# BANK STABILITY MEASURES FOR SELECTED OIC COUNTRIES WITH DUAL BANKING SYSTEM

BY

NORZITAH ABDUL KARIM

A thesis submitted in fulfilment of the requirement for the degree of Doctor of Philosophy in Islamic Banking and Finance

IIUM Institute of Islamic Banking and Finance
International Islamic University Malaysia

AUGUST 2018

# ABSTRACT

A robust and comprehensive measure of bank stability is crucial to identify healthy banks and save troubled banks from deteriorating in order to avoid banking crises. Potential crises in the banking sector should be detected early and prevented as they risk having a systemic effect on the overall financial system of the country. The aim of this study, therefore, is to develop a comprehensive measure of bank stability for selected Organization of Islamic Cooperation countries that have dual banking systems, namely, Bahrain, Bangladesh, Egypt, Kuwait, Indonesia, Malaysia, Pakistan, United Arab Emirates, Saudi Arabia, Turkey and Qatar. The measure is in the form of a composite index, comprehensively adopts relevant indicators from the existing literatures from central bank's stability reports, International Monetary Fund's (IMF) practice, Islamic Financial Services Board (IFSB) and journal articles. Annual data from 1999 to 2015 are obtained from the Bankscope database, and the World Bank Indicators' country macroeconomic database. The study then, extends to compare the bank stability index of Islamic and conventional banks, including introducing the conventional banks with Islamic subsidiary banks and subsidiary Islamic banks. Next, the differences between these bank models are analyzed to determine the impact of crisis indicators on their stability. The factor analysis method used by the Organization of Economic Co-operation and Development is adopted to develop the index. Nonparametric multiple comparison is then performed to compare the Bank Stability Index for different bank models. The study also employed the dynamic panel data of generalized method of moments (GMM) in analyzing the impact of crisis indicators on the stability of each bank models. The study finds that bank stability index is the comprehensive measure of bank stability for all bank models for selected countries in the dual banking system. The study also reveals that the Islamic banks are relatively less stable than the conventional banks, in general. However, there are mixed results given different crisis periods and for different bank models. The impact of crisis indicators on bank stability also produced mixed results. The findings from the study have the implication for the regulatory to use similar measure of bank stability to monitor and report the stability of different bank models. The policymakers need to ensure strong macroeconomics fundamental to mitigate the impact of crisis on the stability of the banks.

# خلاصة البحث

إن إجراء مقياس شامل لاستقرار البنوك أمر مهم لتحديد البنوك المستقرة وإنقاذ البنوك المتعثرة من التدهور لتجنب الأزمات المصرفية. إن الأزمات المحتملة في القطاع المصرفي ينبغي الكشف عنها مبكرا ومنعها لخطورتها على النظام المالي العام للدولة. والهدف من هذه الدراسة هو تطوير مقياس شامل لاستقرار البنوك لدول مختارة من منظمة التعاون الإسلامي والتي لديها أنظمة مصرفية مزدوجة ، وهي البحرين وبنغلاديش ومصر والكويت وإندونيسيا وماليزيا وباكستان والإمارات العربية المتحدة والمملكة العربية السعودية وتركيا وقطر. ويتمثل هذا المقياس في شكل مؤشر مركب ، يتبنى بشكل شامل المؤشرات ذات الصلة من تقارير الاستقرار الحالية للبنك المركزي ، وممارسة صندوق النقد الدولي (IMF) ، ومجلس الخدمات المالية الإسلامية (IFSB) ، والمقالات. وقد تم الحصول على البيانات السنوية من عام 1999 إلى عام 2015 من قاعدة بيانات البنوك، وقاعدة بيانات اقتصاد الدولة الكلي الخاصة بمؤشرات البنك الدولي. كما تتناول الدراسة مقارنة مؤشرات استقرار البنوك الإسلامية و البنوك التقليدية ، بما في ذلك إدخال البنوك التقليدية مع البنوك الإسلامية والبنوك الإسلامية الفرعية. وتم تحليل الفرورق بين هذه النماذج المصرفية لتحديد تأثير مؤشرات الأزمة على استقرارها. تم اعتماد طريقة تحليل العوامل المستخدمة من قبل منظمة التعاون الاقتصادي والتنمية لتطوير المؤشر. وتم إجراء مقارنة غير متعددة لمقارنة مؤشر استقرار البنك لنماذج بنوك مختلفة. استخدمت الدراسة أيضًا بيانات اللوحة الديناميكية للأسلوب العام للحركات (GMM) في تحليل تأثير مؤشرات الأزمات على استقرار كل نموذج من نماذج البنوك. وأوضحت الدراسة أن مؤشر استقرار البنوك هو المقياس الشامل لاستقرار البنك لجميع نماذج البنوك في البلدان المختارة ذات النظام المصرفي المزدوج. كما كشفت الدراسة أن البنوك الإسلامية أقل استقرارًا نسبيًا من البنوك التقليدية بشكل عام. ومع ذلك ، هناك نتائج متباينة من حيث فترات الأزمات المختلفة وفي النماذج المصرفية المختلفة. كما أن تأثير مؤشرات الأزمة على استقرار البنوك أدى إلى نتائج مختلطة. والنتائج التي توصلت إليها الدراسة لها تأثير على النظام لاستخدام مقياس مماثل لاستقرار البنك في رصد واستقرار النماذج المصرفية المختلفة. ويحتاج صانعو السياسات إلى ضمان وجود اقتصاد أساسي شامل وقوي للتخفيف من تأثير الأزمة على استقرار البنوك.

