



الجامعة الإسلامية العالمية ماليزيا  
INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA  
بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

EFFICIENCY OF ISLAMIC AND CONVENTIONAL  
COMMERCIAL BANKS IN MALAYSIA (2000—  
2004): A DATA ENVELOPMENT ANALYSIS (DEA)  
STUDY

BY

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2007

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COMMERCIAL BANKS IN MALAYSIA (2000—2004):  
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A dissertation submitted in partial fulfilment of the  
requirement for the degree of Master of Science in  
Accounting

Kulliyyah of Economics and Management Sciences  
International Islamic University Malaysia

JANUARY 2007

## ABSTRACT

This study provides insights into the relative efficiency of Islamic Commercial Banks (ICBs) and Conventional Commercial Banks (CCBs) operating under the dual banking system in Malaysia. Also, this study examines the efficiency of ICBs as compared to CCBs in Malaysia and the influence of banks' specific characteristics on efficiency measures. This study seeks to examine the efficiency of ICBs and CCBs in Malaysia from the year 2000 to 2004 using Data Envelopment Analysis (DEA). Eleven commercial banks in Malaysia, including 2 fully-fledged ICBs, were chosen as the sample of the study. Two-stage of analysis were employed to answer the objectives and research questions. In the first stage, this study applies DEA to measure the relative technical efficiency under the assumption of Constant Returns to Scale (CRS) and Variable Returns to Scale (VRS). DEA is used to examine the relative efficiency of the selected banks in intermediating inputs into outputs. The inputs chosen are operating expenses, capital, and total deposits and loanable funds, and the outputs chosen are loans and advances, and income. The second stage of the analysis of the study is to examine the influence of the banks' specific characteristics (i.e. bank size, profitability, market power, non-performing loans and bank capitalization) on the efficiency measures (i.e. technical efficiency, pure technical efficiency and scale efficiency) resulting from the DEA using linear regression tests. It is found that more banks are fully efficient under the assumption of VRS. Furthermore, the main source of technical efficiency in Malaysia in 2001-2002 is scale efficiency (i.e. pure technical inefficiency) and in 2000, 2003, and 2004 it is pure technical efficiency (i.e. scale inefficiency). Overall, on average the main source of TE in Malaysia is pure technical efficiency (i.e. scale inefficiency). PBB, BIMB and BMMB were among the least efficient banks, while MBB and BMMB were banks whose operations were locally efficient but not globally efficient. It was also found that the operational or managerial efficiency of CCB is higher than that of ICB. In addition, bank size is significantly positive associated to TE and SE and NPLs is significantly positive associated to SE. On the other hand, market power is negatively significant associated to TE and SE, and bank capitalization is negatively significant associated to PTE. Furthermore, it was also found that, there is no association between profitability and efficiency measures.

ICBs

CCBs

ICBs

CCBs

2000

CCBs

ICBs

.DEA

2004

)

DEA

.VRS

CRS (

DEA

:

.

:

) :

(

) :

DEA

(

. VRS

2002-2001

( ) :

:

TE

BMMB BIMB PBB :

.

BMMB MBB :

:

- -

.ICB

CCB

NPLS

SE

TE

.SE

TE

.SE

PTE

.

## 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 Accounting.

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## 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 IIUM or other institutions.

Nor Aiza Binti Mohd Zamil

Signature.....

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**EFFICIENCY OF ISLAMIC AND CONVENTIONAL COMMERCIAL  
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*To my beloved parents Hj.Mohd Zamil bin Ahmad and Hjh. Aminah binti Hj. Omar  
and my siblings; Norhayati, Nor Asmaa and Nor Syaimaa.*

*The real voyage of discovery consists not in seeking new landscapes, but having NEW  
EYES. –Marcel Proust.*

## ACKNOWLEDGEMENTS



In the name of Allah, the Most Compassionate and the Most Merciful. Praise be to Allah, Lord of the Universe and to His Messenger, Muhammad PBUH.

