

CAPITAL ADEQUACY RATIO AND ISLAMIC BANK
COMPETITION-STABILITY RELATIONS:
EVIDENCE FROM MALAYSIA

BY

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ABSTRACT

This thesis intends to fill in a void in the banking competition and stability nexus literature by (1) investigating the impact of competition on financial stability of dual-banking system, (2) exploring the possible contingent of capitalization on the bank competition and stability association and (3) demonstrating the impact of competition on stability across various types of banks. The consolidation exercises enforced by the Malaysian government after the 1997/1998 Asian financial crisis that resulting in concentrated market with fewer number of conventional banks and the growing significance number of Islamic banks after the conversions of “Islamic window” of conventional banks to the Islamic bank subsidiaries have tremendously changed the Malaysia’s competitive landscape and its risk implications. This study uses two-step system GMM in estimating Malaysian dual-banking system covering 39 banks (15 Islamic and 24 conventional banks) from year 2008 till 2018. The findings reveal a strong significant positive relation between competition and financial fragility. Upon further analysis, the estimates demonstrated that capitalization or capital adequacy ratio is contingent to the association of competition and stability where the capitalization becomes significance after its level is approximately 25%. The finding also indicates that competition affect Islamic banks’ stability differently as compared to conventional banks where market power has positive effect on stability for conventional banks and competition increases in Islamic banks but does not bring negative impact to stability. The further results uncover that bank size and diversification activities have insignificant impacts on stability while the cost inefficiency, bank lending behavior and capitalization have significant positive relations with stability. Overall, the main results of this current study support the “competition-fragility” hypothesis.

ABSTRAK

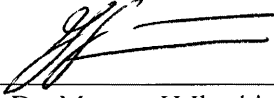
Tesis ini bertujuan mengisi jurang dalam himpunan kajian yang bertemakan hubungan antara persaingan bank dan kestabilan dengan: (1) menyelidiki impak persaingan terhadap kestabilan kewangan dalam sistem dwiperbankan, (2) meninjau kebergantungan permodalan pada hubungan antara persaingan bank dan kestabilan, dan (3) menunjukkan impak persaingan terhadap kestabilan merentasi jenis-jenis bank yang berbeza. Penggabungan bank-bank yang dilaksanakan oleh kerajaan Malaysia selepas krisis kewangan Asia pada tahun 1997/1998 menyebabkan pemusatan pasaran dengan pengurangan bilangan bank konvensional. Sebaliknya, bilangan syarikat perbankan Islam mula meningkat susulan “tingkap Islam” dalam perbankan konvensional yang telah ditukar dan diambil alih oleh anak syarikat perbankan Islam. Kesannya, landskap persaingan bank di Malaysia dan implikasi risikonya telah melalui transformasi yang hebat. Kajian ini menggunakan sistem dua langkah iaitu kaedah momen teritlak (GMM) untuk menganggar sistem dwiperbankan di Malaysia yang meliputi 39 bank (15 bank berasaskan Islam dan 24 bank konvensional) dari tahun 2008 hingga 2018. Dapatan kajian menunjukkan terdapat hubungan yang positif, signifikan, dan kuat antara persaingan dan kerapuhan kewangan. Analisis selanjutnya mendedahkan bahawa anggaran permodalan atau nisbah kecukupan modal bergantung pada hubungan antara persaingan dan kestabilan; permodalan terbukti signifikan selepas tingkatnya dianggarkan 25%. Dapatan juga menyatakan bahawa persaingan mempengaruhi kestabilan bank-bank Islam, jika dibandingkan dengan kestabilan bank konvensional yang mendapat pengaruh positif daripada kuasa pasaran. Tambahan pula, persaingan untuk bank-bank Islam bertambah tetapi tidak membawa impak yang negatif terhadap kestabilannya. Selain itu, saiz bank dan aktiviti mempelbagaian dibuktikan tidak memberi impak yang signifikan terhadap kestabilan, manakala ketidakcekapan kos, kelakuan pinjaman bank, dan permodalan didapati mempunyai hubungan yang positif dan signifikan dengan kestabilan. Secara keseluruhannya, dapatan utama kajian ini menerima hipotesis “kerapuhan persaingan”.

