

Capital Risk: Do Too-Big-To-Fail and Shariah Framework Stringency Matter?

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ABSTRACT

Despite their unique presence in the market, Islamic banks are exposed to similar types of risks as faced by their conventional counterparts in their operations. Acknowledging the importance of capital management in banking, overwhelming exposure may jeopardize the whole banking system and the economy. Aiming to mitigate the capital risk of Islamic banks globally, this study proposed the CAMELS+1 model to examine the driving factors of capital risks. The study employed the Instrumental Variables Two-Stage Least Squares (IV2SLS) using unbalanced panel data over nine (9) countries representing the global major players of Islamic banks from 1999 to 2015. Capital adequacy, liquidity, earnings and the economy were statistically significant to banks' capital risk exposure. Interestingly, Islamic banks have less tendency to face the moral hazard issue of too-big-to-fail. The finding did not support the proposition of the Shariah framework stringency as an important indicator in managing capital risk. The finding suggests Islamic banks to maintain adequate capital and a sufficient liquidity level to mitigate capital risks. Additionally, Islamic banks must be more cautious during a flourishing economy, while when it is very attractive in generating huge earnings, the banks are also exposed to greater capital risks during this period.

Keywords: Bank, Basel Accords, Capital Requirements, Commercial Banks, Financial Risk

ARTICLE INFO

Article History:

Received: 02 April 2021

Accepted: 12 October 2021

Available online: 01 December 2021

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INTRODUCTION

Banks are the heart of an economy that play a significant role in a country. A smooth banking system contributes to a strong and resilient banking industry for a country to ensure sustainable economic growth. Abdul-Rahman et al. (2017) depicted that the collapse of a bank creates bank run and consequently a domino effect to other banks. According to Gorton and Winton (2017), failure of a large bank induces pitfalls to other banks. The domino effect tends to create chaos in the banking industry which significantly influences all the market players as a result of interconnectedness among them in the banking industry. After the onset of Global Financial Crisis (GFC) 2007-2009, the regulatory bodies have become more stringent in managing the capital adequacy of banks. The crisis highlighted the importance of bank capital in order to ascertain a resilient banking industry. Inadequacy of capital held by banks leads to greater capital risk exposure because the banks have insufficient amount of capital to cushion sudden or unexpected losses. Mahmood et al. (2018) posited that bank capital functions as a risk absorber to the banks, which diminishes exposure to losses in day-to-day banking business activities and operations. The deals and transactions in the banking business involve numerous risks that are inevitable but can be mitigated. Due to this reason, banks are more incentivized to hold more buffer of capital to ensure security especially in the event of uncertain economic conditions.

Schiantarelli et al. (2016) described that banks tend to maintain a buffer of capital on top of the capital requirement set by regulatory bodies. This supports the regulatory hypothesis which indicates that banks have to allocate a buffer of capital commensurate to the amount of risk taking. The compliance of the banks to the ruling and regulation in banking simultaneously enables these banks to absorb losses with the available buffer of capital in the bank. Thereby, in line with the theory of risk absorption, the more capital available in banks encourages greater losses covered up by them. Furthermore, being a rival to their conventional counterparts encourages Islamic banks to hold an excess amount of capital in order to mitigate risks and improve liquidity (Mahdi & Abbes, 2018). The authors further emphasized that insufficient capital held by the banks induces less capability of the banks to cushion for sudden shocks and lessen the solvency of the banks, therefore it may incur significant costs and losses to the banks.

Furthermore, capital adequacy also helps the banks to counter liquidity issues in meeting their obligation to their customers, thus providing better access to financial markets. The authors noted that capital reduces the risk-taking activities by the banks, for instance a greater capital position minimizes the risk taking as it absorbs vulnerable losses. The statement aligns to Zheng et al. (2017) who stated that banks hold more capital to compensate for higher risks especially banks with risky investments.

Stability of banks remains a debatable issue in the banking and finance literature. Among others, many scholars like Sahyouni et al. (2021), Ariefianto et al. (2021) and Ghenimi et al. (2020) examined bank stability from the liability perspective that is, the liquidity risk. A study by Beck et al. (2013); Bourkhis and Nabi (2013); Ghenimi et al. (2020) compared soundness of the banks between Islamic and conventional peers using liquidity measures and the Z-score. There are studies that examined the stability from the credit risk point of view (Ali et al., 2021; Chamberlain et al., 2020; Sobarsyah et al., 2020) as well as the probability of default, Z-score (Čihák & Hesse, 2010; Fakhri & Khemaies, 2017; Noman et al., 2017). Smaoui et al. (2019) explored the determinants of capital level of Islamic banks but the study did not consider Shariah compliancy in assessing bank stability. The study also incorporated moral hazard issues in banking as part of the model. Another study that focused on capital level by Raz (2018) was conducted in a specific country while the current study has a wider scope and generalizable to represent Islamic banks globally.

