



DETERMINANT OF SUKUK RATINGS:
THE MALAYSIAN CASE

BY

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ABSTRACT

With the development of sukuk market as the Islamic alternatives of the existing bond market, the issue of how to assign a rating to the sukuk issuance rises. These credit ratings fulfil a key function of information transmission in capital market. Issuers seek ratings for a number of reasons, including to improve the trust of their business counterparties or because they wish to sell securities to investors with preferences over ratings. Many investors rely on ratings in their investment decisions. For these reasons, ratings are considered important by issuers and investors alike. This study tries to provide an empirical foundation for the investors to estimate the ratings assign. Using approaches from several rating agencies, past researches on bond ratings, and financial distress prediction and bankruptcy prediction model, this study is trying to build a new model on determining the sukuk ratings. It used Ordered Logistic Regression and Multinomial Logit Regression to create a model of rating probability from several theoretical variables, ie. firm size, leverage, fixed payment coverage, profitability, liquidity, and existence of guarantor. The result shows 70% for Ordered Logistic and 78.3% for Multinomial Logistic of all valid cases are correctly classified into their original rating classes. About the misclassification cost Type I and Type II error, it is also found that Ordered Logistic prediction is having more both Type I and Type II error compare to Multinomial Logistic prediction. Therefore, we conclude that Multinomial Logistic model is more powerful than Ordered Logistic model using the samples we have.

ملخص الدراسة

نظرا للتطور الملحوظ في سوق الصكوك كبديل إسلامي لسوق السندات المالية، فإن مسألة تقييم وتممين الصكوك أصبحت من المسائل المتداولة. إن التقييم بناء على التصنيف الائتماني يقوم بدور أساسي في عملية تداول البيانات في سوق المال. إن مصدري الصكوك يسعون للحصول على التقييم لعدة أسباب، تتضمن سعيهم إلى زيادة ثقة أصحاب الأموال، أو لأنهم يسعون لبيع صكوكهم مع هامش إضافي يزيد على التقييم الفعلي. وكما أن الكثير من المستثمرين يعتمدون على قرارات تقييم الاستثمارات. لهذه الأسباب، نجد أن التقييم يعتبر مهما بالنسبة لمصدري الصكوك والمستثمرين فيها على حد سواء. إن هذه الدراسة تقدم سياق عملي للمستثمرين حتى يتمكنوا من الوصول للتقييم الصحيح، لقد تم استخدام طرق مختلفة لوكالات تقييم الصكوك، والأبحاث السابقة في تقييم السندات، ونموذج توقع الأزمات المالية وتوقع الإفلاس. إن هذه الدراسة تسعى لبناء نموذج جديد لتحديد تقييم الصكوك. لقد تم استخدام ترتيب الانحدار اللوجستي (*Ordered Logistic Regression*) وأيضا الانحدار المنطقي متعدد الحدود (*Multinomial Logit Regression*) لصياغة نموذج جديد للتقييم الاحتمالات من عدة متغيرات نظرية. على سبيل المثال حجم المنشأة، فعالية المنشأة، تغطية الدفعات الثابتة، معدل الربحية، معدل السيولة، ووجود الضمانات. أظهرت النتائج أن 70% من ترتيب الانحدار اللوجستي (*Ordered Logistic Regression*) و 78% من الانحدار المنطقي متعدد الحدود (*Multinomial Logit Regression*) لجميع الحالات المتوفرة أن النتائج قد صنفت بشكل صحيح في نفس التصنيف الأصلي لها.

APPROVAL PAGE

I certify that I have supervised and read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Master of Science in Finance.



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DECLARATION PAGE

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 IIUM or other institutions.

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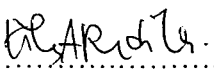
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Dedicated
to
My beloved parents

Aswin Naldi and Rafnis Rahman

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LIST OF ABBREVIATIONS

AAIOFI	Accounting and Auditing Organization for Islamic Financial Institutions
AI	Artificial Intelligence
BP	Back Propagation
EBIT	Earnings Before Interest and Tax
EBITDA	Earnings Before Interest, Tax and Depreciation Amortization
EPS	Earnings Per Share
GE	Grammatical Evolution
IDR	Issuer Default Rating
IFIS	Islamic Finance Information Service
LL	Log Likelihood
LR	Likelihood Ratio
LVQ	Learning Vector Quantization
MARC	Malaysian Agency Rating Corporation
MDA	Multiple Discriminant Analysis
M-Logit	Multinomial Logistic
NN	Neural Network
NRSRO	Nationally Recognized Statistical Rating Organizations
O-Logit	Ordered Logistic
OLS	Ordinary Least Square
RAM	Rating Agency Malaysia
RBF	Radial Basis Function
ROA	Return on Asset
ROE	Return on Equity
S & P	Standard and Poor's
SC	Securities Commissions
SMO	Sequential Minimal Optimization
SPV	Special Purpose Vehicle
TSEC	Taiwan Stock Exchange

