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Risk Management and Efficiency: Data Envelopment Analysis to Sri Lankan Banking Sector

By

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A thesis submitted to the University of Sri Jayewardenepura in partial fulfillment of the requirements for the Degree of Master of Science in Management on Risk Management and Efficiency

"The work described in this thesis was carried out by me under the supervision of Dr. P. D. Nimal and a report on this has not been submitted in whole or in part to any University or any other institution for another Degree/Diploma".

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Jayasuriya Mahapatabendige Ruwani Fernando

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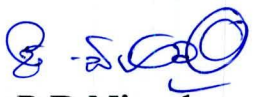

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LIST OF ABBREVIATIONS

BCC	Banker-Charnes-Cooper
CCR	Charnes-Cooper-Rhodes
CRS	Constant Returns to Scale
CBSL	Central Bank of Sri Lanka
DEA	Data Envelopment Analysis
DFA	Distribution Free Approach
DMU	Decision Making Unit
FDA	Free Disposal Hull
LDCB	Licensed Domestic Commercial Banks
LCB	Licensed Commercial Banks
SFA	Stochastic Frontier Analysis
TFA	Thick frontier approach
VRS	Variable Returns to Scale

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ABSTRACT

Increasing competition in the finance sector in Sri Lank has created a huge competition among the banking sector. The high level of competition improved the bank efficiency and efficiency creates risk to the banks. Therefore, risk management is a vital in achieving efficiency. Therefore, this study addresses the question on "whether the Sri Lankan banks are efficient and how risk management changes the banks' efficiency?. The main objective of the study was to identify the efficiency of the banks by incorporating both internal and external risk factors.

This study adopted Three Stage Data Envelopment Analysis based on Licensed Domestic Commercial Banks in Sri Lanka for the period from 2005 to 2011. At the first stage it use DEA to finds the efficiency scores by incorporating internal risk factors such as Credit, Market and Operational risk. In the second stage it applies Tobit regression to find the influence of external environment factors on bank efficiency. At the third stage it again used DEA to find the efficiency by incorporating both internal and external risk factors. Study also measured the efficiency differences among Private and Public banks and also among large and small banks.

The mean efficiency of Sri Lankan banks is high when it compares with the other well countries such as India, UK, US, Taiwan and Islamic Banks located in London. Mean efficiency of Private Banks are higher than Public Banks whereas efficiency of Large Banks are higher than the Small Banks. Risk management has improved the efficiency of the Licensed Commercial Banks in Sri Lanka. However, the external environmental factors have worsened the efficiency of both the public and private banks. Therefore, banks should identify their standing on the market on efficiency levels and should analyze their inefficiencies to improve the efficiencies further.

Key Words: Efficiency, Risk Management, Data Envelopment Analysis, Banks, Three - stage approach.

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

Banking industry is the backbone of a financial system. The importance of the stability in banking sector in a financial system was highlighted by various scholars during the recent financial crisis (Tafri, Fauziah, Rashidah and Normah 2011).

The banking industry in Sri Lanka has a long history which goes back to the post-colonial period. Early banking in Sri Lanka traced back to as only the lenders and pawn brokers. Commercial and retail banking commenced since mid of nineteen century in Sri Lanka. At the beginning it was limited to the plantation and after 1977 it was opened to all the business sectors. At the end of year 2011 there are 24 licensed commercial banks operates in Sri Lanka with 9 licensed specialized banks. Now the operations of banks are extended to several areas such as different schemes of loan grants and deposits, leasing, investments, foreign exchange operations and facilitating for international trade. Therefore, when considers risk of banks now they are more exposed to various risk (Nadarajah 2009).

Stability of the banking system is vital for stability of financial system of a country. Various aspects of banking industry were studied by researchers such as profitability and performances (Fernando and Pushpakumara 2009). Many studies on bank efficiency also could found in literature (Pastor 1999, Chiu and Chen 2009, Silva 2009, Yudistira 2004). However, there were question on studies of profitability which is