

**PERFORMANCE/COMMODITY-LINKED
SUKŪK FOR PRIVATE AND PUBLIC
SECTOR FUNDING: SOME PROPOSED
MODELS**

A dissertation submitted in partial fulfillment of the
requirements for the degree of Doctor of Philosophy
in Islamic Finance

INTERNATIONAL CENTRE FOR EDUCATION
IN ISLAMIC FINANCE

By

ABDOU DIAW

Major Supervisor: Prof. Dr Obiyathulla Ismath Bacha

July 2011

AUTHORIZATION TO SUBMIT DISSERTATION

This dissertation of Abdou DIAW submitted for the degree of PhD in Islamic Finance on “Performance/Commodity-Linked Sukūk for Private and Public Sector Funding: Some Proposed Models”, has been reviewed in final form. Permission, as indicated by the signatures and dates given below, is now granted to submit final copies to the Graduate Studies Department (GSD) for approval.

Major Supervisor _____ Date _____

Prof. Dr Obiyathulla Ismath Bacha

Co-Supervisor _____ Date _____

Dr Ahcene Lahsasna

Internal Examiner _____ Date _____

Prof. Emeritus Datuk Dr Mohamed Ariff bin Abdul Kareem

External Examiner _____ Date _____

Prof. Dr Fauzia Bt Mat Nor

Chairman _____ Date _____

Prof. Datuk Dr. Syed Othman Alhabashi

Final Approval and Acceptance by the GSD

_____ Date _____

Prof. Dr Obiyathulla Ismath Bacha

ABSTRACT

Current *Sukūk* structures often fall short of adequately meeting the *Sharī'ah* conscious investors' needs. The objective of this dissertation is, therefore, to address this issue by conceptualizing and operationalizing three innovative models of *Sukūk*. The first proposed model of *Sukūk* is based on the concept of *Mushārah* and is meant for companies and revenue generating infrastructure projects. The model has an incentive-compatible feature by making the share of the issuing entity in the profit positively related to its performance. In addition to this, a convertibility clause could be included. The second proposed *Sukūk* model is for financing non revenue generating public sector projects whose return is linked to the prices of a basket of export commodities of the issuing country. The underlying *Fiqh* concept used is the Forward *Ijārah*. The third model is similar to the second; however, its return is linked to the GDP performance of the issuing country. The theoretical properties of the models are empirically validated through two types of simulations: Monte Carlo Simulation and Backtesting method. Aside from, the potential application of the findings, this dissertation has at least three main theoretical contributions. First, it adds to the literature on incentive-compatible contracts in Islamic finance, by addressing the under utilization of partnership contracts. Second, it addresses the issue of efficient debt management and benchmarking against interest rate in an Islamic framework. Third, it proposes an innovative and systematic framework for the development of *Sharī'ah* compliant products. All the proposed models are designed to complement and not replace existing financial instruments in such a way that returns are linked to indicators from the real economy with a differentiated and distinctive risk- return profile. The proposed models are based on simplicity, as each uses only one basic *Sharī'ah* nominate contract, but they will constitute a new asset class that offers a high potential for risk-sharing and diversification.

DECLARATION

I hereby declare that this dissertation is the result of my own investigations, except where otherwise stated. I also declare that it has not been previously or concurrently submitted as a whole for any other degrees at INCEIF or other institutions.

Abdou DIAW

Signature.....

Date.....

DECLARATION OF COPYRIGHT

THE INTERNATIONAL CENTRE FOR EDUCATION IN ISLAMIC FINANCE (INCEIF)

DECLARATION OF COPYRIGHT AND AUTHORIZATION TO USE

Copyright ©2011 by Abdou DIAW. All Rights Reserved.

Performance/Commodity-Linked Sukuk for Private and Public Sector Funding: Some Proposed Models

No part of this unpublished dissertation may be reproduced, copied, photocopied, transmitted, stored, in any form or by any means without prior permission of the author except as provided below:

1. Any part quoted, adapted, copied may only be used with proper acknowledgement to the author.
2. The author hereby grants INCEIF with a royalty-free license to use the author's copyright.
3. INCEIF and its library shall have the right to keep, reproduce, transmit copies (print and electronic) for academic and institutional research, teaching and reference purposes.
4. INCEIF Knowledge Management Centre has the right to store in a retrieval system, make copies (print and electronic) and supply copies of this unpublished dissertation if requested by other universities and research libraries.

Affirmed by Abdou DIAW

(signature)

Date: -----

VITA

Postgraduate Diploma in Islamic Banking & Finance

International Islamic University Malaysia

Master's Degree in Applied Mathematics

Cheikh Anta Diop University of Dakar/ Senegal

Bachelor's Degree in Mathematics

Cheikh Anta Diop University of Dakar/ Senegal

General Certificate of Education – Advanced Level

(Mathematics & Physical Sciences)

Ministry of Higher Education of the Republic of Senegal /Cheikh
Anta Diop University of Dakar/ Senegal

Brevet d'arabe littéral (Diploma of Literal Arabic)

Université Sorbonne Nouvelle Paris III /
France

Intermediary Arabic Junior High School Certificate

Ministry of Education of the Republic of Senegal

ACKNOWLEDGEMENTS

Praise be to Allah, Who enabled me to accomplish this work, and peace and blessings be upon His Prophet Muhammad and his family.