The study emphasized on capital risk drivers specifically for Islamic banks globally. Prior literature agrees that there are similar risks exposure between Islamic and conventional banks. Nonetheless, Islamic banks are also concerned with Shariah risks. Due to the uniqueness of the business model of Islamic banks, the banks are exposed to additional risks as failure to comply with Shariah would jeopardize the genuineness of the products offered. The basic Shariah requirements of Islamic banks is the prohibition of interest charges and payments in any of their business transactions. The avoidance of *gharar* (uncertainty) and *maisir* (gambling), prevent such activities of short-selling, speculation and investment in a particular line of business that are deemed to be unethical or may create harm to society. Financial products of Islamic banks are built on the concepts of risk-sharing between fund providers and the users of funds. All transactions are based

on Shariah contracts which fundamentally are backed by tangible assets, portraying the Islamic banks as closer to the real economy relative to their conventional counterparts. Due to that reasons, Islamic banks are obliged to ensure Shariah compliance and unlike conventional banks, failure to do so exposes Islamic banks to Shariah risks.

The importance of the Shariah governance system in Islamic banks has raised concern with reference to Shariah framework stringency. The Islamic Financial Services Board (2009) defines Shariah governance as “the set of institutional and organizational arrangements through which Institutions offering Islamic Financial Services (IIFS) ensure that there is effective independent oversight of Shariah compliance.” Following Islamic Financial Services Board, Malaysia constructed the Shariah Supervisory Board (SSB) to govern Islamic bank operations and activities at country and institution levels. Haan and Vlahu (2016) highlighted that corporate governance of bank has become globally debatable since the onset of the previous GFC. Rosly et al. (2017) revealed that the failure to comply with Shariah regulatory deteriorates the earnings of Islamic banks. Deterioration of the banks’ earnings for longer periods possibly jeopardize their financial health. In turn, banks may erode their capital level in order to buffer for the losses. According to Nomran et al. (2018) the SSB characteristics enhance the performance of Islamic banks. Among the characteristics of the SSB include, size, doctoral qualification and composition. This motivated this study to further investigate Shariah framework stringency focusing on its effect on capital risks. Another raising issue is the possibility of the moral hazard, too-big-to-fail in Islamic banks. Al-Khoury and Arouri (2016) highlighted that large banks hold a low level of capital, resulting in greater capital risk exposure. The banks rely on government support in case of insolvency as the bank perceives itself as too-big-to-fail. Albaity et al. (2019) proposed that large banks have a more risk appetite due to the safety net provided by the government. Although there is evidence of too-big-to-fail reported by conventional banks, it is worth investigating the existence of the moral hazard issue in Islamic banks (Smaoui & Ghouma, 2020).

In response to these problems, the study intended to investigate the possible factors, which are CAMEL (C-capital, A-asset quality, M-management quality, E-earnings, L-liquidity), Shariah compliancy and the influence of moral hazard on the capital risks of Islamic banks. The

model is referred to as the CAMELS+1 model. The study provides new insight into the body of knowledge in the banking literature as the study includes Shariah compliancy and the moral hazard factor to measure the risks that trigger the stability of banks.

LITERATURE REVIEW

Capital risk is one of the pertinent banking risks that occurs due to the fact that a bank is unable to keep a sufficient amount of capital to cushion for sudden shocks. The shocks that are sparked either from internal or external sources trigger the ability of the bank to maintain a sufficient level of capital so as to absorb possible occurrence of risks. The internal shocks are rooted from the unfit financial health of the bank itself while external shocks are caused by the external environment that is inclusive of market performance or economic conditions.

