedonic Pricing Method is to identify price factors based on the premise that the price of goods or services is determined by both internal and external characteristics. For example, in the housing market, the price of a property is determined by the characteristics of the house (e.g. size, appearance, features, condition) as well as those of the surrounding neighborhood (crime rate, value of other homes, noise, traffic). Regardless where the method is used, the Hedonic Pricing Model provides an estimate of the extent to which each factor affects the price. (i.e. the price is rated low or high relative to the direct and indirect features of the product or service). When comparisons of price change are measured over time, a determination is made whether these changes represent low or high prices relative to the previous reporting period [42].

⁴Hedonic Pricing Models are discussed by Stephen Malpezzi in his paper "Hedonic Pricing Models: A Selective and Applied Review".

Available on: <http://www.omega-analytics.com/download/Hedonistic%20Model.pdf>

4.5 Equity Premium Puzzle (EPP)

As mentioned earlier, the valuation and pricing of an asset involve the consideration of the different variables which have serious effects on the returns of the asset. The most common variables used are the time and the risk of the asset's payments since almost all asset pricing formulas take those two variables into account. However, the effects of risk are much more difficult to work out in comparison with the effects of time; because the amount and level of risk cannot be accurately quantified despite of its great importance in determining the value of many assets. For example, U.S. stocks have given a real return of about 9% on average over the last 50 years. Of this, only about 1% is due to interest rates; the remaining 8% is a premium (i.e. the excess return generated by risky assets over risk-free rate) earned for holding risk [9]. The question is whether or not this premium is reasonable in comparison with the associated risk or uncertainty?

4.5.1 The Puzzle

It is well-known that stocks and other equity-based financial assets are riskier than bonds. Therefore, it should be logical that the expected returns on the riskier assets (e.g. stocks) must be higher than those for the risk-less securities (e.g. bonds). But how big should the equity premium be in this case? Standard economics and finance theories suggest that stockholders should receive perhaps an extra 1% return from stocks over bonds as a compensation for holding larger risk associated with equity investing [46]. However, in 1985, Mehra and Prescott realized in their study that the equity premium obtained from the investigation of the US market (both stocks and bonds) in the period 1889-1978 was too large and beyond expectations. They found that over a ninety-year data, the average mean on the S&P 500 Index was 7%, while the average mean on the US government bonds was almost 1%. Consequently, the equity premium in this case is 6% which considered to be quite big; and this what made Mehra and Prescott to declare this phenomenon as a puzzle [36]. They failed to solve the puzzle through a standard general equilibrium model in which the utility function of consumption in any year does not depend on the other utility functions, but they are additive. In addition, the model has a constant representing the relative risk aversion which can be interpreted as if consumption falls by 1%, then the marginal value of 1 dollar of income by an amount equals to the percentage of the

risk aversion coefficient [46]. In order to illustrate the puzzle, we present the findings of John H. Cochrane [8] and [9] in Figure 4.2 as follows:

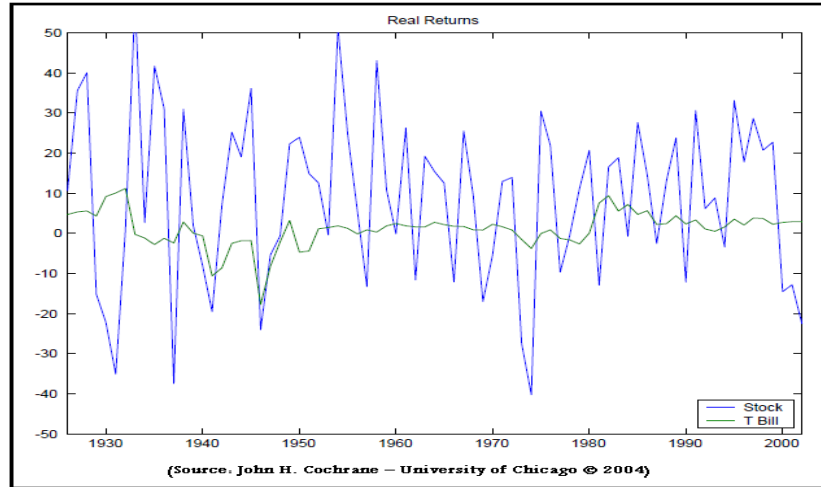


Figure 4.2: Historical Returns of US Market (Stocks and Bonds) in the Period 1927-2002

Cochrane⁵ in his study on the same topic in the period 1927-2002 has found the following results [8]:

US Market (1927-2002)	Stock	Bond	Equity Premium
Mean (%)	8.6	1.1	7.5
Standard Deviation (%)	25.2	4.4	20.8

Table 4.2: Overview of the US Market in the Period 1927-2002

The question is why an equity premium of about 6% or 7% in this case is considered to be too big? Is it just because the standard theory does not hold such result? Do stocks really have very low prices? If so, then why do not investors mainly invest in stocks rather than bonds? By doing so, the returns from stocks would fall down which leads to a reduction in the equity premium.

⁵John H. Cochrane is a Professor of Finance at the School of Business, University of Chicago Booth, USA.

4.5.2 Attempts to Solve The Puzzle

Throughout the past twenty-five years since the equity premium of the US market was officially declared a puzzle, no one to date has been able to solve the mystery behind that puzzle. However, we give an overview of the different attempts to see how economists tried to tackle the problem.

Jeremy Siegel (1992) in a study titled "*The Equity Premium: Stock and Bond Returns Since 1802*" [45] extends the data representing the real returns of the US stocks and bonds back to 1802. He divides the sample period into 3 sub-periods: the early period of US development (1802-1871); the middle period of higher-quality data on stock and bond returns (1872-1925); and the last period (1926 to the present). He finds that the returns on stocks did not exceed those on bonds by the same magnitude they did in most recent data. For example, the returns on bonds have fallen in a dramatic way from 5.4% in the 1st-period to 0.7% in the 3rd-period, while the returns on stocks have risen slightly from 8.3% in the 1st-period to 8.8% in the 3rd-period. As a result, the equity premium for the entire sample period is found to be 5.3% which is less than what Mehra and Prescott (1985) reported by more than 1%. The author concludes that the fall in the real returns on bonds might be due to the high risk of default in the early period followed by the two World Wars after which investors did expect the high inflations of the 1970s; and this what might have slightly reduced the equity premium.

Robert Shiller (1999) in paper titled "*Human Behavior and the Efficiency of the Financial System*" [44] wonders why people invest at all in debt if it is so outperformed by stocks?! He further argues that the attempts to explain the puzzle by utilizing the increased riskiness of stocks relative to bonds are not satisfactory in principle. Simply because over long periods of time, it was found that long-term bonds (payoffs of which are fixed in nominal terms) have been more risky than stocks in real terms; since the consumer price index has been very volatile for a long period of time. The author indicates that the best explanation of the puzzle to date which agrees with experimental evidence on individual choice in selecting portfolios seems to be a combination of loss aversion and myopia (excessive discounting of the distant future) [11].

Fatih Guvenen (2003) in a study titled "*A Parsimonious Macroeconomic Model for Asset Pricing: Habit Formation or Cross-sectional Heterogeneity?*" [16] asks if the equity premium can be explained in a parsimonious macroeconomic model with two key features: limited participation in the stock market and heterogeneity in the Elasticity of Intertemporal Substitution in consumption (EIS). He shows empirically that a small portion of the economy's participants hold significant level of equities; especially in the pre-1990s time period. He also indicates empirically that stockholders have a higher EIS than non-stockholders; which means that as interest rates rise, the stockholders are more willing than the non-stockholders to put off and delay buying. Therefore, the bond holders insure themselves against potential collapse in their consumption by shifting risk to the stockholders who demand a high premium for holding volatile equities, selling risk-free bonds and enduring the volatility of business cycle.

4.5.3 Implications of the Puzzle in Islamic Finance

It is quite difficult to show whether or not the equity premium exists in Islamic finance, and if it exists, is it too big as in the case of the US market? This uncertainty is due to the principle of Profit and Loss Sharing (PLS) used in Islamic finance. In addition, it is well-known that the nature of the different risks (e.g. liquidity and credit) involved in any investment affect the overall profitability of that investment. However, the effects of those risks on Islamic investments are less than those on conventional ones due to the relative risk-sharing principle. For example, liquidity risk should not be existed in Islamic investments since the debt to equity ratio must be very low according to the Islamic law. Moreover, the freedom of using collaterals throughout the investment period in order to reduce credit risk is generally not allowed in Islamic finance [47].

Let us assume that the equity premium exists in Islamic finance and there are excessive returns on equities over debts. Then this equity premium would very low since the equity-based investments increase the overall risk of making returns of investments uncertain; and this is forbidden in Islam as it involves Gharar (excessive risk and speculation) [11]. Therefore, the amount of returns from such investments would be low as the allowable level of risk is very low; and this might explain why Islamic agents do not usually involve themselves in equity-based investments. In contrast, the debt-based

investments decrease the overall risk which makes it very Shariah-complinat. Therefore, the returns of such investment become high enough to the parties involved and that is why Islamic agents intensively invest in debt-based investments [6]. As a result, even if the equity premium exists in Islamic investments, then it would not be as high as what was found in the conventional ones (e.g. the US market).

As mentioned earlier, the equity premium is the difference between the returns from stocks and bonds, and we assume that Sukuk is similar to bonds despite of their technical difference. Having assumed so, we investigate the phenomenon of equity premium further by presenting a simple empirical example, in which, the returns of Dow Jones Islamic Market Index (DJIMI) and Tabreed 06 Sukuk are calculated for 5 years. The historical annual return of DJIMI⁶ in the period 2005-2009 is presented in the table below:

DJIM	2009	2008	2007	2006	2005
Mean (%)	29.12	-50.03	15.13	13.62	8.92
Average Return	3.35%				

Table 4.3: Historical Annual Return of DJIMI in the Period 2005-2009

The average return of DJIMI in the past 5 years is found to be 3.35%. Now let use calculate the returns of Tabreed 06 Sukuk by using the equations mentioned in section 4.3. Since the periodic payments to the Sukuk Holders are paid every 6 months, then we need to know the historical returns of 6-month LIBOR⁷ which are stated in the following table:

⁶The historical prices of DJIMI for the period 03 Jan 2005 to 31 Dec 2009 are quoted in QuoteMedia website: <http://www.quotemedia.com/>

⁷The historical rates of 6-month LIBOR in the period 2005-2009 are quoted in LIBO-RATED website: http://www.liborated.com/historic_libor_rates.asp

6-Month LIBOR	2009	2008	2007	2006	2005
June (%)	1.24	2.91	5.38	5.64	3.69
December (%)	0.49	2.59	4.91	5.37	4.69

Table 4.4: Historical Rates of 6-Month LIBOR in the Period 2005-2009

It should be noted that we assume that Sukuk is issued at the beginning of year 2005, therefore, the periodic payments are due in June and December of each year throughout the contract period which is 5 years. Once the LIBOR is obtained, we calculate the annual return of Tabreed 06 Sukuk bearing in mind that the 6-month margin is 0.625% and the accumulated period of each payment is 180 days. The obtained results are as follow:

Tabreed Sukuk	2009	2008	2007	2006	2005
1st Payment (%)	0.93	1.77	3.00	3.13	2.16
2nd Payment (%)	0.56	1.61	2.77	3.00	2.66
Yearly Total (%)	1.49	3.38	5.77	6.13	4.82
Average Return	4.32%				

Table 4.5: Expected Annual Returns of Tabreed 06 Sukuk in the Period 2005-2009

The average return of Tabreed 06 Sukuk in the past 5 years is found to be 4.32%, therefore, the equity premium in this case is -0.97% (=3.35%-4.32%). The negative premium indicates that investors prefer to invest mainly in Sukuk rather than Stocks. Consequently, this rough example gives an idea of how complex it is in Islamic finance to study the puzzle of equity premium.

According to all the implications mentioned above and much more, it is very clear that the phenomenon of equity premium puzzle is quite hard to be investigated in Islamic finance since there are many known and unknown constraints. However, we may conclude that even if the equity premium is existent within the Islamic investments, then it would not be a puzzle as the returns from equity-based investments may slightly outperform those from debt-based ones.

4.6 Conclusion

This chapter studied the pricing mechanism used in Islamic finance which is the conventional interest-based benchmarks; particularly the London Inter-Bank Offered Rate (LIBOR). Almost all Islamic financial institutions use the LIBOR as the reference for pricing their products (normally a "mark-up" over the benchmarked interest). This pricing method has been investigated in more details through a real case study of "Tabreed 06 Sukuk". In addition, the pricing of shares has been presented including the most common variables usually taken into account to have a competitive price which leads to gain competitive advantages in the market. Last but not least, the puzzle of having historically a large equity premium (excessive returns from stocks over bonds) has been pointed out with the attempts to solve that phenomenon. The story of the puzzle ended with the indication of some implications that make it quite difficult for researchers to study the equity premium within the Islamic finance, such as, the profit-and-loss principle.

Chapter 5

Two Key Islamic Indices

5.1 Introduction

Although there is an increasing attention to Islamic investment; especially after the recent financial crisis, the empirical studies on Islamic indices/funds are still scarce and in its beginning. In this chapter, we examine the performance of Dow Jones Islamic Market Index (DJIMI) and FTSE Shariah All-World Index with the focus on the year 2008 (i.e. the year in which the recent credit crisis took place) by using a number of performance measurement techniques. In addition, we compare these two key Islamic indices with their conventional counterparts indices (i.e. Dow Jones Global Total Stock Market Index and FTSE Global All-Cap Index) in order to investigate the differences in the performance of Islamic indices and their conventional counterparts. We also use the well-known S&P 500 Index as a reference portfolio (market benchmark) for both Islamic indices and their counterparts in order to capture the impact of the changes in the economic conditions on the indices performance.