I would like to express my sincere gratitude to Prof. Dr Obiyathulla Ismath Bacha, my main supervisor, for his insightful guidance and his material and moral support throughout this dissertation. I benefited a lot from his wide knowledge and rich experience as his student and his research/teaching assistant. I am also deeply thankful to my co-supervisor, Dr Ahcene Lahsasna for his help, advice and useful inputs. My grateful appreciation goes to our Chief Academic Officer, Prof. Datuk Dr. Syed Othman Alhabashi for relentless attention to our problems and his valuable support and wisdom. I take this opportunity to thank my lecturers at INCEIF and all those who have ever participated in my training. May Allah reward all of them. I share this PhD journey with interesting colleagues. I particularly think of brother Adam Boon Ka, sisters Salwana, Omaima Nor Aachikin. I reserve special mention to sister Alina who generously went through the earlier drafts of this research.

Over the last two years I have been a recipient of the Malaysian International Scholarship offered by the Malaysian Ministry of Higher Education. I would like to express my heartfelt thanks to the Malaysian government for this precious assistance.

My stay in Malaysia would have been less supportable without a wonderful social environment. I am, thus, appreciative of the great moments spent with Abdoulaye Mbow, Muhammad Ndaw & family, Dr. Abdul Aziz Fall & family, Abdoulaye Diallo, Idrissa Diaby, Dr Harouna & family, Dr Ibrahim Faye & family, Diouma Diallo, Jaml Elbaff, Fomba Sannoh, Khaled Mohamed, my friends at Madrasa Tarbiyah at Kampong Bandar Dalam.

At this stage of my training I deem obligatory to invoke Allah's Mercy upon my late father; my prayers go to my mother too. Both of them invested a lot for my education. I record here my deepest indebtedness to my wife, Maty, and my children for their constant patience and their priceless support and love. Finally to all my brothers and sisters, my relatives and friends who have directly or indirectly contributed to this work I say *Jazaakumullaahu khayrane*.

TABLE OF CONTENTS

AUTHORIZATION TO SUBMIT DISSERTATION	II
ABSTRACT.....	III
DECLARATION	IV
DECLARATION OF COPYRIGHT.....	V
VITA	VI
ACKNOWLEDGEMENTS	VII
TABLE OF CONTENTS	IX
LISTE OF TABLES	XV
LIST OF CHARTS AND GRAPHS	XVII
LIST OF DIAGRAMS	XVIII
LIST OF ABBREVIATIONS.....	XIX
CHAPTER ONE INTRODUCTION.....	- 1 -
1. BACKGROUND.....	- 1 -
2. PROBLEM STATEMENT	- 3 -
3. SIGNIFICANCE OF THE STUDY.....	- 6 -
4. DEFINITION OF THE TERMS.....	- 7 -
5. OUTLINE OF THE CHAPTERS IN THE DISSERTATION.....	- 11 -
CHAPTER TWO OVERVIEW OF ISLAMIC FINANCE AND ISLAMIC CAPITAL MARKET.....	ERREUR ! SIGNET NON DEFINI.
1. INTRODUCTION	Erreur ! Signet non défini.

2. **INTRODUCTION TO ISLAMIC FINANCE**.....Erreur ! Signet non défini.
 - 2.1. **Rationale of Islamic Banking and Finance**Erreur ! Signet non défini.
 - 2.2. **Key *Shar'ah* Rulings Pertaining to Commercial Transactions**..... Erreur ! Signet non défini.
 - 2.2.1. *The Principle of Permissibility* *Erreur ! Signet non défini.*
 - 2.2.2. *The Principle of Mutual Consent*..... *Erreur ! Signet non défini.*
 - 2.2.3. *The Prohibition of Ribā*..... *Erreur ! Signet non défini.*
 - 2.2.4. *The Prohibition of Gharar* *Erreur ! Signet non défini.*
 - 2.2.5. *Prohibition of Maysir* *Erreur ! Signet non défini.*
 - 2.2.6. *Prohibition of Illicit Goods*..... *Erreur ! Signet non défini.*
 - 2.3. **Maqāsid al-*Shar'ah* in Transactions**Erreur ! Signet non défini.
 - 2.3.1. *Beneficial Outcome (Maslahah)* *Erreur ! Signet non défini.*
 - 2.3.2. *Balance in the Terms of the Contracts* *Erreur ! Signet non défini.*
3. **INTRODUCTION TO ISLAMIC CAPITAL MARKET**.... Erreur ! Signet non défini.
 - 3.1. **Capital Market: Definition and Importance**Erreur ! Signet non défini.
 - 3.2. **Islamic Capital Market: Rationale, Players and Instruments** Erreur ! Signet non défini.
4. **OVERVIEW OF THE *SUKŪK* MARKET**Erreur ! Signet non défini.
5. **CONCLUSION**Erreur ! Signet non défini.

CHAPTER THREE LITERATURE REVIEWERREUR ! SIGNET NON DEFINI.