CHAPTER ONE

INTRODUCTION

1.1. BACKGROUND OF STUDY

1.1.1. The Development of Sukuk

Islamic finance is one of the fastest growing segments of international financial markets. Recent innovations in Islamic finance have changed the terrain of the Islamic finance industry. The use of Sukuk or Islamic securities has become increasingly popular in the last few years, especially in the area of bonds and securities. They are used as a means of raising government finance through sovereign issues, and means through which companies raise fund by issuing of corporate sukuk. It began in Malaysia in 1990 with the issuance of RM120 million (US\$ 30 million) by Shell Malaysia and currently progress to become the issuance of the largest size of sukuk in the Islamic finance world. The table shows the total sukuk issuance in 2000-2009.

Table.1.1. Sukuk Issuance, 2000-2009 (US\$ million)

Year	Sovereign Sukuk	Corporate Sukuk	Quasi Sovereign Sukuk	Total	Total Percentage Growth
2000	0	336.3	0	336.3	
2001	250	530	33	780	142%
2002	800	1,684.11	19.4	979.9	208%
2003	1,180	4,637.06	0	5,717.1	132%
2004	14,79.35	5,497.3	8.44	7,210.5	20%
2005	706.5	10,722.25	65.83	12,065	65%
2006	1,311 75	18,050 34	7,020 47	26,798	130%
2007	6,030 34	26,777 71	13,985.09	47,125.56	79%
2008	1,676.69	9,536 23	5,086 85	16,299 77	-65%
2009	12,727 84	12,319.41	13,660.23	48,614.93	198%

Source :IFIS

Table 1.2. Number of Sukuk Issuance

Year	Sovereign Sukuk	Corporate Sukuk	Quasi Sovereign Sukuk	Total Number of Issuance	Total Percentage of Issuance
2000	0	3	0	3	
2001	3	1	1	5	67%
2002	4	26	1	31	520%
2003	5	31	0	36	16%
2004	4	63	1	68	89%
2005	3	90	2	95	40%
2006	29	168	12	209	120%
2007	39	143	24	207	-1%
2008	32	123	27	182	-12%
2009	67	600	90	774	325%

Source: IFIS

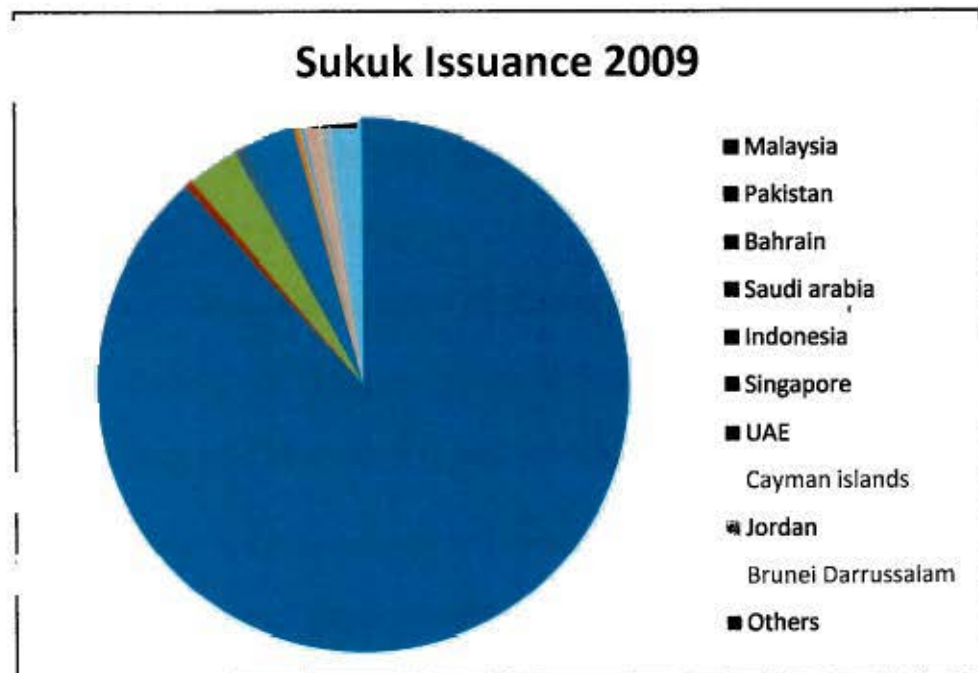
Above table shows growth in sukuk issuance from year 2000 until present. In 2000, the total size of the sukuk issued was only US\$ 336 million with no sovereign sukuk in the market. Within a short span of six year, the total size of sukuk has reached almost US\$ 27 billion. The growth achieved in 2002 had been very significant at 208% from the total amount issued. However, it experienced a slump in 2008, due to financial crisis and Taqi Usmani¹ announcement on Februari 2008 which stated that 85% of the Islamic bonds in the gulf do not comply with Sharia². Nevertheless, it rebounded back in a phenomenal growth in 2009 for both the amount and the number of sukuk issued. After the short fall in 2008, the growth has increased by 198% with a total amount of US\$ 48.6 billion with 774 number of sukuk issuance. This increase is mainly due to Malaysian sukuk market that demonstrate immense interest in sukuk investment. As reported in IFIS, 88% of the sukuk issuance in 2009 was issued in