This chapter is constructed and divided into the following sections; §5.2 Literature Review, §5.3 Dow Jones Islamic Market Index, §5.4 FTSE Shariah All-World Index, §5.5 Performance of the Indices in the 2008 Credit Crisis, §5.6 Comparison with Other Conventional Indices, and §5.7 Conclusion.

5.2 Literature Review

Despite of the growing interest in Islamic investment and finance, the empirical studies on the performance of Islamic mutual funds in the literature are still few and in its beginning. However, we briefly introduce here some of the studies done on the same topic.

M. Kabir Hassan (2002) in a study titled "*Risk, Return and Volatility of Faith-Based Investing: The Case of Dow Jones Islamic Index*" [19] investigates the market efficiency and its relationship with the risk-return of the Dow Jones Islamic Market Index (DJIMI) in the period from 1996 to 2000. Many statistical tests, such as, serial correlation and variance ratio were used; and the findings state that the returns of DJIMI has a significant market efficiency and they are normally distributed. The author also examines the volatility of the DJIMI returns by using a GARCH model; and he concludes that DJIMI has some operational inefficiency which needs to be corrected in order to have a stable risk behaviour over time.

Hakim and Rashidian (2004) in a paper titled "*Risk and Return of Islamic Stock Market Indexes*" [17] test the relationship between DJIMI, Wilshire 5000 index, and 3-month Treasury Bill. The sample period is from 1999 to 2002 and the causality and cointegration analysis were employed. The results show that DJIMI is not correlated with both the Wilshire 5000 index and 3-month T-bill. In addition, DJIMI does not change as a result of changes in either Wilshire 5000 index or 3-month T-bill. The authors conclude that the screening and filtering involved in creating Islamic indices result in an index with a unique risk-returns features which are not influenced by the stock market.

K.A. Hussein (2004) in a study titled "*Ethical Investment: Empirical Evidence from FTSE Islamic Index*" [21] examines the hypothesis that the performance of Islamic indices (i.e. FTSE Global Islamic Index) is significantly different from their counterparts (i.e. FTSE All-World Index) throughout the period 1996-2003. The sample period is divided into two sub-periods: bull period (1996-2000) and bear period (2000-2003). The findings indicate that the Islamic index performs as well as conventional index; and there is a proof that Islamic index achieves abnormal returns in the bull market period, while it underperforms the conventional index in the bear market pe-

riod. The author concludes that FTSE Global Islamic Index does not have crucial privileges in comparison with FTSE All-World Index.

Khaled Hussein (2005) in a paper titled "*Islamic Investment: Evidence from Dow Jones and FTSE Indices*" [22] examines the performance of some Islamic indices (FTSE Global Islamic Index and Dow Jones Islamic Market Index) in comparison with their counterparts (FTSE All-World Index and Dow Jones World Index). The examined period is divided into three sub-periods, 1st bull period (1993-2000), bear period (2000-2002) and 2nd bull period (2002-2004), and a number of well-known performance measurement techniques is used. The author concludes that in general, there is no significant difference in the performance of Islamic investment compared to conventional one.

5.3 Dow Jones Islamic Market Index (DJIMI)

The Dow Jones Islamic Market Index (DJIMI) intends to measure the global pool of investable equities that pass screens for Shariah compliance. Therefore, the purpose of the DJIMI is to provide a definitive standard for measuring stock market performance for Islamic investors on a global basis. The DJIMI applies the Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI) industry and financial screens as follows¹:

Initially, companies with the following business activities (i.e. industry screens) are excluded from the DJIM index:

1. Industry Screens:

- (a) Alcohol.
- (b) Pork-related products.
- (c) Conventional financial services (e.g. banking, insurance, etc.).
- (d) Entertainment (e.g. pornography, casino/gambling, etc.).
- (e) Tobacco.
- (f) Weapons and defense.

¹For more information and details regarding the Islamic Compliance Screens, visit AAOIFI website: <http://www.aaoifi.com/>

After removing the companies which have unacceptable business activities under Islamic rules, the remaining stocks are evaluated according to several financial ratio screens as follows:

2. Financial Ratio Screens:

- (a) $\frac{\text{Total Debt}}{\text{Trailing 24-month Average Market Capitalization}} < 33\%$
(i.e. the amount of debt obliged by the company in comparison to its total asset must be less than 33%)
- (b) $\frac{(\text{Cash} + \text{Interest-Bearing Securities})}{\text{Trailing 24-month Average Market Capitalization}} < 33\%$
(i.e. the amount of cash and other derivative interests owned by the company to its total asset must be less than 33%)
- (c) $\frac{\text{Accounts Receivable}}{\text{Trailing 24-month Average Market Capitalization}} < 33\%$
(i.e. the amount of money owed to the company in comparison with its total asset must be less than 33%)

N.B. The trailing 24-month average market capitalization (i.e. the total asset of a company) is applied to reduce volatility.

The DJIMI consists of many companies from different industries which are: Basic Materials, Consumers Goods, Consumer Services, Financials, Health Care, Industrials, Oil & Gas, Technology, Telecommunications and Utilities².

The real-time stock prices (i.e. closing traded prices and latest available currency rates) of the underlying companies are used in the calculation of the DJIM index. An overview of DJIMI's trend³ throughout the past five years is presented in Figure 5.1:

²Look at Dow Jones Indexes website for further information: <http://www.djindexes.com/>

³The historical prices are for the period 02 Jan 2004 to 18 Dec 2009. The data is quoted in QuoteMedia website: <http://www.quotemedia.com/>

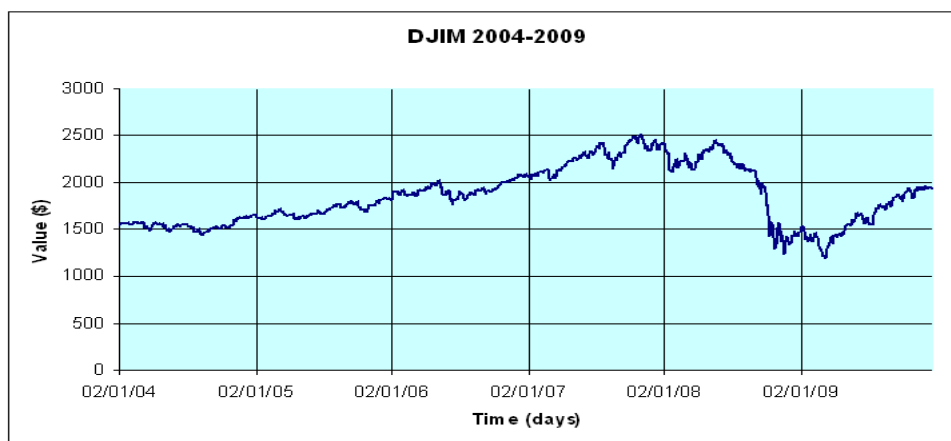


Figure 5.1: Trend of DJIM Index in the period 2004-2009

It is clear from Figure 5.1 that DJIMI was increasing since 2004 until it suddenly declined in a dramatic way in 2008 due to the recent financial crisis. However, it has started to rise again by the beginning of 2009 till now, but the level of recovery is still low in comparison with the index level just before the crisis began. The log-normal returns with some basic statistics for the DJIM index in the period from January 2nd, 2004 to December 18th, 2009 is presented in Figure 5.2:

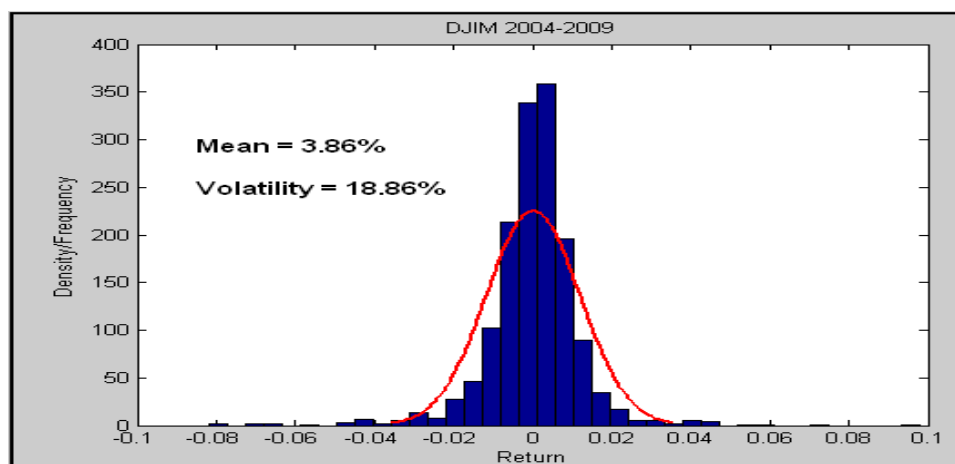


Figure 5.2: Log-Normal returns of DJIM Index in the period 2004-2009

5.4 FTSE Shariah All-World (SAW) Index

The FTSE Shariah All World Index is one of the indices offered by FTSE Group⁴ with the aim to have Shariah-compliant investment products that meet the requirements of Islamic investors globally. The index is designed to represent the performance of the largest and most liquid Shariah-compliant companies based on the FTSE Global Equiy Index Series (GEIS) Large and Mid Cap companies. Using the Large and Mid Cap stocks from the FTSE (GEIS) as a base universe, the companies included in the index series and their components are then screened against a clear set of Shariah principles. Shariah screening is undertaken by Yasaar Research Inc., a wholly owned subsidiary of the leading global Shariah consultancy, Yasaar Limited⁵, to create a Shariah-compliant index.

Initially, the companies involved in any of the forbidden business activities is Islam are filtered out as non Shariah-compliant. After that, the remaining companies are then further screened on a financial basis where some financial ratios have to be met for companies in order to be included in the Shariah index. The screens for business activities and financial ratios are as follows:

1. Business Activity Screens:

- (a) Conventional Finance (non-Islamic Banking, Finance and Insurance, etc.).
- (b) Pork related products and non-halal food production, packaging and processing (or any other activity related to pork and non-halal food).
- (c) Alcohol.
- (d) Tobacco.
- (e) Entertainment (Casinos, Gambling and Pornography).
- (f) Weapons, arms and defence manufacturing.

⁴The FTSE Group is an independent company which originated as a joint venture between the Financial Times and the London Stock Exchange.

⁵The Yasaar Shariah consultancy Ltd. provides Shariah solutions for Banking and Finance. Further details on Yasaar Ltd can be found at: <http://www.yasaar.org/>

2. Financial Ratio Screens:

- (a) Debt is less than 33% of total assets.
- (b) Cash and Interest bearing items are less than 33% of total assets.
- (c) Accounts receivable and cash are less than 50% of total assets.
- (d) Total interest and non-compliant activities income should not exceed 5% of total revenue.

The FTSE Shariah All-World index covers the stocks of many companies around the globe and it is divided into Developed and Emerging segments. The index consists of large and medium companies from different industries and the top 10 constituents of the index are: Exxon Mobil, BP, Total, Chevron (Oil & Gas), Microsoft (Technology), Procter & Gamble (Personal & Household Goods), Johnson & Johnson, Pfizer, Novartis (Health Care), and Coca-Cola (Food & Beverage)⁶.