1. **GENERAL INTRODUCTION**Erreur ! Signet non défini.
2. ***SUKŪK*: CONCEPT, POTENTIALS AND ISSUES**.Erreur ! Signet non défini.
 - 2.1. **The Concept of *Sukūk* and its Historical Background** Erreur ! Signet non défini.
 - 2.2. **Importance and Potential of *Sukūk***Erreur ! Signet non défini.
 - 2.2.1. *Potential Benefits of *Sukūk* for the Public Sector*..... *Erreur ! Signet non défini.*
 - 2.2.2. *Potential Benefits of *Sukūk* for the Private Sector*..... *Erreur ! Signet non défini.*
 - 2.2.3. *Potential Benefits of *Sukūk* for the Investors*.. *Erreur ! Signet non défini.*
 - 2.3. **Comparing *Sukūk* to other Financial Instruments** Erreur ! Signet non défini.
 - 2.4. **Issues with the Current *Sukūk* Structures**Erreur ! Signet non défini.
 - 2.4.1. *Shar'ah Issues*..... *Erreur ! Signet non défini.*
 - 2.4.2. *Economic Issues*..... *Erreur ! Signet non défini.*
 - 2.4.3. **Sukūk Salam** *Erreur ! Signet non défini.*
 - 2.4.4. **Sukūk Mudhārabah/Musharakah**..... *Erreur ! Signet non défini.*
 - 2.4.5. *The AAOIFI's Resolution* *Erreur ! Signet non défini.*

- 2.5. **Conclusion**.....Erreur ! Signet non défini.
3. **INNOVATION AND FINANCIAL ENGINEERING**..... Erreur ! Signet non défini.
- 3.1. **Innovation and Financial Engineering in Islamic Finance**.. Erreur ! Signet non défini.
- 3.2. **Innovation and Financial Engineering in Conventional Finance**.. Erreur ! Signet non défini.
- 3.2.1. **Dealing with the Agency Problem: The Examples of Incentive-Compatible Contracts and Convertibles Bonds**Erreur ! Signet non défini.
- 3.2.2. *Dealing with the Issue of Benchmark: The Examples of Commodity-Linked Bonds and GDP-Linked Bonds*Erreur ! Signet non défini.
4. **GENERAL CONCLUSION**Erreur ! Signet non défini.

CHAPTER FOUR RESEARCH METHODERREUR ! SIGNET NON DEFINI.

1. **INTRODUCTION**Erreur ! Signet non défini.
2. **The theoretical part of the process**.....Erreur ! Signet non défini.
- 2.1. **The Economics of the Model**Erreur ! Signet non défini.
- 2.2. *Sharī'ah Screening/Justification of the Model* ..Erreur ! Signet non défini.
- 2.3. **Mathematical Formulation of the Model**.....Erreur ! Signet non défini.
3. **Empirical part of the process**Erreur ! Signet non défini.
- 3.1. **Simulations**.....Erreur ! Signet non défini.
- 3.1.1. *Monte Carlo Simulation*Erreur ! Signet non défini.
- 3.1.2. **Backtesting**.....Erreur ! Signet non défini.
- 3.2. **Analysis of the Results**Erreur ! Signet non défini.
4. **CONCLUSION**Erreur ! Signet non défini.

CHAPTER FIVE INNOVATIVE SUKŪK FOR COMPANIESERREUR ! SIGNET NON DEFINI.

1. **INTRODUCTION**Erreur ! Signet non défini.
2. **A FIQHI DISCUSSION OF THE UNDERLYING CONCEPT: *Mushārah***
Erreur ! Signet non défini.
- 2.1. ***Mushārah*: Justification and Definition**Erreur ! Signet non défini.
- 2.2. **Pillars and Conditions of *Mushārah***Erreur ! Signet non défini.
- 2.2.1. *Conditions Pertaining to the Capital*.....Erreur ! Signet non défini.
- 2.2.2. *Conditions Pertaining to Profit and Loss*.....Erreur ! Signet non défini.
- 2.2.3. *Management*.....Erreur ! Signet non défini.
- 2.2.4. *Redemption and Convertibility*.Erreur ! Signet non défini.

3. THE MODEL: THE ECONOMICS AND THE MATHEMATICAL FORMULATION.....	Erreur ! Signet non défini.
3.1. The Design of the Model	Erreur ! Signet non défini.
3.2. Valuation (Pricing) of the <i>Sukūk Mushārah</i> Erreur ! Signet non défini.	Erreur ! Signet non défini.
3.2.1 <i>General Considerations on Financial Assets Pricing</i> .	Erreur ! Signet non défini.
3.2.2. <i>Pricing and Risk Analysis of Sukūk Mushārah</i>	Erreur ! Signet non défini.
3.3. The Clause of Convertibility	Erreur ! Signet non défini.
4. MONTE CARLO SIMULATION OF THE MODEL	Erreur ! Signet non défini.
4.1. Method Application and Data.....	Erreur ! Signet non défini.
4.2. Analysis of the Results	Erreur ! Signet non défini.
4.2.1. λ (Lambda) Distribution	Erreur ! Signet non défini.
4.2.2. <i>Returns Distributions</i>	Erreur ! Signet non défini.
5. BACKTESING THE MODEL	Erreur ! Signet non défini.
5.1. Data and Method Application.....	Erreur ! Signet non défini.
5.2. Analysis of the Results.	Erreur ! Signet non défini.
5.2.1. <i>A General Description of the Results</i>	Erreur ! Signet non défini.
5.2.2. <i>An Example of Analysis: the Case of Kwantas</i>.....	Erreur ! Signet non défini.
5.2.3. <i>Hypothetical Example</i>	Erreur ! Signet non défini.
6. CONCLUSION	Erreur ! Signet non défini.