¹ Chairman of AAOIFI

² See Trevor Norman, "Sukuk: where next?" at <http://www.newhorizon-islamicbanking.com>

Malaysia (figure.1). Out of 774 number of sukuk issuance, 679 sukuk were domiciled in Malaysia.

Figure.1.1. Number of Sukuk Issuance in 2009 based on Domicile



Source: IFIS

1.1.2. The Development of Sukuk Rating

The growth of the Malaysian international and local sukuk (Islamic bond) market over the last five years has been highly impressive, registering an average growth of 33%³. For local market, forty-five percent of all bond issued in 2007 were sukuk with a total value of RM 55.5 billion (US\$ 17.5 billion).

Due to high interest from the market, Malaysian government has made a tremendous progress in developing an Islamic capital market that is competitive in size, volume of financial instruments, and efficiency of arrangements. The progress

³ Securities Commissions Malaysia

made in the development of the capital markets has helped nurtured the growth and development of the Malaysian economy. Tariq (2004) stated that, the government of Malaysia launched the Capital Market Master Plan in 2001 to develop a framework for the Malaysian capital market directed at increasing the competitiveness of the capital market and facilitating an efficient provision of financial instruments and securities. In addition to that, the government launched a Financial Sector Master Plan to oversee and supervise the continual development of the Malaysian financial sector. Both initiatives typify a strong regulatory, supervisory and financial structure required to formulate and nurture a competitive capital market. The challenges remain how to develop an effective risk management mechanism, increase market liquidity, and create a truer bond yield benchmark as well as widening the issuer and investor base.

To increase risk management and market liquidity, the issue of asymmetric information among market player should be removed. With regard to this issue, rating agencies have the responsibility to provide the correct information related to the credit worthiness. The objective is to reduce information asymmetries between originator and investor by providing information on the rated security. In addition to that, ratings can solve investors' problem by helping them to monitor the security performance, with downgrades serves as a signal for them to take action. The greater the information efficiency, the better informed decisions investors can make about the markets and the more accurate price transparencies will be.

Credit rating is a mechanism whereby an independent third party makes an assessment, based on different sources of information on the likelihood of default in the debt payment of a corporate issuer. A credit rating focuses on the specific debt instrument and not on the overall credit worthiness or financial standing of the

corporate issuer, although these factors may influence the rating assigned⁴. These ratings are expressed in alpha-numeral symbols that indicate the degree of credit worthiness probability regarding punctual payment of principal and interest/profit⁵ on the rated securities. Indeed, rating agency, while not intended to do so, effectively reduces the burden on investor to do research on the credit worthiness of a security or issuer. Credit ratings are typically among the main tools used by portfolio managers in making their investment decisions and by lenders in their credit analysis.

There are two rating agencies in Malaysia; Rating Agency Malaysia (RAM) and Malaysian Agency Rating Corporation (MARC). RAM was incorporated in 1990 as a pioneer and established itself as an independent corporation responsible for rating all private debt securities, followed by MARC in 1995. They rate a wide array of securities and entities such as banks, financial institutions on their claim paying abilities. Since the establishment of sukuk in the Islamic capital market, both RAM and MARC also provides rating for sukuk.

1.1.3. Sukuk Rating and Bond Rating

An important consideration in structuring sukuk is its Sharia applicability about trading it in the stock exchanges. Unlike conventional bonds, sukuk should be endorsed by Sharia advisor as Sharia compliance before traded on the stock exchange. Sukuk certificates are unique due to the fact that, the investor becomes an asset holder hence should bear the risk of the underlying assets. Sukuk certificate holders carry the burden of these unique risks. Sukuk have emerged over the past 15 years as an

This approach is supported by Manggi Habir, Director of Financial Service Ratings S&P who mentioned that Standard and Poor's opinion only on the general creditworthiness of an obligor with respect to a particular debt security or other financial obligation.