ملخص البحث


خالصة البحث تهدف هذه الأطروحة إلى سد فجوات في أدبيات العالقة بين المنافسة والاستقرار المصرفي من خالل (1) التحقيق في تأثير المنافسة على الاستقرار المالي للنظام المصرفي المزوج، (2) استكشاف احتمال وجود رسملة على اتحاد المنافسة والاستقرار المصرفي، و(3) توضيح تأثير المنافسة على الاستقرار في مختلف أنواع البنوك. لقد غيرت الشركات التابعة بشكل كبير المشهد التنافسي في ماليزيا وانعكاساته على المخاطر تمارين التوحيد التي فرضتها الحكومة الماليزية بعد الأزمة المالية الآسيوية 1997/1998 والتي نتج عنها سوق مركزة مع عدد أقل من البنوك التقليدية وتزايد عدد البنوك الإسلامية بعد تحويل "النافذة الإسلامية المكون من خطوتين لتقدير GMM للبنوك التقليدية إلى البنك الإسلامي. تستخدم هذه الدراسة نظام النظام المصرفي المزوج الماليزي الذي يغطي 39 بنً كاً (15 بنً كاً إسلامياً و 24 بنً كاً تقليدياً) من عام حتى عام 2018. وتكشف النتائج عنّ على مزيد من التحليل، عالقة إيجابية قوية بين المنافسة 2008 والهشاشة المالية. بنا أظهرت التقديرات أن نسبة الرسملة أو كفاية رأس المال تتوقف على ارتباط المنافسة والاستقرار حيث تصبح الرسملة مهمة بعد أن يكون مستواها حوالي 25%. كما تشير النتائج إلى أن المنافسة تؤثر على استقرار البنوك الإسلامية بشكل مختلف عن البنوك التقليدية حيث تؤثر قوة السوق بشكل إيجابي على استقرار البنوك التقليدية وتزيد المنافسة في البنوك الإسلامية ولكنها ال تحدث تأثيً را سلبياً على الاستقرار. تكشف النتائج الإضافية أن حجم البنك وأنشطة التنوع ليس لها تأثيرات كبيرة على الاستقرار. في حين أن عدم كفاءة التكلفة وسلوك الإقراض المصرفي والرسملة لها عالقات إيجابية كبيرة مع الاستقرار. "بشكل عام، تدعم النتائج الرئيسية لهذه الدراسة الحالية فرضية "هشاشة المنافسة

APPROVAL PAGE

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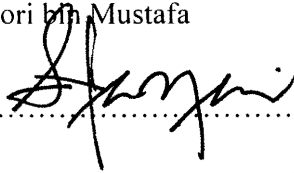
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DECLARATION

I hereby declare that this thesis 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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This thesis is dedicated to my beloved wife,