# APPROVAL PAGE

The thesis of Norzitah Abdul Karim has been approved by the following:

Syed Musa Syed Jaafar Alhabshi
Supervisor

Salina Hj Kassim
Co-Supervisor

Razali Haron
Co-Supervisor

Adam Abdullah
Internal Examiner

M. Kabir Hassan
External Examiner

Rosylin Mohd Yusof
External Examiner

Fouad Mahmoud Mohammed Rawash
Chairman

# DECLARATION

I hereby declare that this thesis is the result of my own investigation, 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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*This thesis is dedicated to the ummah, my parents, my beloved late husband,*

*my children: Mawadda, Muhammad Muaz, Maisara, Munira and Mardiah*

*for all the loves, patience and sacrifice*

# ACKNOWLEDGEMENTS

In the name of Allah, the Beneficent, the Merciful. All praises and glories are for Allah s.w.t., the Almighty, the Guide. Peace and blessings be upon Prophet Muhammad s.a.w.

I would like to dedicate my acknowledgement to all the people who made this thesis possible and made my PhD journey colorfull. First and foremost, my appreciation to the Ministry of Education Malaysia, the VC of UiTM and the Dean of Faculty of Business and Management for granting me a scholarship and also study leave to pursue my PhD.

I am deeply thankful to my supervisors, Assoc. Prof. Dr. Syed Musa for always showing me the light at the end of the dark tunnel, teaching me to believe in myself and giving me the freedom to explore my field of study; Assoc. Prof. Dr. Salina Kassim for always giving me words of encouragement, hugs when needed and assuring me that I am always on the right path of my studies; Assoc. Prof. Dr. Razali Haron for always being generous with his time and patience to share his knowledge in research methods, publications and his words of encouragement. A gratitude also to my examiners who specially allocate their precious time with the intention to improve my thesis.

My sincere appreciation also to Assoc. Prof. Dr. Abideen Adewalee who has tirelessly educate me on quantitative methods and for always being positive whenever I am stuck with the method; Prof. Dr. Saari of Kuliyyah Education, IIUM for allowing me to attend his class on learning the methods; Prof. Dr. Mansur Ibrahim for explaining the method of GMM; Assoc. Prof. Dr. Eng Yoke Kee of Universiti Tunku Abdul Rahman (Perak Campus) for her valuable consultation time on the method of GMM; and also Assoc. Prof. Dr. Muhamad Abduh of Universiti Brunei Darussalam. A special mention to the staff of IIiBF; Sr Haslina, Sr Fadila, Mdm. Zainab, Prof. Dr. Engku, Prof. Dr. Rusni and Assoc. Prof. Dr. Azman Mohd Noor.

A special mentions also to my dear friends Kak Mimi, Shefa, Jamie, Ezza, I'ffah, Rena, Ida, Fariza, Nurul, Syara, Lina and Min. Thank you dear friends, you guys definitely spiced up my PhD journey with many 'curhat' and others.

Last but not least, to the love of my life, my child, Mawadda who ever-inspires and motivates me to complete my studies. Also to the loves of my life, my children, Muhammad Muaz, Maisara, Munira and Mardiah – thank you for all the patience, sacrifice, love and understanding.