CHAPTER SIX INNOVATIVE *SUKŪK* FOR SOVEREIGNSERREUR ! SIGNET

1. INTRODUCTION	Erreur ! Signet non défini.
2. PART I: COMMODITY-LINKED <i>SUKŪK</i>.	Erreur ! Signet non défini.
2.1. The Model: The Economics and the Mathematical Formulation..	Erreur ! Signet non défini.
2.1.1. <i>The Design of the Model</i>.....	Erreur ! Signet non défini.
Stage 1.	Erreur ! Signet non défini.
Stage 2	Erreur ! Signet non défini.
Stage 3	Erreur ! Signet non défini.
2.1.2. <i>The Pricing of CLS</i>	Erreur ! Signet non défini.
2.2. A <i>Fihi</i> Discussion of the Concept Used in the Contract	Erreur ! Signet non défini.
2.2.1. <i>Definition and Legal Basis of Forward Ijārah</i>.....	Erreur ! Signet non défini.
2.2.2. <i>Pillars and Conditions of Forward Ijārah</i>	Erreur ! Signet non défini.
2.2.3. <i>The Issue of Indexation</i>	Erreur ! Signet non défini.

2.3. Backtesting	Erreur ! Signet non défini.
2.3.1. <i>Data and Method Application</i>	Erreur ! Signet non défini.
2.3.2. <i>Analysis of the Results.</i>	Erreur ! Signet non défini.
2.3.3. <i>Hypothetical Example</i>	Erreur ! Signet non défini.
3. PART II: GDP-LINKED <i>SUKŪK</i>	Erreur ! Signet non défini.
3.1. The Model: The Economics and the Mathematical Formulation.....	Erreur ! Signet non défini.
3.1.1. <i>The Design of the Model</i>	Erreur ! Signet non défini.
3.1.2. <i>The Pricing of GLS</i>	Erreur ! Signet non défini.
3.2. A <i>Fiqhi</i> Discussion of the Model	Erreur ! Signet non défini.
3.3. Backtesting the Model.....	Erreur ! Signet non défini.
3.3.1. <i>Data and Method Application</i>	Erreur ! Signet non défini.
3.3.2. <i>Analysis of the Results</i>	Erreur ! Signet non défini.
3.3.3. <i>Hypothetical Example</i>	Erreur ! Signet non défini.
4. Comparing CLS and GLS	Erreur ! Signet non défini.
5. CONCLUSION	Erreur ! Signet non défini.
CHAPTER SEVEN CONCLUSION	ERREUR ! SIGNET NON DEFINI.
1. SUMMARY	Erreur ! Signet non défini.
2. Assessing the Models in the Light of <i>Maqāsid al-Sharī'ah</i> in Transactions	Erreur ! Signet non défini.
3. Assessing the Models in the Light of the Two Types of Efficiency	Erreur ! Signet non défini.
The Technical Efficiency of the Models	Erreur ! Signet non défini.
The Allocative Efficiency of the Models.....	Erreur ! Signet non défini.
4. THEORETICAL IMPLICATIONS	Erreur ! Signet non défini.
5. PRACTICAL IMPLICATIONS	Erreur ! Signet non défini.
6. LIMITATIONS OF THE STUDY AND FURTHER RESEARCH.....	Erreur ! Signet non défini.
BIBLIOGRAPHY	ERREUR ! SIGNET NON DEFINI.
ENGLISH REFERENCES:	Erreur ! Signet non défini.
ARABIC REFERENCES:	Erreur ! Signet non défini.

APPENDICES	ERREUR ! SIGNET NON DEFINI.
APPENDIX 3 -1: Musharaka Term Finance Certificates	Erreur ! Signet non défini.
APPENDIX 5-1: PROOF FOR THE ADDITIONAL CONDITION ON λ	Erreur ! Signet non défini.
APPENDIX 5-2.....	Erreur ! Signet non défini.
Annual Return On Equity (ROE) by sector (malaysia) ...	Erreur ! Signet non défini.
Operating Profit for 16 Malaysian Companies	Erreur ! Signet non défini.
The Betas for 23 Malaysian companies.....	Erreur ! Signet non défini.
APPENDIX 5-3: SUMMARY STATISTICS FOR THE RETURNS ON Sukūk AND EQUITY	Erreur ! Signet non défini.
APPENDIX 5-4: RESULTS OF THE BACKTEST FOR THE FIVE SELECTED COMPANIES OVER THE PERIOD 2005 – 2009.....	Erreur ! Signet non défini.
APPENDIX 6-1: ANNUAL RETURNS TO CLS FOR SELECTED COUNTRIES.....	Erreur ! Signet non défini.
APPENDIX 6-2: EXPORTS-GDP RATIO FOR THE SELECTED COUNTRIES	Erreur ! Signet non défini.
APPENDIX 6-3: Exported commodities data for selected countries based on average 2005-2006.....	Erreur ! Signet non défini.
APPENDIX 6-4: ANNUAL RETURNS TO GLS FOR SELECTED COUNTRIES.....	Erreur ! Signet non défini.