⁵ Interest for conventional bond whereas profit for Islamic bond.

increasingly important asset class (RAM ratings, 2009). Tariq (2004) mentioned that sukuk has similar function with bond, which is to facilitate the raising of funds for organisations through the capital and which must be Shariah-compliant, whilst at the same time expanding the investor base and offering investment opportunities to new groups.

However, sukuk nature is different from the conventional bond. A bond is a contractual debt obligation whereby the issuer is contractually obliged to pay to bondholders, on certain specified dates, interest and principal, whereas, the sukuk holders claims an undivided beneficial ownership in the underlying assets. Consequently, sukuk holders are entitled to share in the revenues generated by the sukuk assets as well as being entitled to share in the proceeds of the realization of the sukuk assets. The different nature of bond and sukuk in term of their respective credit risk exposure call for the need for different rating assessment. Indeed, the rating agencies such as Fitch Ratings, Moody's, S&P, MARC, RAM, etc, have come out with their own methodology to rate sukuk⁶.

This study is conducted to observe the distinctive rating methodology taken by the rating agencies in assigning rating to sukuk and to determine if the determinant of sukuk rating are really different from bond. The study also will benefit in creating a dynamic rating research environment that could minimize or eliminate untimely delivery of rating and rating adjustment by rating agencies. In addition to that, this method can be applied in many credit scoring assessments. It is possible to extract from rating agencies some constant patterns that can be used as guidelines when evaluating unrated issuances. This assertion can be done by modelling and predicting

⁶ See Fitch ratings (2007), Moody's(2008), S&P (2007),MARC (2007), RAM (2008)

credit ratings of companies that have sufficient information about the public domain, using various statistical and non statistical methods.

In conclusion, it is considered that any research efforts directed to analyze and investigate ratings given by rating agencies would be a great benefit to all users of rating mentioned, as well as the enrichment of the literature and the academic libraries.

1.2. RESEARCH OBJECTIVES

The main objectives of this research are as follows:

- a. To build and empirically test sukuk rating model using selected financial and non financial variables for the purpose of analyzing and predicting corporate long-term sukuk rating in Malaysia.
- b. To identify several significant variables and their respective signs as an important determinants of corporate sukuk quality ratings.
- c. To test the accuracy of predictions of sukuk rating based on the model compared to the actual ratings assigned in the market.

1.3. RESEARCH QUESTIONS

To meet our research objectives stated above we will try to answers the following specific research questions during model-building process.

1. Whether or not logistic regression methodology is able to predict the rating of sukuk in the market?
2. Which of the selected variables are significantly associated with corporate long-term sukuk ratings?

3. How accurate are these predictions compare to ratings in the market?

1.4. SIGNIFICANCE OF STUDY

It is considered important to have research effort directed to analyse and investigate the ratings given by the rating agencies, so as to provide an insight into the rating process and thus verify its credibility. The model also can be utilized for rating prediction of securities that are not rated due to high cost. This study is expected to contribute in these areas and in other areas by adding new research output to the existing literature in credit rating research through the following means:

First: it will contribute to the literature by testing the compatibility of theory and the practice in rating industry

Second: this is a preliminary research for sukuk rating prediction by being the first published research works, especially for Malaysian sukuk.

Third: the final model is expected to be a useful tool for corporate managers and investors in their credit assessment and risk management processes as well as for the regulators and the rating agencies themselves.

Fourth: this is a preliminary research for sukuk rating prediction which leads us to extend the studies to capture non-listed companies and asset backed sukuk.

1.5. ORGANIZATION OF PAPER

This research is organized in five chapters. Chapter one discusses the importance, background of the study, motivation behind the study, the main objective, the research questions, the significance of the study and the limitations of the study. Chapter two is about the literature review on bond rating and the theoretical framework of the study. It is divided into three parts, the first part discusses the overview of sukuk. The second

part discusses the rating agency rationale with regard to rating methodology, followed by review of some selected previous studies on bond rating prediction and financial distress model which have similar nature with sukuk rating prediction. The last part of this chapter discusses about the rationale and theoretical background that guide the selection of each independent variable, the hypotheses made about the relationship between the selected chosen variables and the rating, are also discussed here.