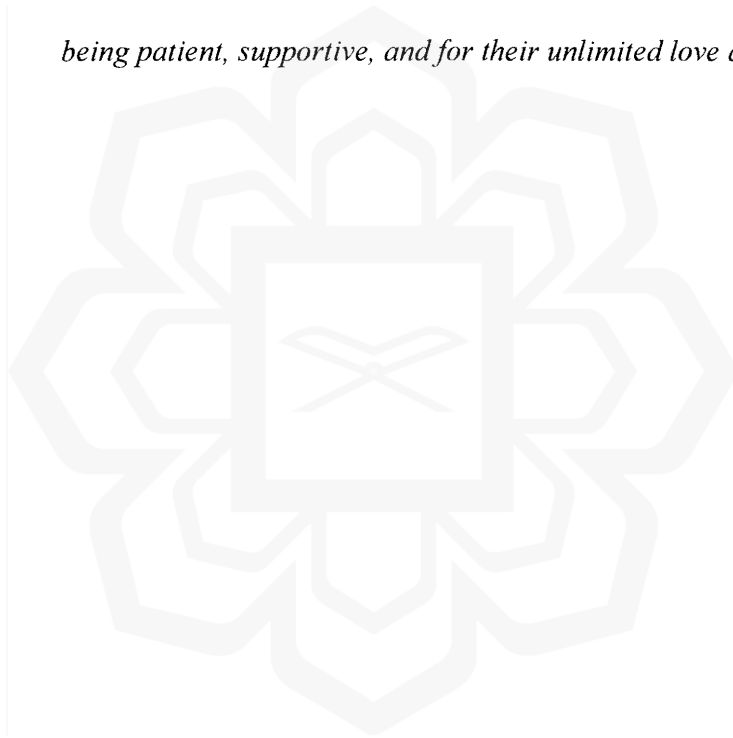
Dr Wan Maizatul Akmar Wan Mohamood,

and all my lovely kids,

Danish Isyraf, Daniel Iqbal, Durratul Iman, Dhiyaa Irdina and Dawood Imran

for

being patient, supportive, and for their unlimited love and faith



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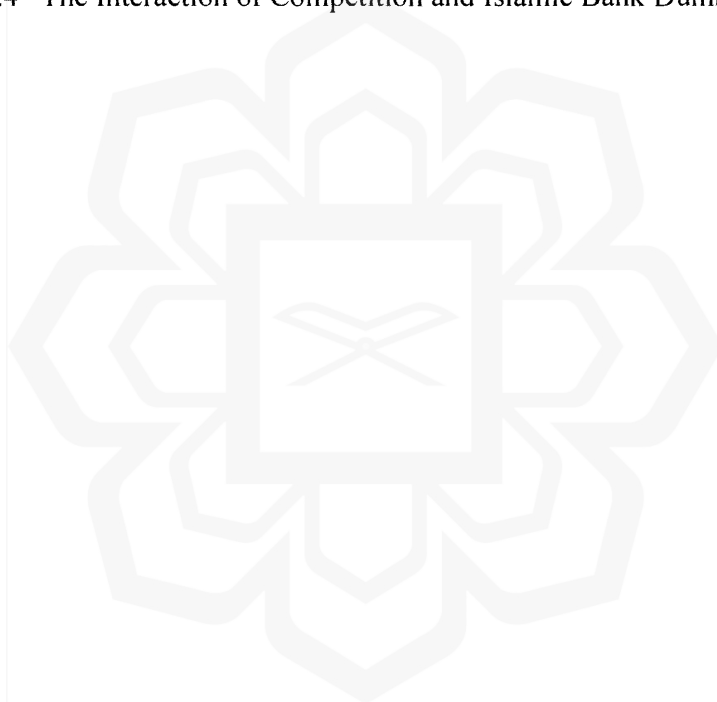
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LIST OF ABBREVIATIONS

BCBS	Basel Committee on Banking Supervision
BNM	Central Bank of Malaysia
OECD	Organization for Economic Co-operation and Development
IMF	International Monetary Fund
CAR	Capital Adequacy Ratio
CCB	Capital Conservation Buffer
IOFC	International Offshore Financial Center
FSA	Financial Services Act
IFSA	Islamic Financial Services Act
LOFSA	Labuan Offshore Financial Services Authority
MP	Malaysian Plan
NKEA	National Key Economic Area
AFC	Asian Financial Crisis
IB	Islamic Bank
CB	Conventional Bank
IA	Investment Account
YOY	Year On Year
D-SIBs	Domestic Systematically Important Banks
HLA	Higher Loss Absorbency
CET 1	Common Equity Tier 1
BDN	Boyd and De Nicolo
GDP	Gross Domestic Product
INF	Inflation Rate
HHI	Herfindahl-Hirschman Index
LIN	Lerner Index
BIN	Boone Index
NPL	Non Performing Loan
LNPL	Natural Log Non Performing Loan
GMM	Generalized Methods of Moments
PVAR	Panel Vector Auto Regression
MENA	Middle East and North Africa Countries

FDIC	Federal Deposit Insurance Corporation
OIC	Organization of Islamic Countries
Fitch-IBCA	Fitch International Bank Credit Analysis
WGI	Worldwide Governance Indicators
ROA	Return on Assets
ROE	Return on Equity
IO	Industrial Organization
NEIO	New Empirical Industrial Organization
SCP	Structured-Conduct-Performance
MC	Marginal Cost
P	Price of Output
TBC	Total Bank Cost
BIS	Bank of International Settlements
RCTA	Ratio of Capital to Assets
RCWA	Ratio of Capital to Weighted Assets
IV	Instrument Variables
SCEL	Single Customer Exposure Limit
RAROA	Risk-Adjusted of Return on Assets
RAROE	Risk-Adjusted of Return on Equity
LnZsc	Natural Log of Z-score
CAP	Capitalization
BLB	Bank Lending Behavior
CIE	Cost In-Efficiency
BAS	Bank Size
DIV	Diversification
DIB	Dummy of Islamic Bank

CHAPTER ONE

INTRODUCTION

1.1 INTRODUCTION

The increasing competition in banking sector following financial liberalization has raised various concerns, one of which is on its impacts on bank stability. Arguably, the impact of competition on stability can be either positive or negative. A traditional view of this nexus suggests that there be a trade-off between competition and stability where some studies found competition arguably enhanced risk-taking behavior by putting pressures on banks to operate with a minimum capital “buffer” (Hellman et al., 2000; Allen and Gale, 2004). A recent view has however an opposite interpretation where enhanced competition favorably fosters financial stability and crises are less likely to happen in competitive banking markets (Beck et al., 2006; Boyd and Nicolo, 2005).