LISTE OF TABLES

<u>Table No.</u>	<u>Page No.</u>
Table 5-1: Summary Statistics of the Backtest Results for the Period 2005-2009	137
Table 5-2: Estimates of the Input Variables for the Period 2012-2016	140
Table 5-3: Results of the Hypothetical Example	141
Table 5-4: Results for Bina Darulaman Berhad	238
Table 5-5: Results for Kwantas	238
Table 5-6: Results for Nestle	239
Table 5-7: Results for Sime Darby	239
Table 5-8: Results for Tenaga	240
Table 5-9: Profit and interest rates paid by the selected companies	240
Table 6-1: Summary Statistics for CLS for the period 1996-2006	170

Table 6-2: Correlation Coefficients between the CLS Annual Returns and Selected Benchmarks	173
Table 6-3: Hypothetical Values of WI and CF_k for Country X CLS	176
Table 6-4: Correlation Coefficients between GDP Growth rate of the Selected Countries and that of their respective regions from 1990 to 2009	184
Table 6-5: Summary Statistics for GLS for the period 1996-2006	187
Table 6-6: Correlation Coefficients between the GLS Annual Returns and Selected Benchmarks	190
Table 6-7: Hypothetical Values of I and CF_k for Country X GLS	191
Table 6-8: Annual Returns to CLS for Bahrain	242
Table 6-9: Annual Returns to CLS for Ghana	243
Table 6-10: Annual Returns to CLS for Malaysia	244
Table 6-11: Annual Returns to CLS for Senegal	245
Table 6-12: Annual Returns to CLS for Uzbekistan	246
Table 6-13: Exports – GDP ratio for the selected countries	247
Table 6-14: Some exported commodities data based on average 2005-2006	248
Table 6-15: Annual Returns to GLS for Algeria	250
Table 6-16: Annual Return to GLS for Bahrain	251
Table 6-17: Annual Return to GLS for Malaysia	252
Table 6-18: Annual Return to GLS for Senegal	253
Table 6-19: Annual Return to GLS for Uzbekistan	254

LIST OF CHARTS AND GRAPHS

<u>Chart No.</u>	<u>Page No.</u>
Chart 2-1: Volume of Issued Sukūk (in US \$ billion)	41
Chart 2-2: Number of Issued Sukūk	42
Chart 2-3: Chart 2-3: Structural break – up of total global <i>Sukūk</i> issuance (Jan. 2001 –Dec. 2009)	43
Chart 5-1: Lambda distribution	127
Chart 5-2: Lambda regression coefficients	128
Chart 5-3: The distribution of the returns to <i>Sukūkholders</i>	129
Chart 5-4: The distribution of the returns to the shareholders (scenario 1, i.e. tax deductibility)	130
Chart 5-5: The distribution of the returns to the shareholders (scenario 2, i.e. without tax deductibility)	130
Chart 5-6: Regression coefficients for return to <i>Sukūkholders</i>	132

Chart 5-7: Regression coefficients for return to shareholders (scenario 1)	132
Chart 5-8: Regression coefficients for return to shareholders (scenario 2)	133
Graph 6-1: CLS (hypothetical) Annual Returns for the period 1996-2006	171
Graph 6-2: GLS (hypothetical) Annual Returns for the period 1996-2006	189

LIST OF DIAGRAMS

<u>Diagram No.</u>	<u>Page No.</u>
Diagram 3-1: Flow Diagram of a Securitization Process	57
Diagram 4-1: Process for Model Development	89

LIST OF ABBREVIATIONS

AAOIFI	Accounting and Auditing Organization for Islamic Financial Institutions
BMA	Bahrain Monetary Authority
BOT	Build-Operate-Transfer
CAPM	Capital Asset Pricing Model
CF	Cash Flow
CLS	Commodities-Linked <i>Sukūk</i>
DIB	Dubai Islamic Bank
e.g.	<i>exempligratia</i> (for example)
EBIT	Earnings Before Interest and Tax
<i>et al.</i>	<i>et alia</i> (and others)
etc.	<i>et cetera</i> (and so forth)
GIFF	Global Islamic Finance Forum

GLS	GDP-Linked <i>Sukūk</i>
GDP	Gross Domestic Product
GNP	Gross national Product
GCC	Gulf Cooperation Council
HNWI	High Net Worth Individuals
IFS	International Financial Statistics
IIFM	International Islamic Financial Markets
IMF	International Monetary Fund
IDB	Islamic Development Bank
IFA	Islamic <i>Fiqh</i> Academy
IFIS	Islamic Finance Information Service
IFSB	Islamic Financial Board Services
IFI	Islamic Financial Institutions
IPDS	Islamic Private Debt Securities
IRTI	Islamic Research and Training Institute
LIBOR	London Inter Bank Offer Rate
MCS	Monte Carlo Simulation
MSCI	Morgan Stanley Composite Index
MTFC	<i>Mushārah</i> Term Finance Certificates
PV	Present Value
PPP	Public-Private-Partnership
RA	<i>Radiallaahu Anhu</i>
ROE	Return On Equity
SAW	<i>Sallallaahu Alayhi Wasallam</i>
SPV	Special Purpose Vehicle
UNCTD	United Nations Conference for Trade and Development
VAR	Value-at-Risk

CHAPTER ONE INTRODUCTION

1. BACKGROUND

The second half of the last century has witnessed important political development which ultimately led to the independence of most of the Muslim countries that were previously under colonial domination. That political development was accompanied by a religious resurgence which called for the application of Islamic principles in all areas of life, particularly in finance. With the increasing amounts of accumulated wealth in the hands of Muslims in the oil-rich countries during the seventies, several initiatives gave birth to the establishment of Islamic Development Bank (IDB) and Dubai Islamic Bank (DIB) which is the first Islamic commercial bank in the world. The following decades have seen the establishment of hundreds of Islamic Financial Institutions (IFI) ranging from Islamic banks to Islamic capital markets institutions. These IFIs are supposed to conduct their operations according to *Shari'ah* stipulations

in commercial transactions. One of these stipulations is the prohibition of payment and receipt of interest which constitutes a form of *Ribā*, severely condemned in the Quran. Given the important role of interest in the conventional financial system, it became necessary to come up with alternative products that satisfy the financial needs of the Muslim populations.