The real-time stock prices (i.e. closing traded prices and latest available currency rates) of the underlying companies are used in the calculation of the FTSE Shariah All-World index. An overview of the index's trend⁷ throughout the period from 30th October 2007 to 29th January 2010 is presented in Figure 5.3:

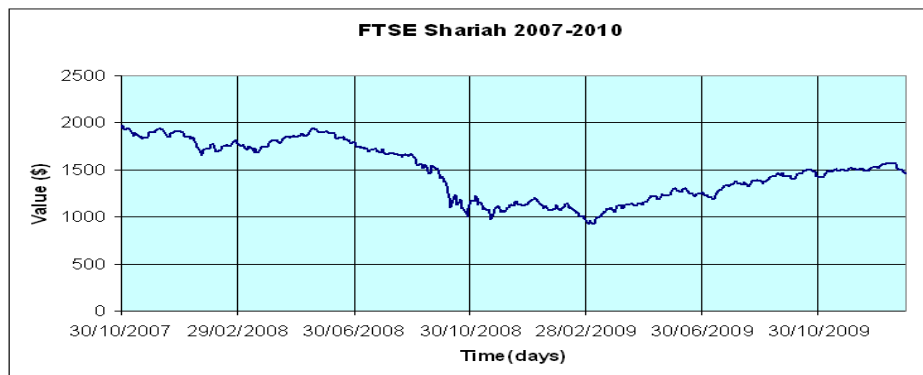


Figure 5.3: Trend of FTSE Shariah All-World Index in the period 2007-2010

⁶For morer information on the FTSE (GEIS), visit the FTSE Shariah website: <http://www.ftse.com/shariah>

⁷The historical prices are quoted on Bloomberg website: <http://www.bloomberg.com>

From the figure above, we can see that the FTSE Shariah All-World index was fluctuating in the first 6 months until it reached its peak in the mid of May 2008. Then, it suddenly declined sharply till the end of February 2009 due to the 2008 credit crisis and its impacts. However, the index has started to grow again since the beginning of March 2009, but the recovery rate is not big enough to get the normal level of index before the crisis began. The histogram shown in Figure 5.4 presents the log-normal returns and some basic statistics for the FTSE Shariah All-World index in the period from October 30th, 2007 to January 29th, 2010:

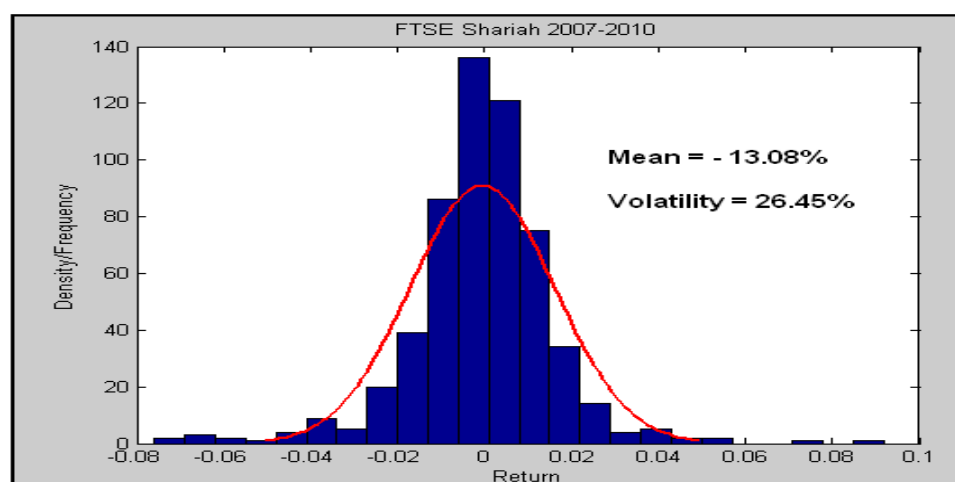


Figure 5.4: Log-Normal returns of FTSE Shariah All-World Index in the period 2007-2010

5.5 Performance of the Indices in the 2008 Credit Crisis

Financial analysts, economists and even individual investors themselves rely heavily on risk-adjusted return (i.e. "performance measures") to evaluate and select among available investment funds/indices [12]. In this section we investigate the performance of "Dow Jones Islamic Market Index" and "FTSE Shariah All-World Index" throughout the year 2008 (i.e. the year in which the recent financial crisis began). The investigation is done via basic statistics, illustrative figures and the "Sharpe ratio" which is the most commonly used performance measure in finance and economic literatures. However, there are many other performance measures than the Sharpe ratio, but they will be used in the next section that deals with a comparison between Islamic and conventional indices.

The Sharpe Ratio (SR) is a well-known performance measure introduced by W. Sharpe [43]. The SR measures the relationship between the risk premium and the standard deviation of the returns generated by a fund/index (i.e. it reflects the return of the fund/index with regard to its risk). Mathematically, the Sharpe Ratio (SR) is defined as:

$$SR = \frac{(r_p - r_f)}{\sigma_p}$$

where:

r_p : the average return of the portfolio (or index) for the sample period.

r_f : the average return of a risk-free security for the sample period.

σ_p : the standard deviation of the portfolio (or index) return over the sample period.

From this point on and in order to test the behaviour of the two key Islamic indices and compare them with other conventional indices later on, we calculate the return on a daily basis by taking the natural logarithmic difference of the price index, so that:

$$R_{i,t} = [\log(P_{i,t}) - \log(P_{i,t-1})]$$

where:

$R_{i,t}$: the raw return of index i at time t .

$P_{i,t}$: the price of index i at time t .

$P_{i,t-1}$: the price of index i at time $t - 1$.

5.5.1 Dow Jones Islamic Market Index

Let us begin the investigation by having an overview of the DJIM index's trend in 2008. The data obtained from the QuoteMedia⁸ consists of daily closing of the DJIM index in the period from January 2nd, 2008 to December 31st, 2008 and it is presented in Figure 5.5:

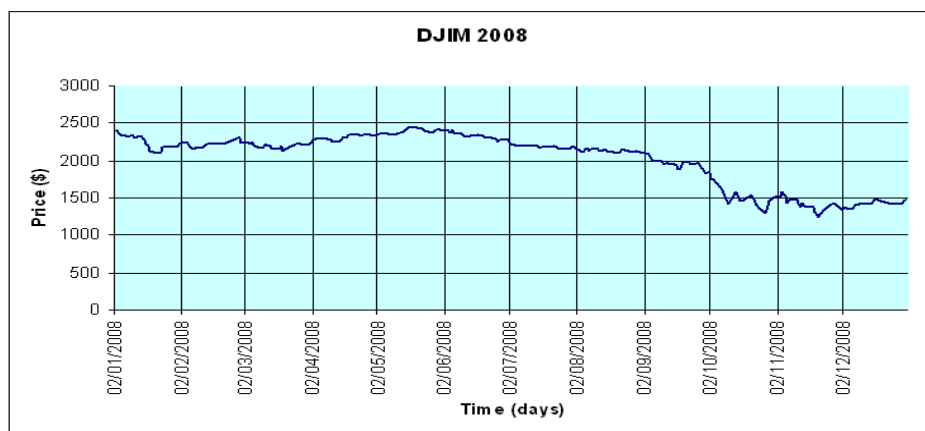


Figure 5.5: Trend of DJIM Index in 2008

It is clear from the above figure that the DJIM index starts at certain price level and it almost remains at that level in the first five months of 2008 before it suddenly begins to decline to quite a low price level; especially in the last quarter of the year 2008. The corresponding daily returns of the DJIM index are plotted in Figure 5.6:

⁸The historical data for Dow Jones Islamic Market Index can be found at <http://www.quotemedia.com/> and the index code is "`^DJIM`".

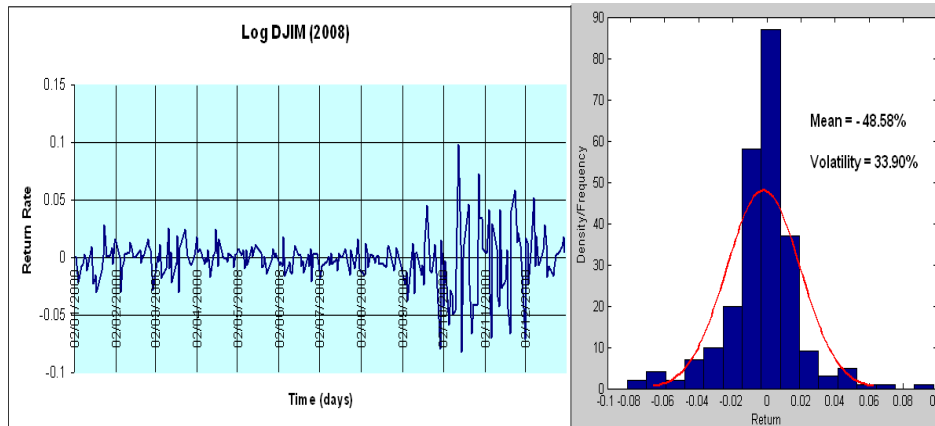


Figure 5.6: The rate of return of DJIM Index in 2008

The figure above shows the daily returns of the DJIM index throughout the year 2008 and it is clear that the returns in the first 8 months fluctuate in the range of $[-3\%, 3\%]$, while in the last 4 month of 2008, the returns change in a bigger volatile range of $[-8\%, 10\%]$.

Now let us measure and evaluate the performance of the DJIM index in 2008 by calculating the Sharpe ratio which is an adequate performance measure if the returns of the fund/index are normally distributed [12]. From the basic statistics obtained, the returns data has a mean (i.e. r_p) of -48.58% and a standard deviation (i.e. σ_p) of 33.90% . In addition we take the average of the daily returns of US Treasury Bond⁹ in the period from January 2nd, 2008 to December 31st, 2008 in order to calculate the risk-free rate of return. The average (i.e. r_f) is found to be 3.65% . Consequently, the Sharpe Ratio for DJIM index in 2008 is -154.07% ; which simply means that no reward or excess returns with regard to the systematic risk is achieved.

⁹The historical data for the US Treasury Note is obtained from Yahoo Finance: <http://finance.yahoo.com/>.

5.5.2 FTSE Shariah All-World Index

Similar to DJIMI, we start the investigation by having an overview of the trend of the FTSE Shariah All-World (SAW) index in 2008. The data obtained from the Bloomberg¹⁰ consists of daily closing of the FTSE (SAW) index in the period from January 2nd, 2008 to December 31st, 2008 and it is presented in Figure 5.7:

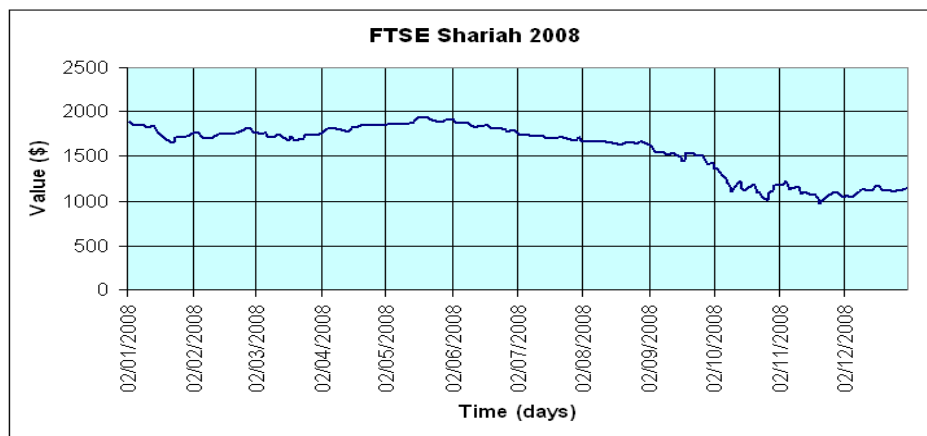


Figure 5.7: Trend of FTSE Shariah All-World index in 2008

It is clear from the above figure that the FTSE (SAW) index starts at certain price level and it fluctuates within almost the same level in the first five months of 2008. Then, it suddenly begins to decline to quite a low price level; especially in the last quarter of the year 2008. In order to perform some basic analysis, we calculate and plot the corresponding daily returns of the FTSE (SAW) index in 2008 in Figure 5.8:

¹⁰The historical data for FTSE Shariah All-World Index can be found at <http://www.bloomberg.com/> and the index code is "SWORLDS:IND".

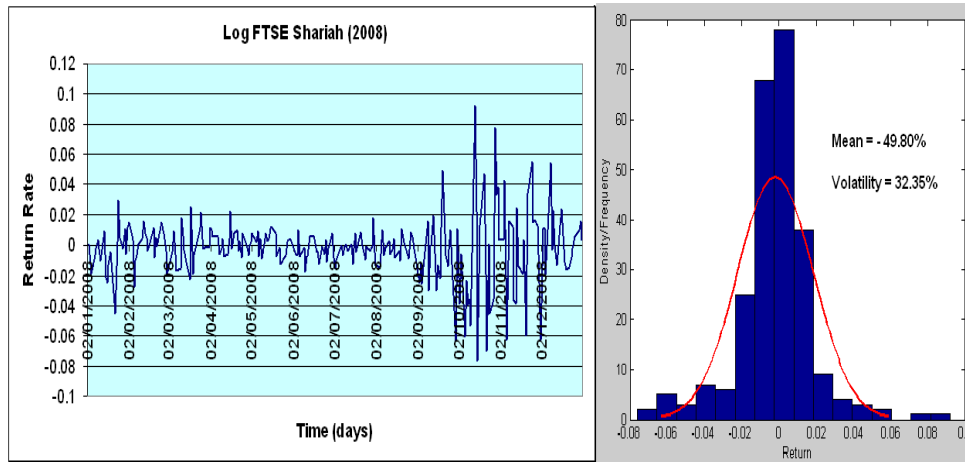


Figure 5.8: The Rate of Return of FTSE Shariah All-World index in 2008

As shown the figure above, the daily returns of the FTSE (SAW) index fluctuate throughout the first 8 months of 2008 in the range of $[-4.5\%, 3\%]$, while in the last 4 month of 2008, the returns change in a bigger volatile range of $[-7.5\%, 9\%]$. From the basic statistics obtained, the returns data has a mean (i.e. r_p) of -49.80% , a standard deviation (i.e. σ_p) of $0.32.35\%$, and the risk-free rate of return (i.e. r_f) is 3.65% . Consequently, the Sharpe Ratio for FTSE (SAW) index in 2008 is -165.22% ; which simply means that no reward or excess returns with regard to the systematic risk is achieved.

5.6 Comparison with Other Conventional Indices

This section compares the performance of the two key Islamic indices (i.e. Dow Jones Islamic Market and FTSE Shariah All-World) with their counterparts (i.e. Dow Jones Global Total Stock Market and FTSE Global All-Cap). In addition to the Sharpe Ratio, we use some of the main performance measures mentioned in financial literatures to evaluate the performance of mutual fund/index. These performance measures are Capital Asset Pricing Model (CAPM), Jensen's Alpha, Market Timing Ability, Appraisal Ratio, Treynor Ratio, and Modigliani & Modigliani Measure. We start by discussing the way these measures are calculated in order to give a basic understanding of their nature, differences, and advantages. After that, we apply these measures on the data we have for the four different indices in order to reach a conclusion on the performance of those indices. So let us begin by introducing these performance measures briefly.