In recent years, the issue of competition also becomes relevant for Islamic banks that operate alongside conventional banks, the co-existence of which is termed the dual-banking market. The proliferation of Islamic banks changes banking structure hence alters the competition level not only among Islamic banks but also conventional banks. However, the understanding on the effects of competition on stability is still limited, which motivates the current study to look at the issue. In this study, the focus is only on a leading dual-banking market, Malaysia.

The introductory chapter provides research background to serve as motivation of the study and research objectives. In the next section, we present the background of competition and stability debate.

1.2 COMPETITION-STABILITY DEBATE

Financial stability is a condition in which financial system can facilitate real economic activities smoothly and is capable of unraveling financial imbalances arising from shocks. The stability of the financial institutions is very important for the development and growth of the economy because it facilitates and enhances economic processes, manages risks and absorbs any shocks over time, along a continuum rather on over a static condition (Schinasi, 2004 and Houben et al., 2004). The instability of financial system or the financial crisis on the other hand is undesirable due to its adverse affects not only to financial institutions but also other economic sectors and they are very costly. The recent Global Financial crisis 2007-2008, for instance, had led to the collapse of one of the giant banks in the US; Lehman Brothers on September 15th, 2008. Also, the profitability of US banks reportedly declined by 83.5% from \$35.2 billion in 2006 to mere \$5.8 billion in 2007 (Leaven and Valencia, 2008).

The financial crisis arguably originates from the instability of financial institution, and it is mainly due to the malfunctions of the banking system. Thus, the functional banking system is very importance because it contributes greatly to economic growth by playing an intermediating role between borrowers and lenders and providing financial resources to other industries and hence facilitating production and providing employments. Moreover, the stability of banking system is vital to ensure financial stability or prevent financial crisis since its instability can be easily transmitted to other sectors by disrupting the interbank lending market and payment mechanisms through the reduction of credit availability to real sectors.

Over the last three decades, several financial crises have taken place worldwide and its frequency has been more often as compared to before. A recent analysis on a database spanning 120 years of financial history indicated that the frequency of the

crises since 1973 had been double that of the Bretton Woods and classical gold standard periods (Bordo, Eichengreen, Klingebiel & Martinez- Peria, 2001). Since the late 1970s, for example, the compilation works of Caprio and Klingebiel showed that there were 119 episodes of systemic banking crises, which occurred in 93 countries, and 51 borderline crises were recorded in 46 countries (1999). The last two recent impactful crises were the 1997-1998 Asian financial crisis specifically affecting Asian emerging economies including Malaysia and the late 2000 Global financial crisis arguably originated from the sub-prime crisis in the United States of America and disseminated globally especially to the European economies.

In view of the high financial and economic costs of banking crisis, identifying the determinants for banking instability has been the center of policy and academic research. Among the various determinants, the role of competition has been much emphasized. Over the last three decades and particularly since the 2007-2008 global financial crisis, the impact of bank competition on financial stability has been a focus of academic and policy debate (Beck, 2008; Carletti, 2010; Acharya and Richardson, 2009; Beck et al., 2010; OECD, 2011; Kabir and Worthington (2017); Risfandy, Tarazi, and Trinugroho(2018); Azmi, Ali Arshad and Rizvi(2019), Ibrahim H, Salim, Abojeib and Yeap (2019), and Alaeddin and Ahmed (2021).

The competition in banking industry started since the liberalization of cash flow and globalization initiatives by International Monetary Fund, World bank and World Trade Organization dated back to 1980 in the process of creating an efficient and competitive banking markets. Competition is a process of rivalry between firms seeking to win customers' business over time (Whish, 2005). Firms compete on prices or quality of the products or services in trying to increase their market share and get higher profits. Generally, competition is desirable for maximization of social welfare and

existence of Pareto efficiency hence the allocative, productive, and dynamic efficiency exist in the market. Similarly, to other industries, competition is important for banking industry because of the vitality of its functions in contributing economic growth by providing financial resources to other economic sectors and as an intermediation between borrowers and lenders. Contrarily, the malfunction of banking system leads to financial instability and economic crisis. Thus, it is essential the policy makers keep stable banking system and competitive market.