In most developed and emerging countries, capital markets have gained increasing importance as a platform for fund mobilization and resource allocation. Two main instruments are usually employed for this purpose: equity instruments and debt instruments. If equity instruments are acceptable, from *Sharī'ah* point of view, with few reservations that the researcher will discuss later, that is not the case for the conventional debt instruments. The reason being the interest payment embedded in the latter. Since in certain circumstances¹, the equity instruments are not adequate to raise the needed funds or to meet the specific risk appetite of a number of investors, it was necessary to develop *Sharī'ah* compliant instruments to meet that demand. *Sukūk*² were found to be the appropriate instrument for mobilizing long term fund in the Islamic Capital market as evidenced by their wide acceptance and their tremendous development. In its Standard No. 17, the Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI) defines *Sukūk* as "*certificates of equal value representing after closing subscription, receipt of the value of the certificates and putting it to use as planned, thus it represents common shares and rights in the underlined assets or their usufructs and services*". From this definition, it appears that

¹ For example, equity financing would not be suitable for governments projects which do not generate revenues.

² ' *Sukūk* ' is an Arabic word in plural; the corresponding singular is 'Sakk'. More elaboration on this in chapter 3.

Sukūk represent proportionate ownership of an underlying asset or service, thus entitling their holders to the cash flows there from.

The rapid growth experienced by the *Sukūk* market during the first stage of the decade was followed by a sharp slow down in the period 2008 – 2009. Two factors have been put forth as causes of this slow down: the global financial crisis and a negative comment of AAOIFI about the conformity to *Sharī'ah* principles of many *Sukūk* structures. While the first factor can be considered as temporary, the second factor, in contrast, if not addressed, threatens the very foundation of the industry, since *Sharī'ah* compliance constitutes the main justification of its existence.

2. PROBLEM STATEMENT

On both the demand and supply sides of the *Sukūk* market, the potential is high. On the demand side, there is an increasing amount of wealth accumulated in the hands of Muslim investors, particularly in the oil-rich Gulf countries, who ask for investment vehicles that are in conformity with the rules of *Sharī'ah*. The wealth in the hands of the Middle Eastern High Net Worth Individuals (HNWI) alone is estimated at US \$ 1.5 trillion, in 2009 (GIFF, 2010; p.32). Besides this category of investors there are others who find *Sukūk* as a suitable instrument for ethical investment and diversification. The oversubscription of many *Sukūk* issues is an additional testimony to the huge demand for *Sukūk*.

On the supply side, there are enormous infrastructure projects, in the Muslim countries that require huge amounts of fund. The planned infrastructure projects in the Gulf Cooperation Council (GCC) countries, from 2008 to 2013, amount to US \$ 2

trillion (GIFF, 2010; p.31). A large number of infrastructure projects, in this region, have been financed through *Sukūk* issuance. As most of the Muslim countries fall in the category of developing countries the need for developmental projects is very high. The World Bank (2008) estimates the total annual demand for infrastructure investment and maintenance from the developing countries to US \$900 billion. Moreover, the recent crisis in the credit market, gave many conventional governments and corporations additional reasons to diversify their source of funding. This explains the increasing openness of many non-Muslim countries to Islamic finance. Also the IFIs which usually use the short-term funds, on their liability side, to finance their long-term assets, are in need of *Sukūk* to manage this maturity mismatch (Standard & Poor, 2009).

To make the high potential supply match this high potential demand a credible *Sukūk* market is crucial. However, there are currently some issues that impede the *Sukūk* market to take full advantage of the abovementioned potentials.

First, as the researcher will show in Chapter Three, the *Sharī'ah* compliance of several *Sukūk* structures in the market and their economic efficiency are questioned by many Muslim scholars. Indeed, the use of *Hiyal*³ in the form of sale and buy-back elements in many *Sukūk* structures, the inclusion of guarantee in partnership contracts and the benchmarking against interest rates are rejected by a majority of Muslim scholars.

Second, to raise funds through *Sukūk*, companies may use either sale-based *Sukūk* or lease-based *Sukūk* or partnership-based *Sukūk* (e.g. *Mudhārabah* and *Mushārah*). The non-tradability of the sale-based *Sukūk* makes them unattractive to

³ Pl. of *Hilah* i.e. legal trick to circumvent *Sharī'ah* rulings.

investors. The *Ijārah* (lease) concept may not be appropriate for those companies that need new investment/venture but do not have eligible asset for *Ijārah*. The partnership-based *Sukūk* appear suitable to overcome the shortcomings of the two other types. However, given the potential agency problem found in them, a proper design of the structure is necessary to attract investors.

Third, the recurrent sovereign debt crises points out to the importance of efficient debt management that could consist of raising the needed funds through financial instruments indexed to some indicators from the real sector of the economy. Such an idea has the property of strengthening the linkage between the real and the financial sectors of the economy and allows risk sharing between the parties involved in the transaction. Despite the compatibility of such an idea with the spirit of Islamic finance, the *Sukūk* market has not yet taken advantage of it as an efficient alternative to benchmarking against interest rates.