Louati et al. (2015) found that Islamic banks have better growth of equities participation, which reflects greater investments in terms of equity capital in Islamic banks. Practically, Islamic banks operate mainly based on the profit and loss sharing principles. A higher equity capital in the banks simultaneously reduces capital risk exposure. The negative relationship is also supported by other scholars, for example Khan et al. (2017) who posited that banks tendentiously maintain a greater capital level in combating the vulnerability of risks. Holding more capital enhances banks' resiliency towards possible shocks. Bitar et al. (2016) stressed that too much capital in the banks indicate a greater business risk exposure. This portrays the relationship between the bank capital and the risk adhere to the theory of regulatory. The theory suggests the banks maintain a sufficient amount of capital commensurate with the amount of risks taken. The authors further postulated that banks that deal with risky investments are more likely to prepare themselves with greater capitalization so as to curb uncertainties. Hence, banks are more prudent in providing services to customers which result in judicious risk management. Consequently, it will lessen possible losses by mitigating the risk that may jeopardize banks financial position. In line with the regulatory theory, the empirical literature indicates a significant relationship between capital level and capital risk for Islamic banks.

According to Abou-El-Sood (2016) better asset quality encourages the growth of capital in banks. The improvement of asset quality, for instance, lowering non-performing financing apparently raises the level of capital ratio held by banks, thereby banks are able to reduce capital risk exposure. Additionally, Oino (2016) emphasized that lack of asset quality creates problems to banks in the sense of supplying credit facilities to the economies. These banks are most probably facing greater non-performing financing that is caused by the inability of the customers to honor their obligations as agreed. In turn, more allocation of provisions for the non-performing financing simultaneously reduces the capital adequacy level in banks, thus increasing capital risk exposure. In contrast, Mili et al. (2017) found that a higher proportion of financing loss provision leads to greater bank capitalization, thereby lessening capital risk exposure. This capital decision corresponds to the regulatory hypothesis. Higher proportion of provisions for the financing losses leads to the bank holding more capital ratio to buffer for possible losses. If that is the case, banks face a lower capital risk exposure due to their prudent policies. Therefore, the study intended to verify the hypothesis if asset quality significantly influences capital risk.

A good management quality reflects the efficiency of the banks in handling their assets and costs. Malim and Sarini (2020) highlighted that better cost control of the banks indicate better performance in a way of generating higher profits. In other study, Ab-Rahim et al. (2020) noted that banks supposedly utilize their inputs at the very optimum rate to maintain good performance and efficiency. In other study, Aiyar et al. (2015) emphasized increment in costs due to the inefficiency of the bank management quality induces greater capital ratio held by the bank, thus lowering the capital risk. For instance, inefficiency of the banks in monitoring their customers causes greater non-performing financing, thereby deteriorating the quality of bank assets. Due to this, banks have to allocate certain proportions so as to buffer for sudden losses or shocks that stimulate a bank's financial health position. Adding to the noise, Chen (2016) and Stefano et al. (2015) measured management quality based on bank competition. Greater competition among banks implies better efficiency of the banks in managing their costs. The competitive banks have less incentives to maintain greater capital formation (Chen, 2016). The author further explicated that banks are unwilling to hold more capital in competitive markets since it results in lower profitability. Therefore, better

management quality leads to greater capital risk exposure. In this case, the banks have to weigh management quality and capital risk exposure. From another point of view, Sorokina et al. (2017) found a contradicting line of reasoning that states that greater competitive banks are more attracted to holding larger proportions of capital ratio. This is due to these banks lessening their leverage ratio, thus lowering capital risk exposure. The literature shows an inconclusive relationship between management quality and capital risk. The study hypothesized that management quality significantly influences capital risk.

Magnis and Iatridis (2017) stressed that banks in the United States and United Kingdom boost up profitability in order to improve capital formation. The more profits generated by the banks, the more capital is invoked to the banks which enables the banks to cushion contingencies that can erode the banks financial health, thus lowering capital risk exposure. Bougatef and Mgadmi (2016) revealed a similar point of view that stated that, greater profitability escalated the capital ratio of banks in Middle East and North Africa (MENA) apparently reducing their vulnerability to capital risk. The authors further emphasized that lack of financial markets development in the MENA region stimulated the banks to depend on their own internal sources of funding in raising capital proportion. The capital proportion aids the banks to buffer for uncertain shocks, hence minifying capital risk exposure. Hristov and Hülsewig (2017) claimed a negative relationship between profitability of the banks and capital risk exposure. The authors highlight that less profits were earned by banks, leading to a lower capital level and consequently a higher capital risk. For instance, financing losses deteriorated capital level in banks, resulting in more provision for financing losses which in turn exposes them to a greater capital risk. Thus, the study proposed that profitability significantly influences capital risk.