There has been intense debate on the nexus of competition and stability in the banking literature. Increased competition is arguably associated with greater financial fragility due to the erosion of franchise value and the reduction of profit margin thus induces higher risk-taking behavior hence destabilizes the financial institution (Keeley, 1990).

According to the recent studies by Llewellyn (2007), Brunnermeier (2009), Milne (2009), and OECD (2011), the causes of credit crunch that led to financial meltdowns in the US and the UK were deregulation and excessive competition. OECD (2010) then revealed the instabilities that triggered from banking problems in many countries have been arguably due to competition among banks. Keeley (2010) also emphasized that higher intensity of competition in the banking industry could promote insolvency of some banks and instability of the whole banking system. This excessive competition because of financial reforms may encourage banks to pursue riskier policies hence could eventually generate bank failure in order to maintain their profit level. The recent global 2007-2008 financial crisis has shown that increased competition contributed to weaker lending markets in the subprime lending market in the United States. It resulted in systemic financial problems across the world. Casu and Girardone (2009a) then mentioned that competition in the banking industry potentially has

extensive implications on economic growth, productivity, consumer welfare and financial stability.

Despite the concerns on the adverse roles of competition, Boyd and Nicolo (2005) argues that increased competition on the other hand promotes financial stability by offering a lower loan rate to the borrower hence reduces loan-defaults.

Competition in banking sector is important because the failure or anti-competitive behavior of banks could have wider implications on bank efficiency, growth, and social welfare throughout the economy (Wilson, Casu, and Molyneux, 2010). The increased competition in banking industry is expected to lead to better efficiency in the provision of financial services, quality of financial products, and higher degree of innovation (Northcott, 2004; Claessens, 2009). In addition, banking competition has significant implications on competition policy, financial stability, and effective supervision and regulation of banking industry.

In a perfectly competitive market, competition drives banks to maximize social welfare in which Pareto efficiency is achieved. It is a situation where it is not possible to make anyone better-off without making someone else worse-off. The Pareto efficiency consists of allocative efficiency, productive efficiency, and dynamic efficiency. The allocation efficiency presents in the market once the market's price is at the equilibrium where the economic resources are efficiently allocated between different goods in such a way it is impossible making anyone better-off without worsening off someone else. Since the banks are the price takers, the consumers pay the prices for allocated goods based on the price they are prepared to pay, which equals to the marginal cost of production. Thus, at this equilibrium price, consumer surplus is at the highest value. Moreover, perfect competition yields productive efficiency in which the goods are produced at the lowest price because the banks use optimal

combination of inputs to produce maximum amount of the outputs at the minimal costs. Banks are required to deploy the most advanced technology hence they can improve their processes to be more efficient, train their human capitals to be more effective, reduce wastages to be minimal, and achieve economies of scales (Motta, 2004; Whish, 2005).

In addition to allocative and productive efficiency, perfect competition further forces banks to achieve dynamic efficiency through the introduction of the new products and services. The rivalry among the banks to increase market share and earn more profits subsequently brings out their best in constantly developing and innovating new products while simultaneously reducing their costs.

All these efficiencies in turn improve social welfare by providing lucrative financial services that allow firms to expand their businesses through competitive borrowing rates, and thus improve overall industry and economic growth (Allen and Gale, 2004; Claessens and Leaven, 2004; Northcott, 2004; Claessens, 2009). Boyd and Nicolo (2005) further stressed that competition in the banking institution allows the society to enjoy many benefits due to the competitive banking market such as lower prices and higher quality financial products.

The existing banking literature and regulatory practice have been ambiguous on whether the intense banking competition contributes to the financial fragility or leads up to the financial stability. There are two conflicting views regarding the relationship between bank competition and financial stability: “Competition Fragility” view and “Competition Stability” view. According to Competition Fragility view, the traditional perception among policymakers and economists suggests that higher competition in banking industry is associated with higher incentives to engage in more risky activities. Thus, there is a trade-off between competition and financial stability. The banking

competition results in the reduction of banks' market power hence banks cannot earn monopoly rents. Consequently, banks have lower profits, capital ratio, and charter values, which in turn, is associated with an increase in risk taking and leads up to an increase in probability of bank failure (Marcus, 1984; Keeley, 1990; Allen and Gale, 2000; Hellman Murdock and Stiglitz, 2000 and Repullo, 2000).