From the above discussion, it appears that in spite of the high potential on both the demand and supply sides of the *Sukūk* market, the current *Sukūk* structures fall short of adequately meeting the market's needs as they exhibit several shortcomings such as:

- The violation of some *Sharī'ah* principles in the area of transaction through the recourse to legal tricks (*Hiyal*) and the combinations of controversial contracts ;
- The lack of a risk sharing element in many current *Sukūk* structures due to the detachment of the cash flows from the performance of the underlying asset and the real sector of the economy;

- The complexity of some *Sukūk* structures that induces additional costs and legal uncertainty in case of litigation.

Such a situation warrants the development of innovative models of *Sukūk* that fill the above gaps. This study is a contribution to that task. To do so, it attempts to provide answers to the following research questions:

- **Q1:** How do we design new models of *Sukūk* that would be economically efficient, offer alternative risk-return profiles and, at the same time, uphold the principles of *Sharī'ah*?
- **Q2:** What are the risk/return characteristics of the proposed models?
- **Q3:** What are the potential benefits of the new models of *Sukūk* to the investors and the issuers?

A glimpse of the history of the problem and its development will be provided in Chapter Three.

3. SIGNIFICANCE OF THE STUDY.

Many scholars in the field of Islamic finance have emphasized the crucial importance of financial engineering for the satisfaction of the industry needs (See for instance, Obaidullah, 2005; Al-Suwailem, 2006; Iqbal and Mirakhor, 2007). The study is carried out in a context marked by an increasing interest in Islamic finance as a result of its relative resilience during the recent global financial crisis and the excess liquidity in the GCC countries, in particular. The context is also marked by the

controversies surrounding the economic efficiency and *Sharī'ah* compliance of many *Sukūk* structures in the market. Thus, drawing on the normative nature of Islamic finance, this dissertation brings the debate on *Sukūk* a step further by conceptualizing and operationalizing new ideas for *Sukūk* structuring. As a result, it has at least three main theoretical contributions, besides the potential practical applications of the findings:

- It adds to the literature on incentive-compatible contracts in Islamic finance, which aims to address the under utilization of partnership contracts, by proposing a model of *Sukūk Mushārah* with a variable profit sharing ratio which could be converted into common stock.
- It addresses the issue of efficient debt management and the issue of benchmarking against interest rate in an Islamic framework by proposing two models of *Sukūk* whose profit rate is linked to a price index of a basket of export commodities and the Gross Domestic Product (GDP) development of the issuing country, respectively.
- It proposes an innovative and systematic framework for the development of *Sharī'ah* compliant products.

All the proposed models are designed in such a way that the returns are linked to some indicators from the real economy and their risk return profiles are different from that of the existing *Sukūk*.

It is worth noting that these new models are not meant to replace the accepted *Sukūk* structures, but rather complement them. They provide investors and issuers with more options in a way that is consonant to the objectives of *Sharī'ah* in transactions.

4. DEFINITION OF THE TERMS.

In this section, the researcher provides the definition of some terms that will be frequently used in the study, in particular the Arabic terms. Other terms will be defined in due course as they need some elaborations.

Sharī'ah: Is the sum total of Islamic teaching and system, which was revealed to Prophet Muhammad *Sallallaahu Alayhi Wasallam*⁴ (SAW) recorded in the Quran as well as deducible from the Prophet's divinely – guided lifestyle called the *Sunnah* (Laldin, 2006, p.3).

The definition of ***Sharī'ah compliance*** will be provided later in Chapter Two, as it requires some background discussion.

Fiqh or science of Islamic law is the knowledge of one's rights and obligations (mainly) derived from the Quran or the *Sunnah* of the Prophet, or the consensus of the opinions among the learned ('*Ijmā'*), or analogical reasoning (*Qiyas*) (Laldin, 2006, p.6).

Fiqh Mu'āmalāt: Is the category of *Fiqh* that covers the rulings that govern the relationships between man and man and man and other creatures of Allah (Laldin, 2006, p.10).

Two words in the title of the dissertation deserve brief explanation.

⁴ Invocation dedicated to the Prophet.

Performance: By performance the researcher specifically means the performance of the *Sukūk* issuing firm, measured by its operating profit or the performance of a *Sukūk* issuing country, measured by its GDP.

Model: By model of *Sukūk*, the researcher means a *Sukūk* structure with a definite underlying *Sharī'ah* concept and the related payoff. It is, therefore, used interchangeably with structure.

Different types of *Sukūk*: In its *Sharī'ah* Standards, AAOIFI (2004a) recognizes 14 eligible asset classes in its investment *Sukūk* Standard. These are:

1. Certificates of ownership in leased assets: the investor owns, through the *Sukūk al-Ijārah*, a share of the asset and the related income.
2. Certificates of ownership of usufructs of existing assets: the *Sukūk* holders own the securitized beneficial ownership of the underlying leasehold assets through *Sukūk manfa'at al-Ijārah*.
3. Certificates of ownership of usufructs to be made available in the future as per description: the investor owns, through *Sukūk manfa'at al-Ijārah mowsufa fi al dzima*, securitized beneficial ownership of the underlying leasehold assets to be made available in the future.
4. Certificates of ownership of services of a specified supplier: these are *Sukūk milkiyat al khadamat* that represent ownership of the service of specified supplier (such as educational programmes in a nominated university).