## TABLE OF CONTENTS

# LIST OF TABLES

# LIST OF FIGURES

# LIST OF ABBREVIATIONS

| | |
|---|---|
| BCBS | Basel Committee for Banking Supervision |
| BSI | Bank Stability Index |
| CAMELS | Principle based measures: Capital Adequacy, Asset Quality, Management Efficiency, Earning and Profitability Quality, Liquidity, Sensitivity to market risks |
| CB | Conventional Bank |
| CBS | Conventional Bank with Islamic Subsidiary Bank |
| FA | Factor Analysis |
| FDIC | Federal Deposit Insurance Cooperation |
| GCC | Gulf Cooperation Council |
| GDP | Gross Domestic Product |
| GFC | Global Financial Crisis |
| GMM | Generalized Method of Moments |
| IB | Full-fledged Islamic Bank |
| IFSB | Islamic Financial Services Board |
| IIUM | International Islamic University Malaysia |
| IMF | International Monetary Fund |
| OECD | Organization for Economic Co-operation and Development |
| OIC | Organization of Islamic Cooperation |
| OLS | Ordinary Least Square |
| PLS | Profit Loss Sharing |
| PSF | Principle of Safety First |
| SIB | Subsidiary Islamic Bank |

# CHAPTER ONE

# INTRODUCTION

## 1.1 BACKGROUND OF THE STUDY

Stability is a persistent concern of most regulatory bodies across jurisdictions, particularly its concept, measurement and framework. Despite studies examining banking and financial stability (see, for example, Segoviano and Goodhart, 2009; Gersl and Hermanek, 2010; Schinasi, 2004; Creel et al., 2014; Swamy, 2014), the concept is not properly defined. To date, there is a lack of consensus on the measures, indicators and quantification of banking and financial stability and instability (Segoviano and Goodhart, 2009; Gersl and Hermanek, 2010). Many studies use the terms *financial stability* and *banking stability* interchangeably (see, for example, Schinasi, 2004; Creel et al., 2014; Swamy, 2014) as a result of the absence of consensus on or a widely accepted model of financial stability (Swamy, 2014) and difficulty measuring and defining financial stability (see, for example, Schinasi, 2004; Creel et al., 2014; Swamy, 2014). As argued by Allen and Wood (2006), though, it is utmost importance to define something with public policy objective because the right definition ensures the right policy been identified and implemented. Thus, it is important to define banking stability, financial stability and the difference between the two, in light of this.

Some common themes do run through definitions of financial and banking stability: institutions' ability to absorb or withstand shocks (see, for example, Schinasi, 2004; Allen and Wood, 2006; Petrovska and Mihajlovska, 2013; Houben, Kakes, and Schinasi, 2004; Popovska, 2014; European Central Bank, 2013; National

Bank of Belgium, 2014), financial solvency, liquidity (see, for example, Allen and Wood, 2006) and freedom from financial distress (see, for example, Segoviano & Goodhart, 2009). Schinasi (2004) defines financial stability as banks' ability "to facilitate and enhance economic processes, manage risks, and absorb shocks over time, along with a continuum rather on over a static condition" (p.1). Similarly, Houben et al. (2004) defines financial stability as "its ability to help the economic system allocate resources, manage risks and absorb shocks again over a continuum changeable over time and consistent with multiple combinations of its constituent elements".

Allen and Wood (2006) furthermore give financial stability a more taxonomic definition, classifying into different dimensions, such as financial solvency and liquidity. Allen and Wood (2006) explain financial stability as "a property of an economic system which is not prone to episodes of financial instability, dampening of perturbation, such as unexpected event, shock, unforeseen development or the unexpected failure, rather than amplifying it to larger in size and magnitude" (p.155). In addition, Segoviano and Goodhart (2009) measure financial stability in three areas of potential distress: 'common' distress throughout the banks in the system, distress between specific banks and distress in the system associated with a specific bank.

Despite these attempts to defining financial stability, Gadanecz and Jayaram (2009) clarify that financial stability is not easy to define or measure due to the interdependence and the complex interactions of various elements of the financial system among themselves and with the real economy. This view of inter-relatedness of banking and financial stability is supported by Swamy (2014) who nonetheless stresses the importance of differentiating banking from financial stability. This inter-relatedness is also evidence in the European Central Bank (2013) definition of financial stability as a characteristic of the financial system, which consists of banks, markets and market infrastructure able of absorbing and mitigating the likelihood of financial shock in the banking processes.