However, contrary to the above traditional Competition Fragility view, the recent Competition Stability view suggests that higher competition increase the financial stability. In a less competitive market, the risk taking is higher due to moral hazards by big banks, which obtain implicit subsidies via government safety nets (Mishkin, 1999), thus competition is needed to reduce moral hazards in banking sector hence fosters financial stability. Boyd and DeNicolo (2005) argued that the charter value hypothesis presented earlier on ignored the effect of competition on the borrowers' behaviors. Thus, they proposed a model for the lending market where it indicated that, in equilibrium, the lack of banking competition might lead to lower bank stability. As the lending market becomes more concentrated, banks excessively use their market power to charge higher loans thus they may have higher interest margin. However, the higher loan rates increase the probability of loan repayment default by borrowers and the likely of bank failure since the borrowers may assume in riskier projects.

Both views have received their respective empirical supports. The mixed empirical evidence has led to the extension of the analysis to include non-linearity and factors that may affect competition-stability relations.

Some of the recent studies have shown non-linear relations on the nexus of competition and stability since the coexistence of competition and concentration in the market can simultaneously induce financial stability and fragility (Berger et al. 2009)

while Martinez and Repullo (2010) then found a non-linear U-shaped relationship between competition and financial stability in their study. They supported Boyd and DeNicolo (2005) in a “risk-shifting effect” where in a less competitive market, higher interest rates shift the banks’ risks to the borrowers and hence borrowers’ risky actions leading to higher likelihood of a bank bankruptcy. But there is also an “interest effect” where greater interest margin improves bank profitability and hence increases financial stability. Tabak, Fazio and Cajueiro (2012) further affirmed the previous finding and showed there is a non-linear U-shaped relationship between competition and financial stability. Their findings indicate the financial stability is better with higher competition and worse with an average competition.

While the existing literature deeply discussed on the nexus of competition and stability, the possibility of association between financial stability and competition being contingent on capitalization has not been explored in the dual banking markets that this study intends to consider in its investigation.

The capital regulation is one of the most important aspects of banking regulation since its functions have significant impacts on banks’ stability, liquidity, and soundness (Scannella, 2012). The Asian financial crisis 1997-1998 and the recent Global financial crisis 2007-2008, for instances, have shown that the crises were partly due to the inadequate capitals. The banking institutions must have a certain level of capital to protect them absorbing any shocks. The Basel Committee on Banking Supervision (BCBS), which is based in Basel, then develops Basel Accords to determine minimal capital requirement purposely to strengthen regulation, supervision, and risk management within the banking industry.

The first accord, known as Basel 1 was issued in 1988 to introduce a uniform way of calculating capital adequacy intentionally to strengthen financial stability. The

banking sectors need to ensure they meet minimally 8% capital ratio and adopt a relatively simple approach to credit risk hence incentives for risk-taking are potentially distorted. The Basel I was however considered as a failure and arguably blamed for financial crisis. Consequently, the Basel Committee revised the existing Accord and later in 2006 issued a new revised version of Accord namely Basel II. The new Accord is designed to further increase the soundness and the stability of the international banking system besides to promote the implementation of strong risk's management practices. The fundamental principle of both Basel I and II is that a bank needs to increase its equity capital proportionately with the increase of asset risk hence the asset substitution incentives are minimized.

However, this risk-based capital standard is inadequately able to provide full control over the asset's substitution incentive (Hovakiman & Kane, 2000). Merton (1995) added that there is a possibility to restructure portfolio in which the risk is basically similar, but the regulatory capital requirement is lower if the capital standards are not based on any consistent economic soundness. Thus, the risk-based capital adequacy regulation is imperfect and potentially intensifies systemic risk as exhibited in the recent global economic crisis in the U.S (Acharya, 2001 a, b). The Basel Capital Accords failed to effectively minimize the moral hazard of asset substitution where banks take advantage of capital regulation's flaws by restructuring and reengineering items on balance sheet so that the capital ratio is better but inadvertently increases the overall risk.

The recent global crisis 2007-2008 has triggered Basel Committee to introduce the new Accord known as Basel III to improve banks' ability to handle shocks from financial stress and to strengthen their transparency and disclosure. It is a set of financial reforms that was developed by the Basel Committee on Banking Supervision