Inability of a bank to serve demand withdrawals sets up an unfavorable outcome, that is bank panic (Abdul-Rahman et al., 2017). Shingjergji and Hyseni (2015) discovered that less liquid banks need more capital to cushion for uncertain risks. This is to assure the banks are able to meet the demand of withdrawals from customers. Realizing the nature of the banking business, in which imbalance of asset-liability encourages banks to maintain a buffer of capital so as to smoothen the banking system. Conversely, DeAngelo and Stulz (2015) found that banks are highly likely to raise their leverage

level in order to meet the liquid claims demand from customers. The banks tend to leverage more so as to be able to provide adequate liquid claims. Therefore, greater leveraging reduces the equity capital in banks, hence a higher capital risk exposure. Similarly, Sorokina et al. (2017) disclosed that banks that previously have low liquidity would leverage more in order to be liquid enough. The banks simultaneously have a less amount of capital hold up to buffer for shocks, thereby a higher capital risk. This indicates an inconclusive relationship and the study hypothesized that liquidity significantly influences capital risk.

As far as the study is concerned, previous scholars did not empirically test whether Shariah compliancy is capable of lessening the vulnerability of capital risk in banks. A study by Rahman and Masngut (2014) disclosed that all Islamic banks in Malaysia complied with the requirement enlisted by the regulator, Bank Negara Malaysia. On top of that, the authors demonstrated that these banks have their internal Shariah Committee. In addition, Islamic banks with stringent Shariah compliance are closely kindred to equity financing and risk sharing as compared to their conventional counterparts that depend on risk transfer activities (Mirza et al., 2015). For instance, the more losses recorded from equity financing contracts recorded by the banks erode the capital structure of the banks. This reduces the value of shareholders, hence greater capital risk exposure. Nevertheless, Bitar et al. (2017) explicated that, in practice, Islamic banks are naturally engaged in profit and loss sharing (PLS) to enhance the capitalization level. In this case Islamic banks are conceived to face a less capital risk exposure. Hence, this study proposed that there are significant differences in capital risk in countries with a less stringent and countries with a stringent Shariah regulatory framework.

The study considered moral hazard as part of the model to prove the theory of too-big-to-fail in examining the capital risk of banks. Although there are numerous banks that are exposed to risks in their day-to-day business activities, the central bank would practically bail out the large bank in a country in that year (Bonfim & Kim, 2012). The bailout is to forefend any possible contagion effect that has the potential to scramble the whole financial system in a country. Al-Khouri and Arouri (2016) disclosed that large banks have a high expectation for financial support from the regulator in the case of an unfavorable financial position. This induces the large banks

to hold less percentage of capital in the banks, thus having a greater capital risk exposure. Moreover, Mili et al. (2017) documented that large banks have less incentives to hold a higher proportion of capital. The banks do not worry about the insolvency issue as they are among the big banks in the country and have a high potential for a bail out. Therefore, large banks are exposed to a great capital risk vulnerability. In contrast, Miah and Sharmeen (2015) found that large banks need to operate their business activities and transactions with a greater level of capital in the banks. The authors emphasized that the largest proportion of banks assets are in the form of financing. The large banks with a greater proportion of financing portfolio possibly have a greater capital ratio to maintain the optimum leverage ratio. Thus, the study hypothesized that there are significant differences in capital risk between small banks with a lesser possibility of the moral hazard issue and large banks with a high possibility of moral hazard.

Despite internal forces, capital risk may be influenced by external forces such as economic conditions and financial crises. The increase of gross domestic product (GDP) implies a stable financial health of a country. According to Mili et al. (2017) banks hold less amounts of capital during the flourishing of the economy. During this period, banks offer more credit facilities in the economies to enjoy greater profits. On the flip side, in return, banks have to cope with the vulnerability of the capital risk. The authors noted that these banks tend to hold a buffer of capital ratio during unstable economic conditions. During this period, banks have a higher tendency to face abnormal non-performing financing when their customers are unable to meet their obligations. On the contrary, Mahdi and Abbes (2018) stressed that Islamic banks hold more capital ratio during a prosperous economy. Holding a buffer of capital in the banks encourages Islamic banks to finance risky projects during the booming of an economy. This indicates that the economic condition contributes to the investment decision made by banks. Hence, Islamic banks have more capital to cushion for unexpected losses. This study suggests that the economy significantly influences capital risk.