Few researches (see, for example, Swamy, 2014; Popovska, 2014; Hartmann et al., 2005) highlight the importance of financial stability lies in the stability of banking system. According to Swamy (2014), the financial stability is a by-product of stability conditions prevailing in the banking system, financial markets and real economy. Swamy (2014) stresses the paramount importance of banking stability to financial stability as at the micro level, the stability of the banking system depends on the asset capital adequacy, asset quality, earnings and liquidity of the individual banks. Moreover, according to Hartmann et al., (2005), the situation of the banking sector is typically considered to be major determinants of the financial stability. This position also gains support from Popovska (2014), who argues that bank is the most important sector to the stability of the financial system. Popovska (2014) further explains that financial stability in developed economies is determined mainly by the condition of nonbanking financial institutions (e.g. investment funds, pensions, private equity funds and brokerage houses). In contrast, in developing countries, stock exchanges, investment and pension funds and insurance companies are underdeveloped, and investments rely on traditional bank loans; therefore, banks are the main pillar of financial stability and overall economic stability. Thus, banking stability is a highly important determinant of financial stability.

According to Swamy (2014), banking stability exists at a micro level, and the stability of the banking system depends on individual banks' asset capital adequacy, asset quality, earnings and liquidity. Since banking stability exists at a micro level, then banking stability should also have a micro-level definition. These criteria are similar to the International Monetary Fund's (IMF) micro-level financial soundness indicators used to determine the health of a bank (e.g. bank capitalisation, asset quality and profitability). On the other hand, the definition of bank stability includes macro level of bank such as bank's ability to withstand adverse events i.e. bank run (see, for example, Balino et al., 1999) and bank's capacity to remain solvent (see, for example, Bourkhis and Nabi, 2013). Thus, the bank stability then can be defined on the micro level as the bank's stability, which dependent on bank capitalisation, asset quality, profitability and other measures, and on the macro level as the bank's ability to withstand adverse event, including crisis, and to remain solvent. Thus, in this research, bank stability is defined as bank capitalisation, asset quality, profitability and other micro measures that enable the bank to withstand adverse events and remain solvent.

The banking system plays an important function in the economic and financial activities of countries with dual banking systems, of which most still have undeveloped non-banking sectors (Popovska, 2014). In Table 1.1, it can be noted that the majority of these countries had high percentage ratios of deposit money bank assets to gross domestic product (GDP), central bank assets to GDP, and bank deposits to GDP. Malaysia has the highest ratios of deposit money bank assets to GDP (135.12%), bank deposits to GDP (123.89%,), private credit by deposit money to GDP (119.64%) and financial system deposits to GDP (123.89%) (Beck, Demirguc-Kunt, Levine, Cihak, and Feyen, 2017). However, Egypt has the highest ratio of central bank assets to GDP (26.28%) (Beck et al., 2017).

Table 1.1 Financial depth indicators of selected OIC countries with dual banking system in year 2015

| **Country** | **Central Bank Assets to GDP (%)** | **Deposit Money Bank Assets to GDP (%)** | **Bank Deposits to GDP (%)** | **Private credit by deposit money to GDP (%)** | **Financial system deposits to GDP (%)** |
|---|---|---|---|---|---|
| Bahrain | NAV | 101.27 | 79.20 | 70.20 | 79.20 |
| Bangladesh | 0.93 | 59.35 | 48.11 | 40.95 | 48.11 |
| Egypt | 26.28 | 69.61 | 60.76 | 24.66 | 60.76 |
| Indonesia | 3.22 | 37.01 | 33.71 | 31.53 | 33.71 |
| Kuwait | NAV | 99.54 | 95.39 | 94.97 | 95.39 |
| Malaysia | 0.23 | 135.12 | 123.89 | 119.64 | 123.89 |
| Pakistan | 9.28 | 39.90 | 30.05 | 14.90 | 30.05 |
| Qatar | 0.03 | 121.70 | 83.76 | 63.57 | 83.76 |
| Saudi Arabia | NAV | 66.27 | 40.57 | 54.19 | 40.57 |
| Turkey | 0.54 | 70.65 | 44.49 | 58.01 | 44.49 |
| United Arab Emirates | 3.84 | 102.65 | 82.54 | 74.00 | 82.54 |
| | | | | | |
| Japan | 54.37 | 165.51 | 215.36 | 102.63 | 215.36 |
| United States | 23.47 | 60.20 | 81.35 | 50.39 | 81.35 |