1. The Capital Asset Pricing Model (CAPM) is a measure used to price risky securities as well as to describe the relationship between expected rate of return of an asset and associated risk. The CAPM is based on the modern portfolio theory by Harry Markowitz [33] and it is mathematically expressed as:

$$E(r_i) = r_f + \beta[E(r_m) - r_f]$$

where:

$E(r_i)$: the expected return of a mutual fund/index i .

$E(r_m)$: the expected return of the market portfolio.

r_f : the return of a risk-free asset.

β : the sensitivity of the mutual fund/index i to the market portfolio. One way to calculate this sensitivity is by:

$$\beta = \frac{Cov(r_i, r_m)}{Var(r_m)}$$

where:

$$Cov(r_i, r_m) = E(r_i - E[r_i]) \cdot E(r_m - E[r_m])$$

$$Var(r_m) = E[r_m^2] - E[r_m]^2$$

2. The Jensen's Alpha (α) is a special case of CAPM that was developed by Michael Jensen [27] and its idea is to not just focus on the expected return of a portfolio but also on the associated risk. In other words, Jensen's Alpha deals with realized returns rather than expected returns as in CAPM. Therefore, it is considered to be a risk-adjusted performance measure and it can be calculated mathematically by:

$$\alpha = r_p - [r_f + \beta(r_m - r_f)]$$

where:

r_p : the realized return of a portfolio (or index) at time t .

r_m : the realized return of the market portfolio at time t .

r_f : the realized return of a risk-free security at time t .

β_t : the sensitivity of the portfolio (or index) to the market portfolio at time t .

3. The Market Timing Ability (γ) is just an extension of the Jensen's Alpha developed by Treynor and Mazuy via adding a quadratic term to it [50]. Their idea was to measure the ability to predict the future movement of the market and hence to switch among the classes of mutual fund/index in order to gain some profits out of the changes in the market trend. The mathematical expression of the Market Timing Ability is as follows:

$$\gamma = \frac{\alpha - r_p + [r_f + \beta_t(r_m - r_f)]}{(r_m - r_f)^2}$$

where α , r_p , β_t , r_m , and r_f are as explained and defined in the Jensen's Alpha model.

4. The Appraisal Ratio (AR) is a measure for the abnormal return per each unit of the non-systematic risk (i.e. the risk that can be diversified away by holding a completely diversified portfolio). This ratio was developed by Treynor and Black [49], and it is mathematically expressed as:

$$AR = \frac{\alpha}{\sigma}$$

where:

α : the Jensen's Alpha of the portfolio (or index).

σ : the non-systematic risk of the portfolio (or index).

5. The Treynor Ratio (TR) is a special case of the Sharpe Ratio (SR) developed by Jack Treynor [48] with the objective to measure the return on a risk-free security per each unit of market risk. As a consequence, the TR only takes into account the systematic risk rather than the total risk as in SR (i.e. it uses the Beta as the volatility instead of the Standard Deviation). The mathematical formula for the Treynor Ratio is defined as:

$$TR = \frac{r_p - r_f}{\beta}$$

where:

r_p : the average return of a portfolio (or index) for the sample period.

r_f : the average return of a risk-free security for the sample period.

β : the systematic risk of the portfolio (or index).

6. The Modigliani and Modigliani Measure (MM) is an extension of the Sharpe Ratio that focuses on the total market volatility as well as the risk-adjusted return which is simply the difference between the portfolio return and the market return [38]. The M&M measure is mathematically expressed as:

$$MM = (SR_p - SR_m)\sigma_m$$

where:

SR_p : the Sharpe Ratio of the portfolio (or index).

SR_m : the Sharpe Ratio of the market.

σ_m : the volatility/standard deviation of the market.

5.6.1 DJIMI vs. Dow Jones Global Total Stock Market Index

The Dow Jones Global Total Stock Market (DJGTSM) index is intended to provide a comprehensive measure of equity securities traded globally in 65 countries¹¹. Now after introducing some performance measures, we compare the performance of the Dow Jones Islamic Market Index (DJIMI) and its counterpart (i.e. the DJGTSM index). So let us first have a look at the historical overview of both indices¹² in the period from September 25th, 2006 to December 18th, 2009 which is plotted in Figure 5.9:



Figure 5.9: Trend of DJIM and DJGTSM indices in the period 2006-2009

The figure above shows that both DJIMI and DJGTSMI follow almost the same trend in the period from 2006 to 2009. This can be reflected by calculating the correlation between the returns of both indices which is found to be 0.83. As the correlation between both indices is quite high, then it is quite difficult to compare their performance in a very accurate way. Therefore, let us focus on the comparison of the performance during the year 2008; especially that there was unusual event which is the recent current credit crisis. An overview of the prices trend for both DJIMI and DJGTSMI in 2008 is illustrated by Figure 5.10:

¹¹Further details on the Dow Jones Global Total Stock Index can be obtained from DJ Indexes website: <http://www.djindexes.com/>

¹²The historical prices for both DJIMI and DJGTSMI can be obtained from: <http://www.quotemedia.com/> and the index code for DJIMI is "^DJIM" and for DJGTSMI is "^DWG".

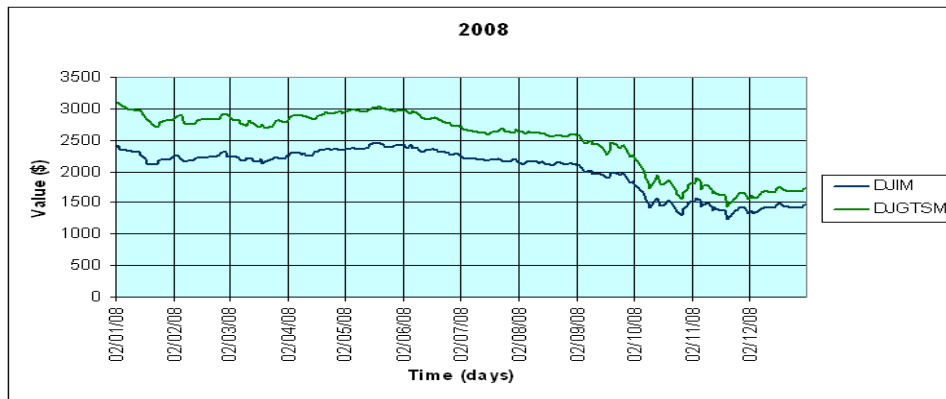


Figure 5.10: Trend of DJIM and DJGTSM indices in 2008

Again even with the focus on the year 2008, there is still an indication of high correlation between DJIMI and DJGTSMI; because they both follow almost the same trend. The correlation between the returns of both indices is found to be 0.84. Further more, the daily returns of DJGTSMI in 2008 are examined and plotted in Figure 5.11:

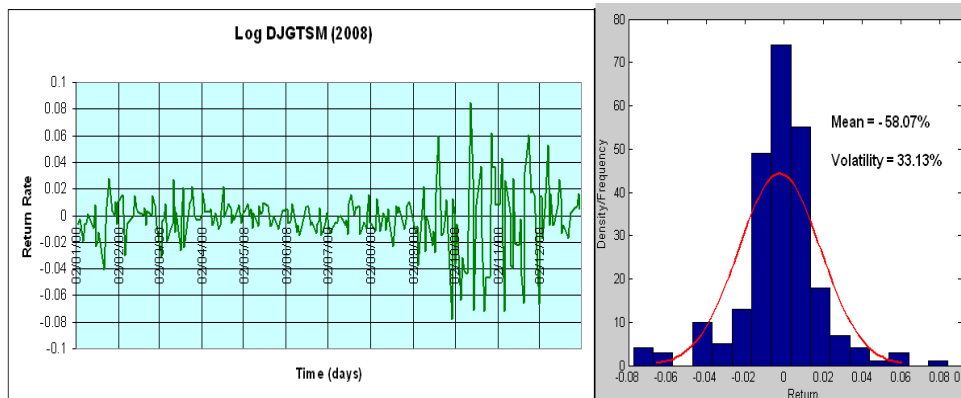


Figure 5.11: Rate of Return of DJGTSM Index in 2008

It is clear from Figures 5.6 and 5.11 that the daily returns of the DJIM and DJGTSM indices fluctuate in the range of $[-3\%, 3\%]$ and $[-4\%, 3\%]$ respectively in the first 8 months, while in the last 4 months of 2008, the returns for both indices change in a bigger volatile range of $[-8\%, 10\%]$ and $[-8\%, 8.5\%]$ respectively.

5.6.2 FTSE (SAW) Index vs. FTSE Global All-Cap Index

The FTSE Global All-Cap (GAC) Index is a free float market capitalization weighted index which includes constituents or components of the Large, Mid and Small capitalization universe for the Developed and Emerging Market segments¹³. We aim in this section to compare the performance of the FTSE Shariah All-World Index and its counterpart (i.e. the FTSE (GAC)¹⁴ index). Therefore, we start the comparison first by having an overview of the historical prices of both indices in the period from October 29th, 2007 to January 29th, 2010 which is plotted in Figure 5.12:

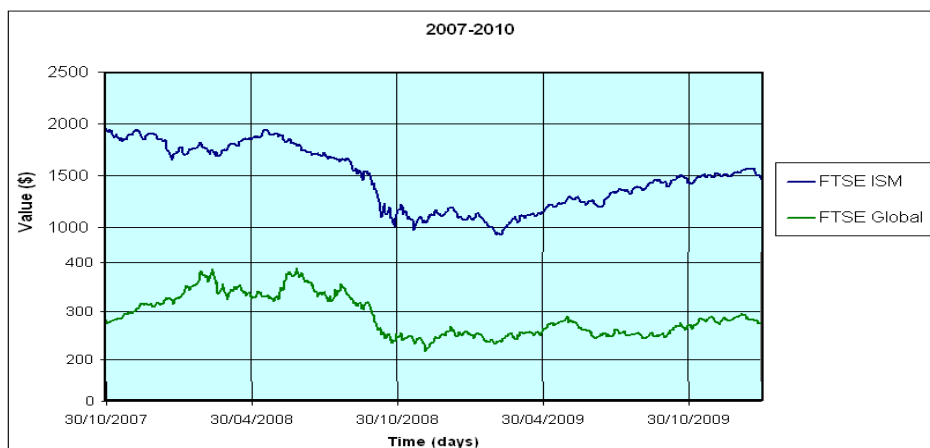


Figure 5.12: Trend of FTSE (SAW) and FTSE (GAC) indices in the period from 2007-2010

The figure above shows that the trends of both FTSE (SAW) and FTSE (GAC) indices are quite different; especially in the first 12 months of the examined period. Such difference reflects a low correlation between both indices despite of that FTSE (SAW) index is a subset of the FTSE (GAC) index. This can be shown by calculating the correlation between the returns of both indices which is found to be 0.41.

¹³Further details on the FTSE Global All-Cap Index can be obtained from: "<http://www.ftse.com/>" and "<http://www.bloomberg.com>"

¹⁴The historical prices for FTSE (GAC) Index can be obtained from: "<http://www.quotemedia.com/>" and the index code is "`^G01`".

As the correlation between both indices are quite low, then it is quite easy to compare their performance. However, we focus on the comparison of the performance throughout the year 2008 due to the unusual event which is the recent credit crisis. An overview of the prices trend for both indices in 2008 is given by Figure 5.13:

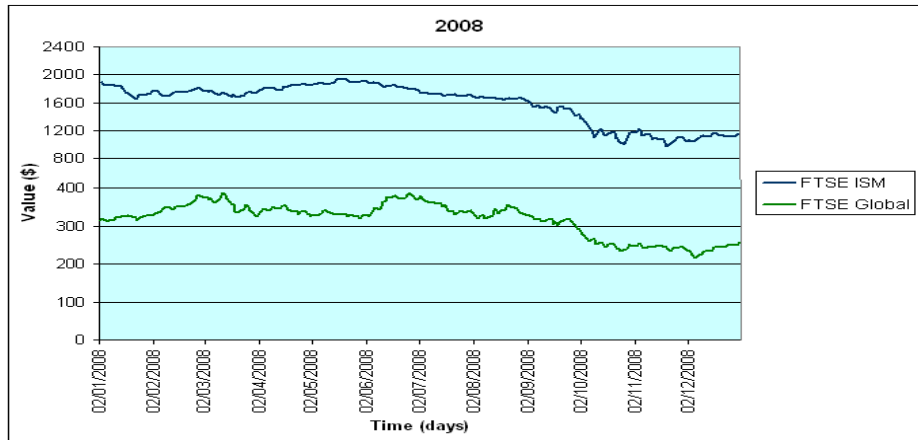


Figure 5.13: Trend of FTSE (SAW) and FTSE (GAC) indices in 2008

The focus on the year 2008 in the figure shown above indicates that there is still a proof of low correlation between FTSE (SAW) and FTSE (GAC) indices; because there is a difference in the trend and movement of each index. The correlation between the daily returns of both indices in 2008 is found to be 0.44. Further more, the daily returns of FTSE (GAC) index in 2008 are examined and plotted in Figure 5.14:

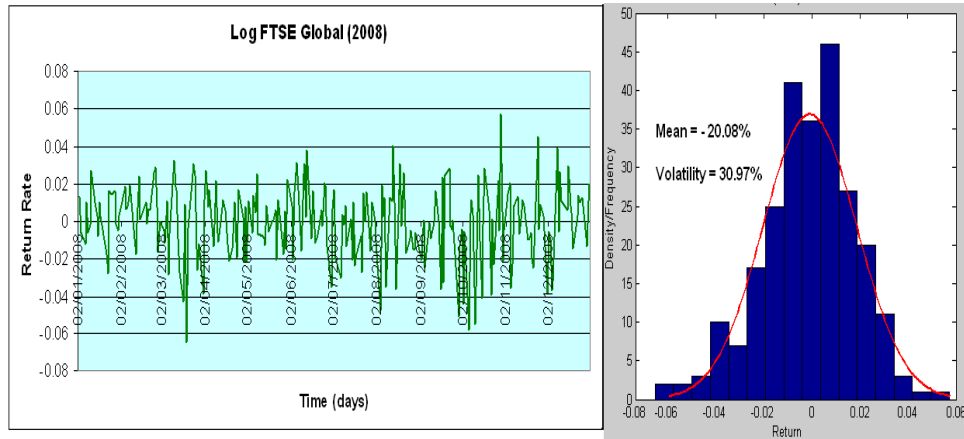


Figure 5.14: Rate of Return of FTSE (GAC) index in 2008

It is clear from Figure 5.8 that the daily returns of the FTSE (SAW) Index fluctuate in the range of $[-4.5\%, 3\%]$ in the first 8 months of 2008, while in the last 4 months of the same year, the returns change in a bigger volatile range of $[-7.5\%, 9\%]$. On the other hand, Figure 5.14 shows that the daily returns of the FTSE (GAC) Index fluctuate and change in almost a constant range of $[-6.5\%, 6\%]$ throughout the entire year.