The financial crisis affected banking system globally but the effect of the GFC on Islamic banks is ambiguous (Alqahtani et al., 2017). The crisis prolonged and continued with a sovereign debt crisis at the end of 2009. Although the effect of the crisis was globally shared, the assets of Islamic banks grew during 2008 to 2013 (Ernst & Young, 2013). It shows

that Islamic banks were able to relieve the downturn given the growth in their assets. In addition, the nature of Islamic banks that practice equity participation, profit and loss sharing as well as risk sharing among the banks and investors resulted in a less severe impact on Islamic banks (Alandejani et al., 2017). Due to this reason, Islamic banks faced a lower capital risk exposure. The argument was also supported by Islamic Financial Services Board (2015) that emphasized that the natural practice of Islamic banks encouraged greater capital ratio held by the banks at all times. Therefore, the study hypothesized that there are significant differences in capital risk between a normal and a financial crisis period.

RESEARCH METHODOLOGY

The study focused on nine (9) major players of Islamic banks across countries as documented by Ernst and Young (2016) in the World Islamic Competitiveness Report. The countries are Bahrain, Indonesia, Kuwait, Malaysia, Pakistan, Qatar, Saudi Arabia, Turkey and United Arab Emirates. It involved bank level data obtained from the Bankscope database while the Economic data was obtained from World Bank database. The dataset was in a yearly basis, spanning from 1999 to 2015 which is equivalent to a seventeen-year period of study. The sample consisted of 351 observations using unbalanced panel data.

The study included capital adequacy, asset quality, management quality, earnings, liquidity and additional two (2) drivers: Shariah compliancy and moral hazard, henceforth is known as CAMELS+1, in examining the risks in Islamic banks. Following Bonfim and Kim (2012) and Wu et al. (2017), the study identified large Islamic banks with a possibility of the moral hazard issue of too-big-to-fail based on the banks' asset value. The study separately assessed the asset value of the banks for each year and country. The study listed asset value for each bank and was categorized into four (4) quantiles. The banks in a country that belonged to the fourth (4th) quantile were recognized as large Islamic banks while below than fourth (4th) quantile otherwise. However, for countries without any banks belonging to the fourth (4th) quantile in a particular year, the study proposed that the banks belonged to the third (3rd) quantile as large Islamic banks with a possibility of moral hazard. The process was repeated for each year and

each country. The study denoted dummy 1 for banks with a possibility of a moral hazard issue of too-big-to-fail and dummy 0 otherwise.

In the sense of Shariah compliance, notably there are two (2) acceptable models; the centralized and the decentralized models. The centralized model encourages standardization and harmonization of the Shariah compliance among Islamic banks in the country where Islamic banks act based on the standards set by the Shariah Supervisory Board of Central Bank. On the contrary, the decentralized model represents the independent Shariah Supervisory Board of the Central Bank, where decisions are made by the Shariah Supervisory Board members at institutional level. While countries with the decentralized model may have various levels of compliancy and are deemed to be relatively less stringent, the study considered four (4) critical criteria in measuring the stringency of a country that are, (i) the existence of the Shariah governance framework, (ii) the presence of Islamic banking law, (iii) the restriction of the SSB members, and (iv) the composition of the members in the SSB of a country. The inclusion of these criteria was to assess the rigorous Shariah regulatory framework of a country. Specifically, the four (4) criteria were employed to measure the level of stringency in complying to Shariah within a country. The existence of a proper guideline of the Shariah governance framework ensures a robust and orderly development of Islamic finance in a country, hence promoting end-to-end Shariah compliance in Islamic banking operations. The second criteria of the presence of Islamic banking law implies structured supervision and monitoring activities by regulators. Meanwhile the last two (2) criteria represent independent and qualified Shariah Supervisory Board member eligibility to ensure fair and transparent Shariah decisions. Although there are possible discrepancies of compliance levels between different banks in the same countries, the restriction and composition of Shariah Board members is considered to control the differences to be minimal. The country that meets all these criteria are classified as stringent Shariah compliancy. The study denoted 1 as a stringent Shariah compliancy country and 0 otherwise. In this study both Saudi Arabia and Turkey were identified as countries with relatively less stringent Shariah compliancy while the rest of the countries were identified as having stringent Shariah compliancy. This is due to Saudi Arabia and Turkey relatively not having a Shariah governance framework and both of the countries remain silent on the restriction and composition of Shariah

Supervisory Board members in the country¹. Table 1 represents the proxies and the definition of variables in the study.