5. A business owner wishing to undertake specific services may raise the funding for such services by pre-selling the services and their expected benefits by issuing *Sukūk milkiyat al khadamat mawsofa fi aldzima*.
6. A business wishing to produce/provide specific goods/commodities at a future date may pre-sell such future delivery goods/commodities and monetize the assets through the issuance of *Sukūk al-Salam*.
7. Builders, developers and manufacturers may fund the cost of construction, development, or manufacturing and deliver the to-be-completed assets at a future date through the issuance of *Sukūk al-Istisnā'*.
8. A business wishing to acquire certain goods or commodities for future sale under a *Murābahah* agreement funds the acquisition of such goods or commodities through the issuance of *Sukūk al Murābahah*. The *Sukūk* holders shall own such goods or commodities and shall be entitled to the realized sales price of the same.
9. A business may seek capital participation in its corporate capital or for a specific project the issuance of *Sukūk al-Mushārahah*. The *Sukūk* holders share in the risks and rewards of the business at the general level or specified sub-business or project level.
10. An entrepreneur (*Mudhārib*) with a good business idea but without capital or little capital may access funds for a proposed business/project from capital providers through the issuance of *Sukūk al-Mudhārahah*. The *Sukūk* holders share in the risks and rewards of the *Mudhārahah*.

11. Capital may be raised through *Sukūk* issues to acquire certain assets or goods or services which are then entrusted to an agent or *wakil* for management on behalf of the owners. In this *Sukūk al-wakāla*, the *Sukūk* holders take the risk of the underlying assets or goods or services and are entitled to any profits generated from the same.
12. The principal owner(s) of an agricultural land (or the owner(s) of the leasehold estate) may raise funds for the cultivation of the land through issuing *Sukūk al-muzāra'ah*. The subscribers to the *Sukūk* are entitled to a share of the produce of the land.
13. The owner(s) of an orchard with productive trees may finance their irrigation, maintenance and orchard management needs by issuing *Sukūk al-Musāqah*. The subscribers are entitled to a share of the produce of the trees.
14. The owner(s) of productive, cultivated farmland may access funds to maintain the land as well as the trees/crops by issuing *Sukūk al-Muqārasah*. The *Sukūk* investors are entitled to a share of the produce of the land and of the trees/crops.

5. OUTLINE OF THE CHAPTERS IN THE DISSERTATION.

This dissertation comprises seven chapters. Each chapter starts with an introductory section that gives an overview of the objectives and structure of the chapter, followed by the main part which can comport several sections. The conclusion represents the last section which offers a summary of the main points of the chapter.

Chapter Two contextualizes the study. For a reader familiar to Islamic finance it constitutes a background for the subsequent discussion, but it provides the neophyte with key concepts in Islamic finance that need to be understood. The chapter starts with a discussion on the rationale for Islamic finance, followed by the presentation of the key rulings or principles that support the field. A separate discussion on the objectives of *Sharī'ah* in transactions is carried out to show that there should not be a conflict between form and substance in Islamic finance. The reason is that all the identified rulings serve some specific objectives of *Sharī'ah* in the areas of commercial transactions. Thus, the researcher has identified two main objectives that serve as criteria for the *Sharī'ah* assessment of *Sukūk* models in the last chapter. A discussion on Islamic capital market and the current development of the *Sukūk* market is carried out in two different sections of the chapter.

Chapter Three reviews the literature related to the topic. It presents the concept of *Sukūk*, its history and its potential economic benefits. The discussion is followed by an examination of the issues in the *Sukūk* market. In this chapter, the researcher argues that to fully take advantage of the potential benefits of the *Sukūk* these issues should be addressed and the way to do so is through innovation. Wisdom can be taken from anywhere, and conventional finance has some good aspects that can be useful to Islamic finance. In this regard, two innovative ideas discussed in conventional finance literature are explored, these are: the incentive-compatible contracts and the GDP/Commodity-linked bonds. These two ideas present opportunities for risk sharing and for integrating the financial sector to the real sector of the economy. Both of them fit well to the principles of Islamic finance.

Chapter Four presents the method employed to develop new models of *Sukūk*. Thus, the method employed is a process which consists of 5 steps that are grouped into two main parts: theoretical and empirical. The theoretical part comprises the first three steps: the discussion of the economics and the *Sharī'ah* issues as well as the mathematical formulation. The empirical part is constituted of simulations and the analysis of the results. Two forms of simulations are employed to test the effectiveness of the models and unveil the characteristics of the returns: Monte Carlo simulation (for the first model only) and backtesting.

The structure of Chapter Five, like that of Chapter Six, follows the process explained in Chapter Four. Chapter Five is about the first model of *Sukūk* for Corporate and revenue generating projects, whereas Chapter Six concerns the second and third model for government infrastructure projects that do not generate revenue. The main method used for the simulations is Backtesting. However, given the limitation of the data to carry out the backtest for the first model, Monte Carlo Simulation (MCS) is also employed, as a complement, to further test the effectiveness of the model.

Chapter Seven concludes the study. The answers to the research questions, formulated from the problem statement, are presented. The models are evaluated from *Sharī'ah* perspective, based on the two objectives of *Sharī'ah* in transactions, discussed in Chapter Two, followed by the assessment of their economic efficiency. The theoretical implications as well as the policy implications are then examined.