5.6.3 DJIM and FTSE (SAW) Indices vs. S&P 500 Index

Since we use the S&P 500 Index as the market benchmark for all the performance measurements of the Islamic indices and their counterparts, we need to have a brief overview of the market index. The S&P 500 index is a well-known US and internationally accepted index that is created and managed by the Standard & Poor's¹⁵. The index includes 500 leading companies in different leading industries of the U.S. economy. The historical trend of the S&P 500 index in comparison with the DJIM and FTSE (SAW) indices in the period from October 30th, 2007 to December 18th, 2009 is illustrated in Figure 5.15:

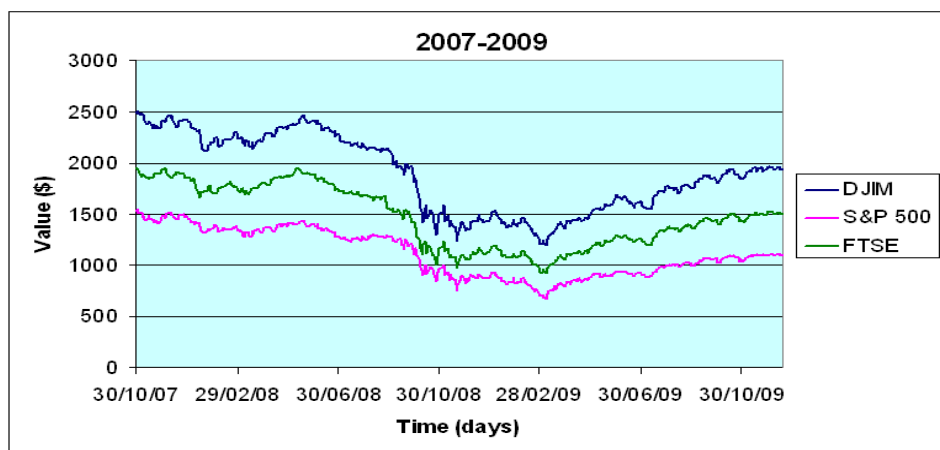


Figure 5.15: Prices Trend of DJIM, FTSE (SAW) and S&P 500 indices in the period 2007-2009

It is clear from the above figure that both DJIM and FTSE indices follow almost the same trend as the S&P 500 index in the period from 2006 and 2009. This can be shown by calculating the correlation which is found to be 0.84 for (DJIM and S&P 500), while it is found to be 0.82 for (FTSE (SAW) and S&P 500).

¹⁵For more information on the S&P 500 index and Standard & Poor's, visit: <http://www.standardandpoors.com/>

As the correlation between the Islamic indices and S&P 500 index is quite high, then it is difficult to compare their performance. Therefore, let us focus on comparing the performance throughout the year 2008 in which the recent financial crisis took place as presented in Figure 5.16:

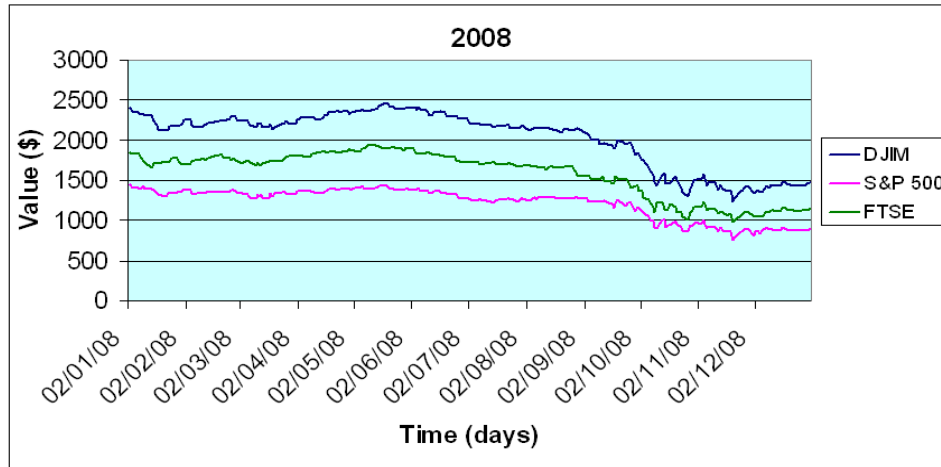


Figure 5.16: Prices Trend of DJIM, FTSE (SAW) and S&P 500 in 2008

Again even with the focus on the year 2008, there is still an indication of high correlation between both DJIM & FTSE (SAW) indices and S&P 500 index; as they both follow almost the same trend as the market index. The correlation is found to be 0.87 for (DJIM and S&P 500), while it is found to be 0.81 for (FTSE (SAW) and S&P 500). In addition, we further examine the daily returns of both Islamic indices and S&P 500 index in 2008, and their corresponding plot is shown by Figure 5.17:

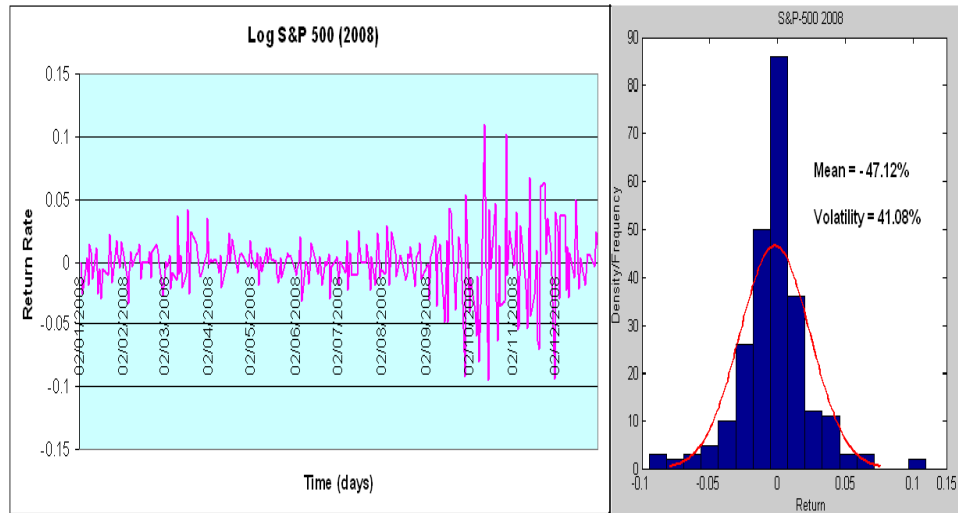


Figure 5.17: Rate of Return of S&P 500 Index in 2008

Figures 5.6, 5.8 and 5.17 show the daily returns of the DJIM, FTSE (SAW) and S&P 500 indices in which they fluctuate in the range of $[-3\%, 3\%]$, $[-4.5\%, 3\%]$ and $[-3\%, 4\%]$ respectively in the first 8 months, while in the last 4 months of 2008, the returns for all indices change in a bigger volatile range of $[-8\%, 10\%]$, $[-7.5\%, 9\%]$ and $[-9.5\%, 11\%]$ respectively.

5.6.4 Results and Interpretations

Let us now use the obtained statistics (i.e. average return and volatility of all the different indices), and also other calculated parameters (i.e. $\beta_{DJIM} = 0.72$, $\beta_{DJGTSM} = 0.56$, $\beta_{FTSE(SAW)} = 0.63$, $\beta_{FTSE(GAC)} = 0.17$ and $r_f = 3.65\%$) to compute all the performance measures mentioned earlier. The evaluated results and their interpretations are stated below:

Performance Measure	DJIM	DJGTSM	FTSE (SAW)	FTSE (GAC)
CAPM (r)	-0.3296	-0.2476	-0.2846	-0.0514
Jensen's Alpha (α)	-0.1562	-0.3331	-0.2134	-0.1494
Market Timing Ability (γ)	0.0019	-0.0010	-0.0043	0.0061
Appraisal Ratio (AR)	-0.4608	-1.0053	-0.6598	-0.4825
Sharpe Ratio (SR)	-1.5407	-1.8630	-1.6522	-0.7662
Treynor Ratio (TR)	-0.7245	-1.1030	-0.8454	-1.3714
M&M Measure (MM)	-0.1190	-0.2501	-0.1709	0.1930

Table 5.1: Performance Measures for Islamic Indices and Their Counterparts

Since all performance measures has been calculated, we need to interpret them in order to reach some conclusions on the performance of the Islamic indices and their counterparts in the 2008 credit crisis. The interpretations are as follow:

1. CAPM (r): Assuming that the CAPM formula holds, then the expected return for DJIM and FTSE (SAW) should be -32.96% and -28.46% respectively; while the average return in reality is found to be -48.58% and -49.80% respectively, so we might say that the DJIM and FTSE (SAW) are underperformed. Similarly, the expected return for DJGTSM and FTSE (GAC) should be -24.76% and -5.14%; while the realized average return is found to be -58.07% and -20.08% respectively, so we might also say that DJGTSM and FTSE (GAC) are underperformed. However, the economic interpretation of the CAPM equation shows that the portfolio (or index) that would attract investors is the one that could

offer a return that is over the risk-free rate of return (r_f) by an amount equals to the market-wide risk premium of ($r_m - r_f$), otherwise they prefer to invest in risk-free securities. In the case of DJIM, DJGTSM, FTSE (SAW) and FTSE (GAC), the market risk premium for all of them is almost equal, and therefore, it is hard to tell which one to select. But if we consider their volatility (i.e. standard deviation), then we may select to invest in either DJGTSM or FTSE (GAC) as they have slightly smaller risk in comparison with DJIM and FTSE (SAW) respectively.

2. Jensen's Alpha (α): The alpha for DJIM is -15.62% and for DJGTSM is -33.31%. This means that DJIM and DJGTSM are not earning any excess return and they are underperformed their market benchmark (i.e. S&P 500) by 15.62% and 33.31% respectively. Similarly, the alpha for FTSE (SAW) is -21.34% and for FTSE (GAC) is -14.94%; which indicates that FTSE (SAW) and FTSE (GAC) are not earning any excess return and they are underperformed their market benchmark by 21.34% and 14.94% respectively. From a portfolio management prospective, investors would prefer to invest in DJIM or FTSE (GAC) since they have the least negative alpha despite of no extra returns are achieved.

3. Market Timing Ability (γ): The gamma of 0.19% and 0.61% for DJIM and FTSE (GAC) respectively represents the small ability of both indices in adapting themselves with the changes in the market. On the other hand, the gamma of -0.10% and -0.43% for DJGTSM and FTSE (SAW) respectively shows how difficult it is for both indices to adapt themselves with the changes in the market index. Although there is a great debate whether the market timing is a crucial measure for evaluating funds or not, we think it is still an important tool especially for those who watch and monitor the market on a daily basis. Therefore, we can say that DJIM and FTSE (GAC) are better than DJGTSM and FTSE (SAW) respectively in terms of market timing ability in order to profit from the changes in the market expectation.

4. Appraisal Ratio (*AR*): The abnormal returns (= "*actual generated returns – predicted returns*") per each unit of the non-systematic risk for DJIM and DJGTSM is -46.08% and -100.53% respectively. In other words, an increase of 33.90% or 33.13% in the specific risk of DJIM or DJGTSM would result in a reduction in the abnormal returns by 46.08% and 100.53% respectively. Similarly, the appraisal ratio for FTSE (SAW) and FTSE (GAC) is -65.98% and -48.25% respectively; which simply means that an increase of 34.24% or 30.97% in the non-systematic risk of FTSE (SAW) or FTSE (GAC) respectively would lead to a reduction of 65.98% and 48.25% respectively in the abnormal returns. It is obvious and clear that no abnormal returns are achieved by any of the indices, but DJIM and FTSE (GAC) might be considered for investment since they have the least negative appraisal ratio.
5. Sharpe Ratio (*SR*): The rewards or excess returns with regards to the index's non-systematic/total risk is -154.07% and -186.30% for DJIM and DJGTSM respectively, while it is -165.22% and -76.62% for FTSE (SAW) and FTSE (GAC) respectively. A negative Sharpe ratio means that it is better for investors to invest in risk-free securities rather investing in risky indices, such as, DJIM, DJGTSM, FTSE (SAW) and FTSE (GAC). However, if we want to judge on the performance of the four indices according to their Sharpe ratios, then we might say that DJIM and FTSE (GAC) are performing slightly better than DJGTSM and FTSE (SAW) respectively with regards to the specific risk since it may have a more effective index's asset management.
6. Treynor Ratio (*TR*): The rewards or excess returns with regards to the systematic/market risk is -72.45% and -110.30% for DJIM and DJGTSM respectively, while it is -84.54% and -137.14% for FTSE (SAW) and FTSE (GAC) respectively. Since Treynor ratio is very similar to the Sharpe ratio except that it uses the market risk instead of the total risk, the interpretation for the Treynor ratio would be similar to the interpretation of the Sharpe ratio mentioned earlier (i.e. we may say that DJIM and FTSE (SAW) are performing slightly better than DJGTSM and FTSE (GAC) respectively with regards to the market risk since it might have a more effective index's asset management).