Table 1: Variables and Proxies Measurement

	Symbol	Proxy Measurement
<i>Dependent Variable</i>		
Capital risk	CAPR	Equity to total assets (%)
<i>Independent Variables</i>		
Capital adequacy	CAD	Equity to net financing (%)
Asset quality	AQ	Financing loss provision to net operating revenue (%)
Management quality	MQ	Other operating income to average total assets (%)
Earnings	EARN	Net income to average total assets (%)
Liquidity	LIQ	Liquid assets to total deposits and short-term funding (%)
Shariah compliancy	SC	0 = country with less stringent Shariah regulatory framework 1 = country with stringent Shariah regulatory framework
Moral hazard	MH	0 = small bank less likely to face moral hazard issue 1 = large bank with high potential of moral hazard
<i>Control Variables</i>		
Economy	ECO	Gross Domestic Product (GDP) growth rate (%)
Financial crisis	FC	0 = recovery and/or normal economic condition 1 = financial crisis period

The study incorporated two (2) control variables that are financial crisis (FC) and economy (ECO) so as to control the time variation of the study time frame and variation of countries included in the sample of the study which varied in the sense of economic size. The study identified two (2) crises within the study period; however, the study only focused on

¹ The assessment of Shariah stringency is valid only for the study period between 1999 to 2015. Note starting from 2018, Turkey sets up the Central Advisory Board (Shariah Board) under the participation Banks Association of Turkey. Saudi Arabia issues Shariah Governance Framework effectively on 9 August 2020.

the GFC 2007-2009 instead of Turkish Banking Crisis (TBC) 2000-2001 because of the unavailability of Turkish bank data for the crisis years. The study denoted dummy 1 for financial crisis year which was from 2007-2009 while dummy 0 for recovery year and/or normal economic conditions. The inclusion of GFC was motivated by the study of Alqahtani and Mayes (2018) and Alqahtani et al. (2017). The authors noted that, Islamic banks in the Gulf Cooperation Council (GCC) less performed in the aftermath of the GFC when the impact hit the real economy. This indicated that the GFC still impacted Islamic banks' performance, though it was not immediate. Unlike the GCC countries, the Indonesian banking sector was more resilient during the GFC since the banks held capital adequacy at 16 percent. Thus, the banks had a better ability to absorb the shock and losses that were rooted in the GFC. The inconsistent effect of the GFC towards the banks, encouraged the inclusion of the GFC in the study.

The two methods employed in this study were the Instrumental Variable Two-Stage Least Squares (IV2SLS) and the Generalized Method of Moments (GMM) so as to counter for the endogeneity issue. The study employed the former method to curb the issue as this study did not use the time lag variable as required by the later method. Therefore, the study employed IV2SLS accordingly based on the procedures mentioned by Gujarati and Porter (2010). In order to proceed with the IV2SLS, the study considered one instrumental variable that had a potential of the endogeneity issue, that is capital adequacy. The study regressed the instrumental variable so as to examine the possible factors that influence capital risk of Islamic banks.

As for the validity of the instrumental variable used, the study embarked on relevant testing as proposed by Gujarati (2011). The author lists that instrumental variable is supposed to meet the criteria as (i) it is an instrument that correlates to the endogenous variable either positively or negatively, (ii) it must be uncorrelated to the error term, and (iii) it must not belong to the original model. The econometric equation for the IV2SLS estimation was as follows:

$$CAPR_{it} = \rho_0 + \rho_z CAD_{it} + \rho_2 AQ_{it} + \rho_3 MQ_{it} + \rho_4 EARN_{it} + \rho_5 LIQ_{it} + \rho_6 SC_{it} + \rho_7 MH_{it} + \rho_8 ECO_{it} + \rho_9 FC_{it} + \mu_{it} \quad (1)$$

$$CAD_{it} = \rho_z + \rho_{1z} CADIns_{it} + \omega_{it} \quad (2)$$

RESULTS AND DISCUSSION

Due to the possibility of the endogeneity issue, the study employed the IV2SLS, yet the study embarked on pertinent testing so as (i) to ensure that the variable used is truly endogenous, (ii) to overcome identification issue if any, and (iii) to identify the strength or weakness of selected instrumental variables. Table 2 demonstrates the diagnostic results of instrumental variable estimation.