First and foremost, I am very grateful to Allah, the Almighty, for giving me the strength, health and energy to undergo all the challenges in life. Also, I am grateful to Allah for allowing me to always remain true to myself.

Secondly, I would like to thank all my teachers and lecturers throughout my life. They have taught me to go through life with my own capacity and capability. They made me realize that success is not an easy task but not an impossible one.

It has taken the sincere efforts of many people together for me to complete this thesis successfully. I would like to thank my supervisor, Assoc. Prof. Dr. Abdul Rahim Abdul Rahman for his guidance, patience and valuable comments in supervising me to make this piece of work possible. It was a great pleasure for me to conduct this thesis under his supervision.

Also, special thanks are due to Dr. Hafiz Majdi Abdul Rashid, Dr. Fatima Abdul Hamid, Assoc. Prof. Dr. Siti Normala Sheikh Obid, Dr. Shahul Hameed, Prof. Dr. Maliah Sulaiman and Assoc. Professor Dr. Nik Nazli Nik Ahmad. I am very grateful to be one of your students, you have broadened my perspective on life. You have assisted me to be a better person and to face life with courage and the application of ability.

In addition, I would like to forward my appreciation to my truest friends. They are always there for me...through thick and thin.

Finally, I would like to express my deepest appreciation to my father and my mother. Thank you for their unconditional love and support. It is because of their spirit that I have been encouraged to overcome every challenge that came along. They taught me that in any situation I should not withdraw, hold back, and be afraid in life. They polished me to outshine in life. And, to my siblings, Hayati, Asmaa and Syaimaa, I always aim for the best in life to inspire them to achieve success in their own interest.

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## LIST OF ABBREVIATIONS

AE	Allocative Efficiency
AFBB	Affin Bank Berhad
AMBB	AmBank Berhad
BAFIA	Banking and Financial Institutions Act 1989
BCBB	Bumiputra-Commerce Bank Berhad
BIMB	Bank Islam Malaysia Berhad
BMMB	Bank Muamalat Malaysia Berhad
BNM	Bank Negara Malaysia
CCB	Conventional Commercial Bank
DEA	Data Envelopment Analysis
DMU	Decision Making Unit
DMUs	Decision Making Units
EON	EON Bank Berhad
e.g.	( <i>exempligrantia</i> ): for example
et al	( <i>et alia</i> ): and others
etc.	( <i>et cetera</i> ): and others
FISB	Faisal Islamic Bank-Sudan
FRS <i>i</i> – 1 <sub>2004</sub>	Financial Reporting Standard <i>i</i> – 1 (2004)
GCC	Gulf Cooperation Council
GP8-i	Guidelines on the Specimen Reports and Financial Statements for Licensed Islamic Banks
HLBB	Hong Leong Bank Berhad
i.e.	( <i>id est</i> ): that is
IBA	Islamic Banking Act 1983
IBS	Islamic Banking Scheme
IBs	Islamic banks
ICB	Islamic Commercial Bank
IIFM	International Islamic Financial Market
MASB	Malaysia Accounting Standard Board
MBB	Maybank Berhad
MPI	Malmquist Productivity Index
NPLs	Non-Performing Loans
OE	Overall Efficiency
PAO	Pilgrim Affairs Office
PBB	Public Bank Berhad
PMFB	Pilgrims Management and Fund Board
PSC	Pilgrim Savings Corporation
PTE	Pure Technical Efficiency
RHB	RHB Bank Berhad
SBB	Southern Bank Berhad
SE	Scale Efficiency
SFA	Stochastic Frontier Analysis
TE	Technical Efficiency