7. Modigliani & Modigliani Measure (MM): The DJIM, DJGTSM and FTSE (SAW) would have an average annual return of 11.90%, 25.01% and 17.09 respectively less than the market (i.e. S&P 500) if they had the same level of risk as the market. On the other hand, the FTSE (GAC) would have an average annual return of 19.30% more than the market if it had the same level of risk as the market. This measure is very interesting since it evaluates the performance of an index in comparison directly with the market via shifting the index up or down the capital market line; so that its standard deviation is identical to that of the market.

All the results and interpretations above can be summarized by rating and ordering the indices with regard to the different performance measures as follows:

Performance Measure	Good	Fair	Acceptable	Bad
CAPM (r)	FTSE (GAC)	DJGTSM	FTSE (SAW)	DJIM
Jensen's Alpha (α)	FTSE (GAC)	DJIM	FTSE (SAW)	DJGTSM
Market Timing Ability (γ)	FTSE (GAC)	DJIM	DJGTSM	FTSE (SAW)
Appraisal Ratio (AR)	DJIM	FTSE (GAC)	FTSE (SAW)	DJGTSM
Sharpe Ratio (SR)	FTSE (GAC)	DJIM	FTSE (SAW)	DJGTSM
Treynor Ratio (TR)	DJIM	FTSE (SAW)	DJGTSM	FTSE (GAC)
M&M Measure (MM)	FTSE (GAC)	DJIM	FTSE (SAW)	DJGTSM

Table 5.2: Rating and Ordering of Islamic Indices and their Counterparts According to its Performance

It can be noted from the table above that FTSE (GGAC) Index has achieved the first position for most of the performance measures. One reason behind this result is that the data of FTSE (GAC) is the best in terms of normality. If you look at the histograms in Figures 5.6, 5.8, 5.11, 5.14 and 5.17, you would notice that the best normal fit is done with FTSE (GAC) as the majority of data lies within the fitted normal distribution. This can lead to more accurate performance measures and that might be the reason behind the slight outperformance of FTSE (GAC) Index.

5.7 Conclusion

This chapter investigated the performance of two key Islamic indices (i.e. Dow Jones Islamic Market Index and FTSE Shariah All-World Index) in the 2008 credit crisis. The analysis is done by using many well-known performance measures which are Sharpe Ratio, Capital Asset Pricing Model (CAPM), Jensen's Alpha, Market Timing Ability, Appraisal Ratio, Treynor Ratio, and Modigliani & Modigliani Measure. These measures are employed to compare the performance of Islamic indices with their counterparts (i.e. Dow Jones Global Total Stock Market Index and FTSE Global All-Cap Index) as well as with S&P 500 Index as a reference for all other indices. The findings show that there is no significant difference between Islamic and conventional indices, however Islamic indices are more stable than conventional ones since they have slightly a lower volatility and a good ability to adapt themselves with the market fluctuations and changes. In contrast, the conventional indices are performing quite better than Islamic ones in terms of gained returns which might be due to arbitrage opportunities and other business activities which are forbidden under Islamic finance.

Chapter 6

Designing New Index Fund

6.1 Introduction

One of the riskiest activities in the business world is to invest in only one risky portfolio due to the high probability of lose or bankruptcy. Therefore, investors tend to apply the concept of diversification by investing in multiple risky assets, or a combination of risky and riskless assets. The purpose of such investment strategy is that the positive performance of some portfolio components will neutralize the negative performance of others. In this chapter, we try to employ the Portfolio Theory in order to create a more efficient index fund by combining both the Dow Jones Islamic Market Index and the FTSE Shariah All-World Index. The basic idea of the Portfolio Theory within the mean-variance framework is to minimize the variance on returns and maximize the rate of returns. Once the efficient index fund is created, we then compare its performance with the original components (i.e. DJIM and FTSE (SAW)) as well as with a market benchmark (e.g. S&P 500).

This chapter consists of the following sections; §6.2 Different Views on Index Investing and International Diversification, §6.3 Modern Portfolio Theory (MPT), §6.4 Proposed New Index, §6.5 Performance of Proposed Index, and §6.6 Conclusion.

6.2 Different Views on Index Investing and International Diversification

Since Dow Jones Islamic Market and FTSE (SAW) indices include stocks from different countries around the globe, we briefly present some of the studies done on the index investing and international diversification:

Levy and Sarnat (1970) in a study titled "*International Diversification of Investment Portfolios*" [32] suggest that diversifying securities portfolios internationally can provide a noticeable risk reduction for investments which have a relatively high degree of positive correlation within an economy. The authors present estimates of the potential gains from such diversification in 28 countries for the period from 1951 through 1967. They use a method for the empirical determination of the composition of optimal international portfolios based on the Portfolio Theory. The results indicate that there is a significant advantage for international diversification in terms of variance reduction; especially when the portfolio includes securities from different countries and economies.

French and Poterba (1991) in a paper titled "*Investor Diversification and International Equity Markets*" [15] consider the case where most investors put almost all their wealth in domestic investments despite of the historical proofs that international diversification can provide many benefits. The authors concerns come from the fact that national economies do not always move together, so investors can get use of such market movements by holding investments in different countries. French and Poterba employ simple model and arguments to examine investor preferences and institutional behaviors. They conclude that current portfolio patterns imply that investors in each nation expect returns in their domestic equity market to be much higher than returns in other markets. Therefore the lack of diversification appears to be the result of investor choices, rather than institutional constraints.

Aiello and Chieffe (1999) in a study titled "*International Index Funds and the Investment Portfolio*" [2] evaluate the performance of 9 international indexes in the period from January 1989 to December 1997 by using monthly returns data. The international indexes are compared with the S&P 500 since it is widely used as the market proxy. The statistical findings show that international index investing does not have significant returns in comparison with the S&P 500 index, but there are remarkable benefits of diversification.

6.3 Modern Portfolio Theory (MPT)

The Modern Portfolio Theory (MPT) or also known as "Portfolio Theory" was developed and introduced by Harry Markowitz [33]. Prior to Markowitz's work, investors were constructing their own portfolios by evaluating the risks and rewards of individual securities/assets. The basic principle was to construct a portfolio from the securities/assets that offered the best opportunities for gain with the least risk. In other words, investors might compile a portfolio entirely from individual stocks which offered good risk-reward.

After that, Markowitz proposed a mathematical model for selecting portfolios with the focus on their overall risk-reward characteristics instead of merely compiling portfolios from securities that each individually have attractive risk-reward characteristics. The MPT model explains how to diversify risky assets and the degree of such diversification can reduce risk, but it depends upon the correlations among security returns. If the returns are not correlated, diversification could eliminate risk, while if security returns are perfectly correlated, no amount of diversification can affect risk [33].

6.3.1 Multiple Assets

The main objective of the MPT is to create a more efficient portfolio by combining either only risky assets or risky and riskless assets within the mean-variance framework. The simple idea of such framework is to minimize the variance on returns and achieve the maximum possible returns for that least variance. As a consequence, the return, variance and volatility of a portfolio under the MPT are as follows:

1. Portfolio Return (R_p) is the proportion-weighted combination of the component assets' returns:

$$E(R_p) = \sum_i w_i E(R_i)$$

Subject to:

$$\sum_i w_i = 1$$

Where R_i is the return and w_i is the weighting of component asset i .

- Portfolio Variance (σ_p^2) is a function of the volatility (σ) and correlation (ρ) of the constituent assets:

$$\sigma_p^2 = \sum_i \sum_j \sigma_i \sigma_j \rho_{ij}$$

Where $\rho_{ij} = 1$ for $i = j$.

- Portfolio Volatility (σ_p) is the squared root of the portfolio variance:

$$\sigma_p = \sqrt{\sigma_p^2}$$

6.3.2 Two Assets

There is a special case of combining two assets in one portfolio that consists of either two risky assets or one risky and one risk-free assets. In such case, the return and variance of the portfolio are given by:

- Portfolio Return (R_p) is:

$$E(R_p) = w_A E(R_A) + w_B E(R_B)$$

Or

$$E(R_p) = w_A E(R_A) + (1 - w_A) E(R_B)$$

Where R_A & R_B are the return and w_A & w_B are the weighting of component assets A & B respectively.

- Portfolio Variance (σ_p^2) is:

$$\sigma_p^2 = w_A^2 \sigma_A^2 + (1 - w_A)^2 \sigma_B^2 + 2w_A(1 - w_A)\sigma_A\sigma_B\rho_{AB}$$

Where σ_A & σ_B are the volatility of constituent assets A & B respectively and ρ_{AB} is the correlation between both assets.

6.3.3 Optimal or Efficient Portfolio

As mentioned earlier, the crucial purpose of the MPT is to select the most optimal or efficient portfolio which has the following two features [41]:

1. It has a higher return than any other portfolio with the same (or smaller) risk (variance).
2. It has a smaller risk (variance) than any other portfolio with the same (or small) expected return.

Those properties indicate that there should be a compromise between the expected returns and the associated risk. As a consequence, the more risk investors take, the higher return they get; and vice versa. Therefore, the expected return for each efficient portfolio would be smaller than what investors might wish for since the risk (variance) of such portfolio is minimized to the least possible level.

In order to obtain the minimum variance (risk) for any efficient portfolio, we need to minimize the variance on the entire returns of the portfolio. With the focus on the case of the efficient portfolio with two risky assets, we minimize the variance on the returns by solving the following:

$$\frac{\partial \sigma_p^2}{\partial w_A} = 0$$

- Recalling that the portfolio variance with two risky assets is given by:

$$\sigma_p^2 = w_A^2 \sigma_A^2 + (1 - w_A)^2 \sigma_B^2 + 2w_A(1 - w_A)\sigma_A\sigma_B\rho_{AB}$$

- Differentiating the portfolio variance with respect to the weighting of the component asset leads to:

$$\frac{\partial \sigma_p^2}{\partial w_A} = w_A \sigma_A^2 + w_A \sigma_B^2 - \sigma_B^2 + \sigma_A \sigma_B \rho_{AB} - 2w_A \sigma_A \sigma_B \rho_{AB} = 0$$

- Solving for the weighting of the component asset results in:

$$w_A = \frac{\sigma_B^2 - \sigma_A \sigma_B \rho_{AB}}{\sigma_A^2 + \sigma_B^2 - 2\sigma_A \sigma_B \rho_{AB}}$$

6.3.4 Limitations of MPT

Although the Modern Portfolio Theory has a revolutionary impact on investments since 1950s, many researchers and scientists criticize the theory and claim it is dead. Such criticisms and claims usually take place whenever an economy faces a downturn, such as the recent financial crisis; and this indicates that the diversification strategy offered by the theory has failed. We briefly present some of the views regarding the limitations of the MPT as follows:

Robison and Brake (1979) in a paper titled "*Application of Portfolio Theory to Farmer and Lender Behavior*" [40] mention that MPT cannot provide all decision makers with their preferred investment plans within the expected value-variance (EV) set. This is because the EV set or also known as "mean-variance framework" becomes efficient only if the outcomes from the investment plans are normally distributed. Moreover, MPT only considers price-risk characteristics; and this imposes additional limitation; especially when obtaining the EV set by quadratic-programming method. Such method requires investment activities to be completely non-negative, divisible, linear (i.e. outputs are linear combinations of the inputs). The authors suggest many extensions to the MPT in order to account for liquidity risk, assets liquidity, and portfolio adjustments.

William Jahnke (1997 and 2004) in two papers titled "*The Asset Allocation Hoax*" [24] and "*It's Time to Dump Static Asset Allocation*" [25] lays out some criticisms of MPT as follows:

- Current characteristics and valuations of market are ignored. Therefore, valuation is assumed to be irrelevant under traditional methodology of portfolio management.
- Investment allocations are entirely and simplistically based on projected historical data. Consequently, the forecast of the long-term average historical correlation is assumed to be an accurate estimate of the future correlation between investments.
- Portfolio allocations are determined at the beginning of the investment process and are never changed, except when they are rebalanced. Therefore, the most important investment decision should be fixed at some arbitrary point in time.

John Mulvey (2005) in a study titled "*Essential Portfolio Theory*"¹ [39] figures out some problems with MPT which are given as:

- Oversimplified view of the markets: performance measures used in MPT consider generally stock-and-bond portfolios over a single period. Such measures deal with investments which have symmetrical return patterns, but this is not always the case with stock and bond markets since they move in unpredictable ways.
- Market efficiency has been overstated: one of the main principles of MPT is that markets are completely efficient; so that information of securities is fully available for investors throughout the tradings. However, several researches have shown that the predictability of market prices is much more difficult than what people think.
- Rearview mirror effect: future expectations of growth rate for earnings, economic conditions, or interest rate movements are ignored in MPT model since it only focuses on past performance.