*Legend:*

Lowest Highest Benchmark *GDP* Gross Domestic Product

Source: Financial Development and Structure Dataset, (Beck et al., 2017)

There are three types of banking systems: a full-fledged Islamic banking system, a conventional banking system and a dual banking system. Countries including Iran and Sudan have adopted full-fledged Islamic banking systems, which permit only Islamic banks and no conventional banks to operate in the financial system. Other Muslim-majority countries, including Egypt, Bahrain, Bangladesh, Brunei, Indonesia, Jordan, Kuwait, Malaysia, Pakistan, Qatar, Saudi Arabia, Turkey, and the United Arab Emirates, have adopted dual banking systems, which allow both Islamic and conventional banks to operate side-by-side in the financial system. Other countries tend to adopt conventional systems which allow only conventional banks, with a few Islamic banks, to operate in the financial system. Vast academic discussions are devoted to the similarities and differences between Islamic and conventional banks (see, for example Hassan, Mohamad, and Bader 2009a; Hasan and Dridi, 2010; Parashar and Venkatesh, 2010; Kassim and Majid, 2010; Pappas, Izzeldin, and Fuertes, 2012; Johnes et al., 2013; Bourkhis and Nabi, 2013). These discussions tend to focus on fundamental aspects of banking models, particularly bank efficiency, performance, profitability, soundness and stability.

The vast majority of research (see, for example Hassan, Mohamad and Bader (2009a); Hasan and Dridi (2010); Parashar and Venkatesh (2010); Kassim and Majid (2010); Pappas, Izzeldin, and Fuertes (2012); Johnes et al. (2013), and Bourkhis and Nabi (2013)) has reported inconclusive findings on differences between Islamic and conventional banks. On the other hand, Hassan et al. (2009a), Pappas et al. (2012) and Johnes et al. (2013) find no significant difference in the gross efficiency of Islamic and conventional banks. Whereas Beck et al. (2013) report that Islamic banks are less cost effective, Hassan et al. (2009a) find that Islamic banks are more efficient than conventional banks at using their resources to generate revenues and profits. Iqbal (2001) also supports that Islamic banks use resources more effectively.

Evidence on differences between Islamic and conventional banks in performance, soundness and stability is also inconclusive. Bourkhis and Nabi (2013) find no significant difference in the soundness of Islamic and conventional banks. However, Hasan and Dridi (2010), Parashar and Venkatesh (2010) and Bourkhis and Nabi (2013) report that Islamic banks have better performance and more stable than conventional banks during and after the global crisis. Similarly, Beck et al. (2013) detected significant differences in bank stability (as measured by z-score) between Islamic and conventional banks.

Debate continues about the significance of difference between Islamic and conventional banks. A number of researchers have tried to explain the differences inherent in fundamental aspects of the banks. Whereas the conventional bank is largely debt based and allows for risk transfer, the Islamic bank is asset based and grounded in risk sharing. In a key difference, the model of Islamic banks does not allow investing in or financing the kind of instruments also known as toxic assets, such as derivatives, that adversely affect their conventional competitors and triggered the 2007–2009 Global Financial Crisis (GFC) (Hasan & Dridi, 2010). In contrast to environments that do allow such investment or financing, Islamic banks provide a different environment for both Muslims and non-Muslims, creating a more stable financial system (Karwowski, 2009; Ariff, 2006).

The issue of the comparison of Islamic and conventional banks has grown in importance in light of the 2007-2009 GFC. The GFC is considered the worst financial crisis, threatened to cause the total collapse of large financial institutions and resulted in bank bailouts by national government and stock market downturns around the world. Confusion and a loss of confidence regarding what constitutes a stable bank emerged as financial institutions reported to be 'healthy' financial institution prior to the crisis, had indeed suffered failure during the crisis. There is also puzzle as to whether the Islamic banking is shielded from the crisis. . Parashar and Venkatesh (2010) report that better performance by Islamic banks than convention banks both under normal economic conditions and during the GFC. Similarly, Hasan and Dridi (2010) trace adverse effects from the global financial crisis on the Islamic banking model, particularly on banks' profitability, asset growth and rating. However, Kassim and Majid (2010) find that both Islamic banking and conventional banking are