# CHAPTER ONE

## INTRODUCTION

### 1.1 MOTIVATIONS OF THE STUDY

The motivation to do this study arose whilst reviewing the literature on performance evaluation in the banking sector. During the initial phase of the literature search, it was found that there is extensive literature using Data Envelopment Analysis (DEA) to measure efficiency, internationally (Al-Faraj, Alidi and Bu-Bshait, 1992; Oral, Kettani and Yolalan, 1992; Miller and Noulas, 1996; Darrat, 2000; Soteriou and Stavrinides, 2000; Sathye, 2001; Akhtar, 2002; Drake and Howcroft, 2002; Sturm and William, 2004) and using the Malmquist Productivity Index (MPI) to measure the productivity (Mukherjee K., 2001; Sathye, 2002; Darrat, Topuz, and Yousef, 2002; Sturm and William, 20004; Krishnasamy, Alfieya, and Perumal, 2003, Fadzlan and Suraya, 2005) of banking activities for conventional banks.

In addition to the literature on the efficiency of conventional banks, there are a few attempts at measuring the efficiency of Islamic banks (IBs) using various methods such as ratio analysis, linear equations and regression analysis (Sarker, 1999; Hassan and Bashir, 1999; Bashir, 2000; Limam, 2001). There were also studies conducted to measure the efficiency of IBs using DEA by Yudistira (2003) and Hassan, M.K. (2005).

Although there is a vast literature on measuring efficiency of banks internationally, there are only a few studies on efficiency of banking activities in Malaysia (Katib, 1999; Salleh et al., 2001; Guan et al., 2004; Amrizal and Wan

Nursofiza; 2004; Norashfah, 2005). The minimal number of studies in examining efficiency, specifically using DEA in Malaysia, has basically created the need for such a study. This is particularly true in terms of investigating the efficiency of conventional and ICB in Malaysia.

Also, the concern on the efficiency and effectiveness of Islamic financial institutions to ensure the development and growth of the economy has been addressed by Zeti Akhtar Aziz (2005)<sup>1</sup>;

Given its roles in the intermediation process and payments system, the Islamic banking system will continue to be at the core of the Islamic financial system. A well functioning and efficient banking system is vital for achieving robust economic performance. As financial intermediaries, banks are entrusted to safeguard their deposits and preserve the efficiency in the manner the funds are mobilized, while vigilantly channeling these savings to productive investments. Given these responsibilities, the banking institutions therefore need to play their role effectively and efficiently to contribute to the overall stability of the financial system, and the growth and development of the economy.

In addition, given the current scenario in which the conventional financial system has produced 358 billionaires, while keeping 1.3 billion people living in absolute deprivation, there arose the need to have a more equitable financial system (Nor, 2003)<sup>2</sup>. The existence of the Islamic banking systems that uphold social and economic justice, and aim at equitable wealth and income distribution are really expected by the public (i.e. Muslims) to prosper. Thus, it is crucial to measure the efficiency of the IBs in order to ensure that the operations of IBs that are based on the Islamic principles are operating at their competitive advantage.

---

<sup>1</sup>In the Governor's Speech at the Seminar on the 10-Year Master Plan for Islamic Financial Services Industry—'Building a Progressive Islamic Banking Sector: Charting the Way Forward' on 22<sup>nd</sup> June 2005 at Putrajaya

<sup>2</sup> Nor, Mohamed Yacop. (2003, September). In his speech at the International Islamic Conference: From Moneylenders to Bankers: Evolution of Islamic Banking in Relation to Judeo—Christian and Oriental Banking Traditions on 9<sup>th</sup> – 10<sup>th</sup> September 2003 at Prato, Italy.

## **1.2 OBJECTIVES OF THE STUDY**

This study could be an initial effort to measure the performance of Malaysian-owned banks in terms of efficiency. It will further enhance the development of research on the Malaysian scene.

Therefore, the objectives of this study are;

1. To measure the efficiency of CCBs and ICBs in Malaysia for the year 2000-2004 by using DEA.
2. To compare the efficiency between CCBs and ICBs in Malaysia for the year 2000-2004.
3. To analyze and examine factors that may influence the efficiency of CCBs and ICBs. The characteristics of the banks that will be tested to explore their influences on efficiency are bank size, profitability, market power, loan ratios and capitalization.