In addition to all of the above criticisms and limitations of MPT, it is clear from the theory's model that no consideration is taken for transactions cost which is a crucial factor in index investing. Therefore, it is very difficult for investors to rely heavily on MPT and its diversification benefits. As a consequence, they need to review their investment plans frequently in order to minimize and overcome the problems occurred as a result of MPT's limitations.

¹The paper is prepared by John Mulvey, Professor at Princeton University, and it is a service mark of Rydex Investments (C) All rights reserved.

6.4 Proposed New Index

In this section, we propose a new index fund by combining the Dow Jones Islamic Market Index and FTSE Shariah All-World Index within the mean-variance framework presented by the MPT. Let us first start by having an overview of the historical prices of both indices in the period from October 30th, 2007 to January 29th, 2010 which is presented in Figure 6.1:

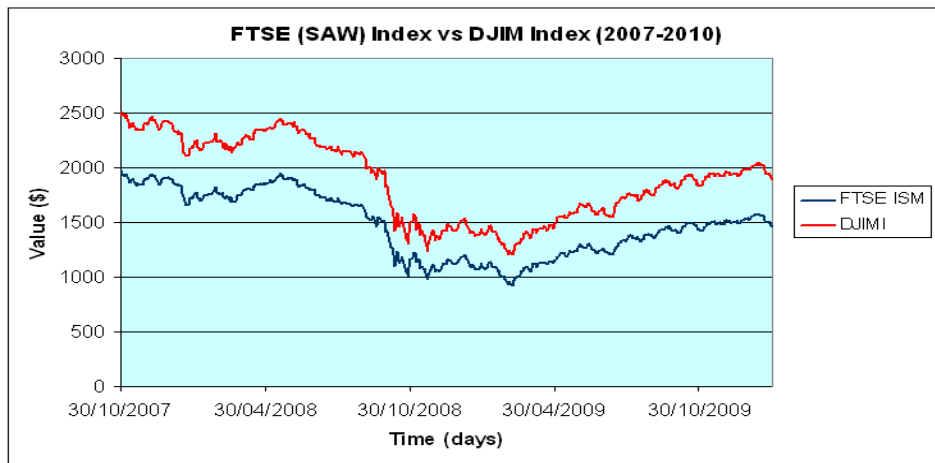


Figure 6.1: Trend of DJIM and FTSE (SAW) indices in the period 2007-2010

It is clear from the above figure that both DJIM and FTSE (SAW) indices follow almost the same trend in the period from 2007 to 2010. Such trend indicates a high correlation which can be a bad sign for diversification. This can be shown by calculating the correlation between the returns of both indices which is found to be 0.90. As the correlation between both indices is quite high, then it might be difficult to achieve a large reduction in the variance; and hence the diversification benefits would not be limited. However, we still aim to use the MPT model to design the new index fund, therefore, we present some basic statistics for the returns of both indices in the same sample period as follows:

2007-2010	DJIM	FTSE (SAW)
Return	-12.32 %	-13.20 %
Volatility	27.62 %	26.51 %
Correlation	0.9	0.9

Table 6.1: Average Yearly Return and Volatility of DJIM and FTSE (SAW) indices in the Period 2007-2010

In order to employ the MPT in the implementation or design of the new index fund, we need to use the relevant figures presented in the table above. Recalling the weighting equation mentioned earlier:

$$w_A = \frac{\sigma_B^2 - \sigma_A \sigma_B \rho_{AB}}{\sigma_A^2 + \sigma_B^2 - 2\sigma_A \sigma_B \rho_{AB}}$$

Where σ_A & σ_B are the volatility of FTSE (SAW) and DJIM respectively, and ρ_{AB} is the correlation between both indices. In addition, w_A & w_B are the weighting of FTSE (SAW) and DJIM respectively.

According to the MPT, the new index fund should consist of 28% of DJIM and 72% of FTSE (SAW). Such weightings strategy aims to create a more efficient portfolio by minimizing the variance as much as possible via the mean-variance framework. The historical overview of what the trend of the new index might have been during the same sample period (2007-2010) is presented by Figure 6.2:

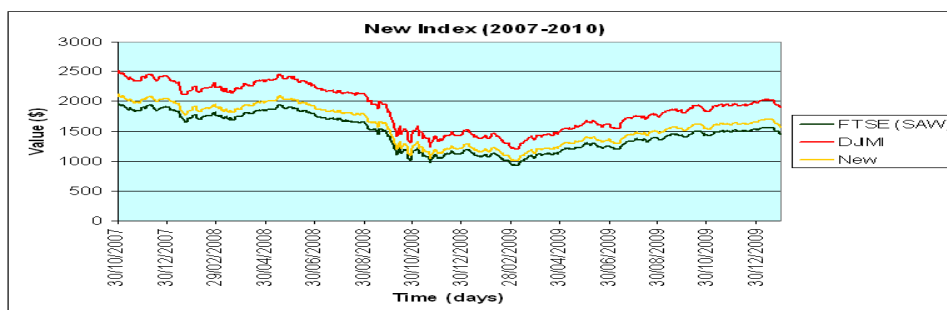


Figure 6.2: Trend of NEW Index in Comparison to DJIM and FTSE (SAW) indices in the Period 2007-2010

As shown in the figure above, there is still a high correlation between the new index and the other two indices. The correlation between the new index and the FTSE (SAW) and DJIM indices are found to be 0.99 and 0.96 respectively; which means they are almost positively correlated. In addition, the main two elements within the mean-variance framework of MPT are the return and volatility of portfolios. Therefore, we use those elements to compare the new index with the other two Islamic indices as presented in the table below:

2007-2010	DJIM	FTSE (SAW)	NEW
Return (daily)	-0.0489 %	-0.0524 %	-0.0512 %
Return (yearly)	-12.32 %	-13.20 %	-12.90 %
Volatility (daily)	1.74 %	1.67 %	1.65 %
Volatility (yearly)	27.62 %	26.51 %	26.19 %

Table 6.2: Average Daily and Yearly Return and Volatility of DJIM, FTSE (SAW) and NEW indices in the Period 2007-2010

It is clear that the NEW index has the least volatility (variance) in comparison with the other two Islamic indices. The reduction in variance is quite tiny since the correlation between the two Islamic indices is very high; and as mentioned earlier, this is one of the limitations of the MPT. However, the crucial objective of the MPT has been achieved by minimizing the variance as much as possible, and hence obtaining the maximum possible expected return for that particular risk level.

6.5 Performace of Proposed Index

The design and implementation of any index fund have a crucial objective which is to replicate or match the investment performance of a specific or market index. Therefore, we test the performance of the index fund proposed in the previous section by identifying how much its returns match the corresponding returns of the S&P 500 index. Such performance measure is called "Tracking Error", and it is accepted in many financial literatures since historical data is used [35]. Tracking Error (TE) is usually a root-mean-square error measure of the difference in returns between the portfolio and the target index over a time period [35]:

$$TE = \sqrt{\sum_{i=1}^T \frac{(F_t - I_t)^2}{T}}$$

Where:

F_t : the return on the index fund (portfolio) at time t .

I_t : the return on the target or market index at time t .

T : the time period or horizon.

In order to measure the Tracking Error for the proposed index fund, we first have a look at the prices of its componenets and how they change in comparison with the S&P 500 index throughout the period from October 30th, 2007 to January 29th, 2010. The componenets are the Dow Jones Islamic Market and FTSE (SAW) indices, and Figure 6.3 shows their historical overview with the S&P 500 Index:

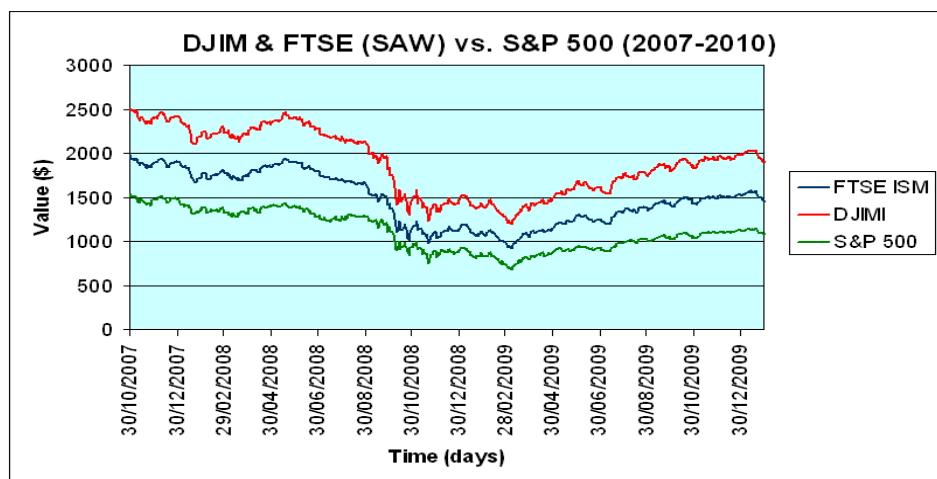


Figure 6.3: Trend of DJIM and FTSE (SAW) indices in comparison with S&P 500 Index throughout the Period 2007-2010

The trends of the three indices are almost the same; which means there is a high correlation between them and quite small tracking errors in comparison with the S&P 500 index. The correlations between S&P 500 and DJIM & FTSE (SAW) are found to be 0.837 and 0.816 respectively. In addition, the tracking error for DJIM and FTSE (SAW) is resulted to be 1.16% and 1.22% respectively.

Now let us measure the tracking error for the proposed index fund, and see whether or not it has a lower tracking error than DJIM and FTSE (SAW). Again, we start by having an overview of the price of the proposed index fund (NEW) and how it changes in comparison with the S&P 500 index throughout the period from October 30th, 2007 to January 29th, 2010 as shown in Figure 6.4:

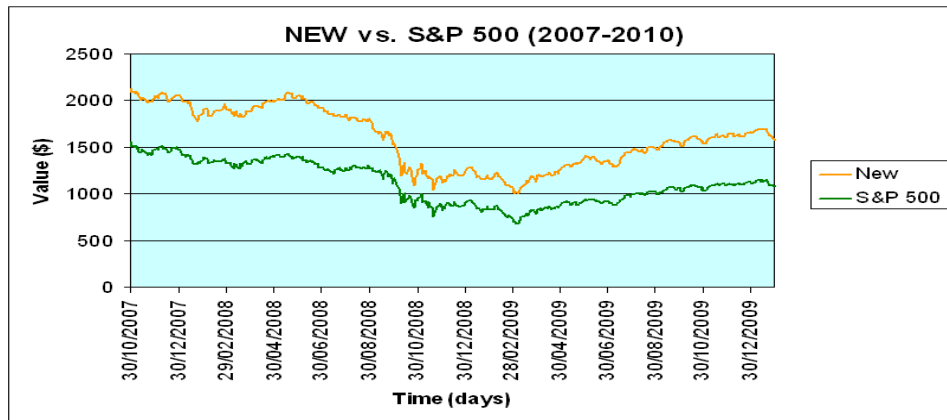


Figure 6.4: Trend of NEW Index in comparison with S&P 500 Index in the period 2007-2010

Similar to the case of DJIM & FTSE (SAW), the NEW index has almost the same trend as the S&P 500 index during the same sample period. The correlation between the NEW and S&P 500 indices is found to be 0.841, while the tracking error for the NEW index is calculated as 1.14%. Since the tracking errors of the three indices in comparison with the S&P 500 index are quite small, then this indicates that they (including S&P 500) have almost the same returns at each time sample as shown in Figure 6.5:

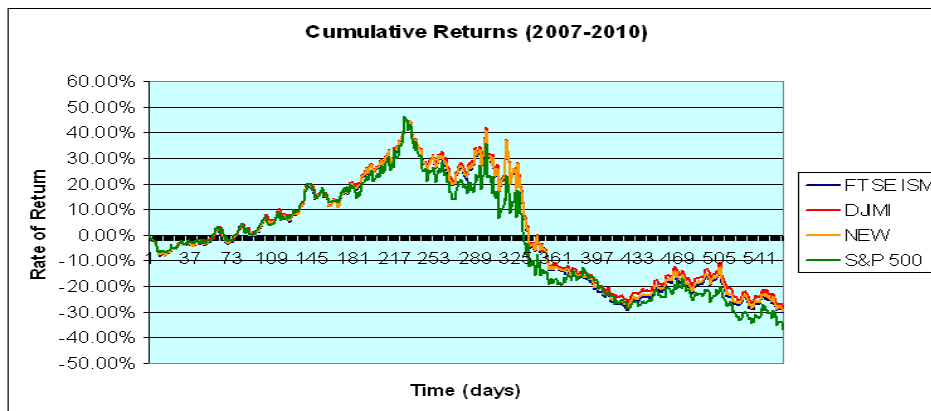


Figure 6.5: Cumulative Returns of DJIM, FTSE (SAW), NEW, and S&P 500 indices in the Period 2007-2010

Although it seems that all three indices are replicating the S&P 500 index quite well, it is important to consider their tracking errors in such indexing investment. This is simply because that the tracking error is proportional to the transaction cost, and therefore, investors aim to have the least possible tracking error which reflects a good performance measure [3]. Therefore, we present the following cumulative tracking error of the three indices throughout the period from October 30th, 2007 to January 29th, 2010 as illustrated by Figure 6.6:

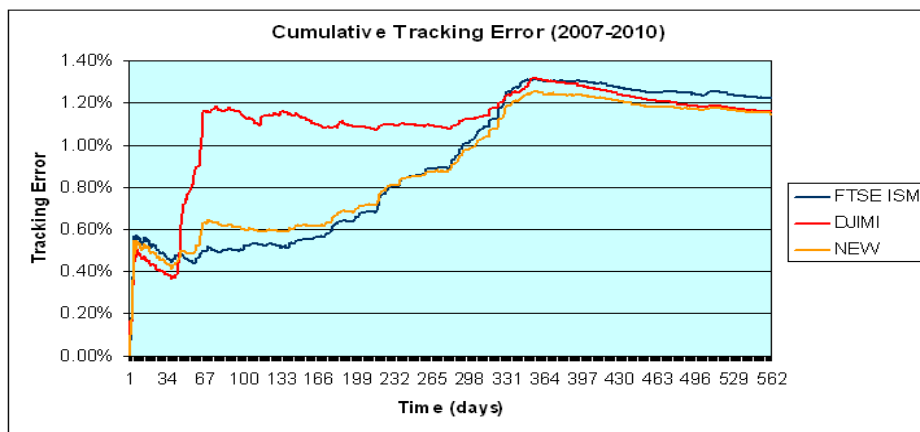


Figure 6.6: Cumulative tracking error of DJIM, FTSE (SAW), and NEW indices throughout the Period 2007-2010

It is clear that the cumulative tracking error of the three indices was increasing until it reached a steady-state level of about 1.20%. However, in the first half of the sample period, we might say that FTSE (SAW) was performing the best, but in the second half, NEW was performing the best. In order to measure the performance in a comprehensive way, we use the entire sample period to evaluate the cumulative tracking error of the three indices which are as follows:

2007-2010	DJIM	FTSE (SAW)	NEW
Tracking Error (TE)	1.16 %	1.22 %	1.14 %

Table 6.3: Average Tracking Error of DJIM, FTSE (SAW) and NEW Indices in the Period 2007-2010

As mentioned earlier, the transaction costs are proportional to the tracking error. Therefore, the New Index is performing quite better than the other two indices in terms of volatility, tracking error, and transactions cost. Consequently, we may conclude that the proposed index fund has achieved slight benefits of diversification offered by the MPT despite of the high correlation between its component assets. If the correlation was a bit lower, then the diversification benefits would be even much better than what it is now.

6.6 Conclusion

This chapter proposed a new index fund as a result of combining the Dow Jones Islamic Market and FTSE Shariah All-World (SAW) indices. Such combination is done through the Modern Portfolio Theory (MPT) within the mean-variance framework. The simple idea of MPT is to minimize the variance to the least possible level and at the same time maximizing the expected return corresponded to that risk level. Therefore, the MPT aims to provide some diversification benefits to reduce or even eliminate risks despite of its limitations. However, it has been shown that the new index would be performing slightly better than the DJIM and FTSE (SAW) indices in terms of volatility, tracking error, and transaction costs; since all these measures are important in indexing investments.

Chapter 7

Conclusions and Recommendations

7.1 Overview

The main aim of this thesis was to have a better understanding and insight into the concept of Islamic Banking by investigating the performance of the Islamic stock indices in the 2008 credit crisis. We attempted to achieve that aim by addressing three research questions, in which, we studied the development, structure, and pricing of Islamic financial products. In addition, we investigated the performance of Islamic stock indices in the 2008 credit crisis, and how significantly different they are from their counterparts. Last but not least, we proposed a possible way to combine the Islamic stock indices to have a more efficient index fund.

We briefly present in this chapter the main conclusions reached throughout this thesis, and also indicate some recommendations as well as future works that might help to solve the general problems within the Islamic finance industry.

7.2 Conclusions

Our findings throughout all the chapters of this thesis are presented by the following points:

- The basic idea of Islamic finance is that money is only a measure of value and it does not have any value itself. As a result, there should be no charge for using money (i.e. interest). Therefore, Islamic finance is considered to be asset-based as opposed to conventional finance which is currency-based. Since Islamic finance is asset-based, investments are structured on exchange or ownership of assets, and money is simply the payment driver to affect and initiate the transaction. Those investments should comply with Shariah (i.e. Islamic rules) which forbids many activities, such as, usury, uncertainty, gambling, and speculation. In addition, they should not contain any commodities, such as, pork, tobacco, and alcohol.
- The development of new products within Islamic banking consists of three phases which are Identifying Shariah Options, Finalizing Shariah Structure, and Reviewing Legal Documentation. Each of those phases involves different activities and deliverables which require full and comprehensive understanding of Islamic law in order to make the entire process and end results Shariah-compliant. Since everything has to be Shariah-compliant, many issues exist throughout the development process of products. For example, diversity in Shariah opinions exists as different scholars have different interpretations of the Islamic rules; especially if they are not stated clearly in the primary sources (i.e. Quran and Sunnah). Therefore, what is viewed as a permissible activity varies from one scholar to another due to the absence of uniform or standard way of interpreting the available sources of Shariah (Islamic law).
- The concepts (ideas) of almost all Islamic financial products are similar to those of conventional financial products, but they differ mainly in principles. For example, the Profit-and-Loss Sharing (PLS) principle exists only in Islamic finance. Therefore, the capital of investment deposits is not guaranteed in Islamic banking, while it is protected and guaranteed in conventional banking. In addition, the rate of return of those deposits in the majority of conventional banking is fixed and

irrespective of the investments performance, while it is uncertain and dependant on the overall performance of the investments in Islamic banking. Last but not least, the use of discretion by banks with regards to collateral to reduce credit risk is always allowed in conventional banking, while it is generally not permissible in Islamic banking; except in extreme cases to lessen moral hazard in PLS modes.

- The pricing of Islamic financial products does not have clear and uniform mechanism. However, the majority of Islamic financial institutions currently use the conventional interest-based benchmarks like the London Inter-Bank Offered Rate (LIBOR) as the reference for pricing their products (normally a mark-up over the benchmarked interest). For example, the coupon (periodic payment) paid to the holders of "Tabreed 06 Sukuk" depends on the LIBOR plus a margin of 1.25% per annum. Such pricing mechanism brings doubt to the public that there is no difference between Islamic banking products and the conventional banking products since they both use the same interest-based benchmark. Therefore, the interest-based pricing mechanism in Islamic banking should be changed to avoid being in suspicious situations. The suggested pricing method is "Hedonic Pricing Model" which is used to value real assets by identify price factors based on the premise that the price of goods or services is determined by both internal and external characteristics.
- The equity premium puzzle (i.e. large excessive returns from stocks over those from bonds) might not be existent in Islamic finance due to the PLS principle. So due to the risk-sharing feature, the risk involved in Islamic investments is much lower than conventional ones. For example, liquidity risk should not be existent in Islamic investments since the debt to equity (leverage) ratio must be very low according to the Islamic law. However, even if the equity premium is assumed to be valid within Islamic finance, then it would not be as big as in the case of the US market. Simply because that Islamic banks are not allowed to invest in stocks freely since the risk associated with such investment is very volatile (excessive risk) and involves speculation which are both forbidden under Islamic law. Therefore, the returns from stocks would be limited to the allowable level of risk which, and the returns from debts would be similar to those from conventional bonds or a bit big-

ger. As a result, our personal view is that the equity premium in Islamic finance would be very small and within the range suggested by standard theorems.

- The performance of Islamic indices (Dow Jones Islamic Market Index and FTSE Shariah All-World Index) is found to be not significantly different from their counterparts (Dow Jones Global Total Stock Market Index and FTSE Global All-Cap Index) throughout the 2008 credit crisis. The result obtained from the different performance measures show that the returns from conventional indices are slightly better than those from Islamic indices due to many activities, such as, gambling and arbitrage opportunities which are forbidden in Islamic finance. However, Islamic indices are relatively more stable than conventional ones since they have slightly a lower volatility and a good ability to adapt themselves with the market fluctuations and changes. In general, the screening and filtering process of companies within any conventional index in order to have an Islamic index (i.e. a subset of the conventional index) does not have effective influence on the overall performance of the obtained index.
- The Modern Portfolio Theory (MPT) is an acceptable tool for creating efficient portfolios by minimizing the variance on returns and maximizing the rate of returns. The use of MPT in creating the new index through the combination of Dow Jones Islamic Market Index and FTSE Shariah All-World Index has achieved a better performance in comparison with the individual components of the index since it has lower volatility and tracking error. Therefore, the achieved and obtained result shows that MPT is able to provide some diversification benefits (i.e. reducing or even eliminating risks) despite of its limitations.

7.3 Recommendations

Throughout the chapters of this thesis, we have figured out some problems that Islamic finance industry is currently facing. Therefore, we try to recommend some general solutions to overcome those problems as follows:

1. Absence of unique and uniform interpretation of Islamic law (Shariah).

The obvious consequence of this problem is the variations of rules (i.e. what is viewed as a permissible activity varies from one scholar to another, from one location to another, and also from one time to another). One possible solution is to standardize the process of interpreting the different sources of Islamic law through a common committee. This is usually the role of central banks but it currently aims to standardize everything on the national level. However, we need an international standardization which requires the courage and cooperation of all players in the market. For example, many central banks have already formed the International Islamic Financial Market (IIFM) as an infrastructure institution to resolve this problem as well as other issues which exist in the industry. The IIFM focus on uniformity and standardization, in which the widely acceptable Shariah interpretations or rulings are benchmarked to create unified documentation framework and products. Such action can provide cost reduction for all financial institutions in the market with improved transactional security, and most importantly a transparent process [4].

2. Islamic Banks do not seem to use interest-free policy in practice.

The profit made by Islamic banks is usually hidden under different covers, such as, admission fees or control/management costs. The banks also involve in some suspicious activities like using the conventional interest-based benchmark for pricing their products. In addition, many studies conclude that there is no discrimination between Islamic and conventional banks in terms of profitability and efficiency; since they both offer their depositors similar returns [37]. Therefore, there should be a very strict supervision from central banks on all the practices and activities of Islamic banks as well as providing more honest and transparent legalizations and regulations with regard to trading and dealing with customers. Again the standardization of institutional working framework would be also advantageous in this case.

3. Some products, such as sukuk, are doubted to be not Shariah-compliant.

Most Islamic financial products share almost the same concept or idea with the corresponding conventional products. Therefore, there is usually a doubt that they are not permissible, especially that people deal with Islamic banks for religious reasons only. For example, in the case of sukuk, there is a doubt that it is not Shariah-compliant; because it either gives fixed periodic payments or guarantees the nominal value (capital). Some sukuk issuers like Tabreed tried to overcome those two concerns by having variable periodic payments and amortized re-payment of capital. However, there might be still some suspicions about the actual business activity in practice. As a solution, there should be an internationally accepted body that varies the Shariah compliance and permissibility of sukuk. This can be done by placing universal systems in every market to monitor how sukuk are traded and progressed as well as appointing highly qualified scholars to ensure the availability of all Shariah requirements before issuing sukuk.

4. No clear mechanism for the pricing of products.

It is very difficult to find in literatures or even in practice how Islamic financial products are priced. All what you might find is that conventional interest-based benchmarks (e.g. LIBOR) are used to value and price the products within Islamic banking. This ambiguity in giving more technical details makes the study of Islamic finance very mysterious as well as creates some doubts on the compliance of Shariah; especially in the area of valuation and pricing of products. Therefore, some smart actions should be taken to overcome this issue by proposing a comprehensive framework for the pricing of products including mathematical equations and formulas. In addition, there should be a universal interest-free based benchmark employed in the pricing process in order to eliminate the fear of market players on dealing and trading with interest or usury.

5. Islamic indexing through the screening and filtering of the components of existent indices is not efficient.

The common methodology used in creating Islamic indices is by filtering the components of existent indices against some business and financial criteria, so if those criteria are met then the component are regarded as Shariah-compliant. Such methodology is not efficient since the created Islamic index is considered to be a subset of the original index and this does not make them different in terms of return and volatility. In addition, it does not give a real evaluation of Islamic investments and businesses, therefore, there should be a more realistic methodology. For example, the creation of Islamic indices should only consider institutions and companies where Islamic dealing and trading are the main business. By doing so, we can call those indices as real Islamic indices and they would give more a accurate and realistic overview on the performance of Islamic finance. Last but not least, the design of indices should take care about the weight of each component in the index as this can affect the overall performance (i.e. the larger the weight of any component, the higher influence on the index performance; especially in terms of volatility).

It is clear from all the problems and recommendations above that there is a huge lack of standardization within Islamic finance and this what causes all those problems and issues. Therefore, we highly recommend that all future works and researches within this industry should target to solve the issue of uniformity and standardization; because we simply believe that this is the first step that should be taken in order to move the Islamic finance industry forward as well as to face all current and future challenges. See ¹

¹You may like to look at one of the most recent works "Standardisation in Islamic Finance" by Dr. Sayd Farook. Available in two parts:

Part 1: [http://www.daralistithmar.com/files/Standardisation%20in%20Islamic%20Finance%20\(Part%201%20of%202\).pdf](http://www.daralistithmar.com/files/Standardisation%20in%20Islamic%20Finance%20(Part%201%20of%202).pdf)

Part 2: [http://www.daralistithmar.com/files/Standardisation%20in%20Islamic%20Finance%20\(Part%202%20of%202\).pdf](http://www.daralistithmar.com/files/Standardisation%20in%20Islamic%20Finance%20(Part%202%20of%202).pdf)

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