Chapter 3 discusses about data and methodology. First, we discuss about the data and sample selection, continued with review on two logistic regression methods that we used, Ordered logistic and Multinomial logistic. Chapter four discusses the results of the data screening process, the descriptive statistics of the data used and present the results of the model. We also analyse the results of the Ordered Logistic regression, its significance and assumption test, and then followed with discussion on Multinomial Logistic regression result. The comparison of the accuracy ratio between the two methods is also emphasized in this chapter.

Chapter five discusses the summary and conclusion of the major findings of this study and their implications. The chapter also provides several suggestions for further research and suggests some guidelines to be followed in extending this research, based on the results and experience gained in the current study.

CHAPTER TWO

THEORITICAL FRAMEWORK AND HYPOTHESES

2.1. INTRODUCTION

Based on our knowledge, no study relating to Sukuk rating have been found to exist. This condition therefore arouse our interest to adopt the combination of several approaches from different rating agencies and bond rating prediction studies as literature, as well as bankruptcy prediction and financial distress prediction studies. All the studies are assumed to have the same nature with Sukuk rating prediction model.

The review of literature is divided into three main parts. The first part explains a brief discussion about sukuk with regard to its definition, structures, and the issuing modes. The second part provides a review of rating agencies' approaches on Sukuk rating, and related past research works about the prediction method of bond rating, company financial bankruptcy and company financial distress. The third part provides some hypotheses with the theoretical framework and some previous findings that justify the selection of each variable used in this study.

2.2. SUKUK REVIEW

Sukuk (plural of sakk) had been extensively used by Muslim in the Middle Ages, as papers representing financial obligations originating from trade and other commercial activities. However, sukuk as applied in the capital markets pertains to the process of securitisation. According to AAOIFI, sukuk are certificates of equal value that

represent an undivided interest in the ownership of an underlying asset⁷, usufruct and services or assets of particular projects or special investment activity.

Unlike a bond that is confined to the loan upon interest, sukuk can be structured from various applications of Islamic financial contracts. Nonetheless, sukuk has some similarities with the conventional bonds because they are structured with physical assets that generate revenue. The underlying revenue from these assets represents the source of income for payment of profits on the sukuk. According to AAOIFI⁸, sukuk are issued on various transaction contracts. These sukuk are Ijara⁹, Murabaha, Salam, Istisna, Mudaraba and Musharaka, Muzara'a (sharecropping), Muqasa (irrigation) and Mugharasa (agricultural partnership). However, the last three types are rarely used in the market.

Sukuk Ijara is a sukuk that represent ownership of assets, its usufruct or services from the underlying asset. The claim embodied in the sukuk includes both the right to the cash flow and the proceeds from the sale of the underlying asset.

Sukuk Murabaha entails the sale of goods at cost plus margin and is widely used in trade financing. Generally, the margin is related to the cost of funds, including credit risk. In the case of sukuk issued as evidence of indebtedness arising from the sale of asset, the claim is on the obligations stemming from the applied contract of exchange. In this case, the Sukuk does not represent ownership of the underlying asset rather ownership has been transferred to the obligor.

⁷ According to AAOIFI Definition of Sukuk, Sharia Standard no 17, the asset should be tangible
However, SC Malaysia permitted both tangible and intangible

⁸ See AAOIFI, Sharia Standard no 17 for detail information

⁹ Based on AAOIFI, sukuk ijara includes sukuk of ownership of leased assets, ownership of usufructs, and ownership of services

Salam and Istisna also entail the sale of goods. Salam is a sale whereby the seller undertakes to supply some specific goods to buyer at a future date in exchange for an advance price fully paid while istisna involves the delivery in the future but the price is not necessarily paid in advance.

For special investment activities funded through Musharaka or Mudaraba, these Sukuk represent the holders' undivided interests in the investment. Sukuk Musharaka is used to mobilise funds for the establishment of new project or development of the existing one. This business activity is base on partnership contracts. Profits from the investment are distributed according to agreed proportions among the holders and loses are distributed according to their equity shares. Meanwhile, Sukuk Mudaraba represents ownership of units of equal value in Mudaraba equity and registered in the name of the holders on the basis of undivided ownership of shares in the Mudaraba scheme. Returns are distributed according to agreed ratio, meanwhile loses are entirely borne by the Sukuk holders, unless in the event of any negligence or wilful misconduct by the mudharib (manager), who will be responsible for the same.

Thus, Sukuk is different from conventional bonds because, interest-bearing securities arising from the securitisation of loan contracts while Sukuk represent ownership claim on a pool of assets or rights to receivable participation¹⁰.

2.2.1. Modes of Sukuk

¹⁰ See Introduction to Sukuk, Malaysian Sukuk Market Handbook, RAM ratings (2008) for detail explanation