In answering the research objectives above, this study will examine the relative efficiency of 11 Malaysian-owned CCBs, including two fully-fledged ICBs, for a period of five years. The relative efficiency of the banks will be measured by using DEA.

The DEA method uses linear programming to construct a non-parametric piecewise linear frontier of the production process for a group of banks or other decision-making units (DMUs) using multiple inputs and producing multiple outputs (Neal, 2004). It is an application of linear programming that can be used to measure the relative efficiency of the banks with the same goals and objectives (Leong et al., 2003). This is where the efficiency of banks in intermediating inputs into outputs will be measured. In this study, the relative efficiency of commercial banks in Malaysia

will be examined due to the same goals and objectives of this type of institutions. Furthermore, the Malaysian commercial banks are chosen since the ICBs and CCBs have to abide by the requirements pronounced by Bank Negara Malaysia.

DEA is a model that uses multiple inputs and outputs from a sample of institutions to develop an efficiency frontier and evaluate the efficiency of a Decision Making Unit (DMU) relative to the DMUs in the sample (Craycraft, 1999; Cooper, Seiford & Tone, 2000; Thanassoulis, 2001). This method combines all the input and output information on the firm into a single measure of productive efficiency that lies between zero (i.e. a completely inefficient firm) and unity (i.e. a completely efficient firm) (Leong et al., 2003). In addition, the DEA effectively estimates the frontier by finding a set of linear estimates that bound (i.e. envelop) the observed data (Leong et al., 2003). Thus, this technique is a benchmarking technique in the sense that the 'best practice' firms lie on the frontier and 'envelop' other inefficient firms (Neal, 2004). In this study, labour cost, capital and total deposits and other loanable funds were chosen as the inputs, while loan and advances, and income (i.e. interest income, non-interest income and Islamic Banking Scheme (IBS) income) were chosen as the outputs. Furthermore, the efficiency levels will be regressed with the banks' specific characteristics.

This would allow assessing and comparing the efficiencies of CCBs operating under the dual banking system and 2 fully-fledged ICBs. In addition, the efficiency measures (i.e. technical efficiency (TE), pure technical efficiency (PTE) and scale efficiency (SE)) will be regressed with banks' specific characteristics to identify the factor that influenced the efficiencies level of ICBs and CCBs in Malaysia. Also, the analysis of the findings will highlight the efficiency of ICBs as compared to the CCBs. In studying the efficiency of banking activities this study would like to

deliberate on the efficiency measures of the ability of the bank to play its role as an intermediary between depositors and investors. It is expected that, by measuring the efficiency using DEA, we could infer how efficient the 11 Malaysian-owned banks were in intermediating the inputs into outputs. Also, it is expected that this study will unfold the performance of the ICB in Malaysia as compared to the CCB and will allow for an explanation of the unique characteristics of IBs and how they will survive in the current economy.

### **1.3 ORGANIZATIONS OF THE STUDY**

This thesis comprises of six chapters. This chapter is the first chapter which provides the introductory part of this thesis by explaining the objectives, background, and motivations of the study. Chapter two will present the introduction on Islamic banking. It explains the development and growth of Islamic banking and finance industry worldwide and in Malaysia.

Chapter three reviews the literature on the performance measurement of the banking sector and examines the suitability of DEA over SFA (i.e. among the popular nonparametric and parametric models used) to measure performance in terms of the efficiency in the banking sector. Next, it presents the literature review on the performance of IBs and the performance of Malaysian ICBs and CCBs. Also, it addresses the possibility of comparing the efficiency of ICBs and CCBs.

Chapter four addresses the gap in the previous literature and empirical studies on the performance and efficiency of the banking sector. Next, the research objectives and research questions are presented. It also explains the research design of this study that comprises two stages. In the first stage, the efficiency levels are examined by