The study revealed the existence of the endogeneity issue as both Wu-Hausman F-test and Durbin-Wu-Hausman chi-sq showed a significant value, which was statistically significant at the 1 percent level. The result suggests capital adequacy is endogenous and has nexus to the error term of the regression. The study added the under-identification test, Anderson canonical correlations LM statistic was also significant at the 1 percent level, thus rejecting the null hypothesis that stated that instrumental variable for capital adequacy is related to the endogenous regressor, hence it is a valid instrument.

As for the over identification test, the Sargan statistic revealed 0.000 for the panel. The statistic proposed that panel estimation was exactly identified, which means the number of instrumental variable (m) is equal to the number of endogenous instrument (k). Therefore, there was no need for the study to proceed with the over identifying restrictions test: The Cragg-Donald Wald F-statistic and Stock-Yogo report for weak identification test. The Cragg-Donald Wald F-statistic was exactly alike to the first stage F-statistic regression since the study only involved one (1) endogenous regressor in the model. The result suggests the Cragg-Donald Wald F-statistic was greater than ten (10) which indicated, the instrumental variable was uncorrelated to the regressor in the model. Furthermore, the Cragg-Donald Wald F-statistic was greater than Stock-Yogo critical value. It was statistically significant at least at the ten (10) percent level. This signaled that the instrument used was a strong instrument and had no relationship with the endogenous variable.

Table 2: Diagnostic Tests of Instrumental Variable Estimation

<i>Endogeneity test:</i>	
Wu-Hausman	11400.000***
Durbin-Wu-Hausman	340.818***
<i>Under identification test:</i>	
Anderson canon. corr. LM statistic	298.026***
<i>Over identification test of all instruments:</i>	
Sargan statistic	0.000
<i>Weak identification test:</i>	
Cragg-Donald Wald F statistic	1918.417
<i>Stock-Yogo weak ID test critical values:</i>	
10% maximal IV size	16.380
15% maximal IV size	8.960
20% maximal IV size	6.660
25% maximal IV size	5.530
Source: Stock-Yogo (2005).	

Note: ***, **, * statistically significant at 1%, 5% and 10% level respectively.

As soon as the study managed to prove the endogeneity issue, the study proceeded with the IV2SLS regression. Table 3 presents the regression results for capital risk of Islamic banks. It is worth noting that capital risk proxies by equity to total assets, thus the increase in the ratio signal for lower capital risk exposure in Islamic banks. Therefore, the result derived will be explained inversely. Among all the variables, the study revealed a significant effect of capital adequacy, earnings, liquidity and economy on capital risk of Islamic banks. On the other hand, asset quality, management quality, Shariah compliancy, moral hazard and financial crisis had no significant influence towards the capital risk of Islamic banks. In other words, greater asset quality, efficient management of assets and costs, stringent Shariah regulatory framework, possibility of moral hazard issue of too-big-to-fail and financial crisis did not affect the vulnerability of Islamic banks' capital risk.

Capital adequacy was statistically significant at the 1 percent level and negatively related to the capital risk of Islamic banks. A higher ratio of capital in the banks portrays the loss of absorbing capacity from the financing activities, resulting in the decline of capital risk exposure as greater

capital ratio hold up. This is due to the fact that the Islamic banks are highly involved in equity participation among the investors that brings up to more equity capital in the Islamic banks (Louati et al., 2015). Therefore, higher capital ratio held by the Islamic banks lessened the exposure to capital risk as greater capital ratio encourages the ability of a bank to cushion for the sudden losses derived from banking activities. The findings was aligned to the regulatory hypothesis in which, the banks hold a buffer of capital commensurate to the amount of risk that they are dealing with. The greater amount of capital depicts those Islamic banks are not relying on the leverage financing. The finding is similar to Khan et al. (2017).

Table 3: Instrumental Variable Two-Stage Least Squares (IV2SLS) Regression for Capital Risk

Variables	Coefficient
Capital adequacy	0.636***
Asset quality	0.005
Management quality	-0.128
Earnings	0.385***
Liquidity	-0.077***
Shariah compliancy	-0.217
Moral hazard	0.087
Economy	-0.064**
Crisis	-0.112
_cons	1.780***
obs.	351

Note: ***, **, * statistically significant at 1%, 5% and 10% level respectively.

Similar to capital, earnings of Islamic banks were statistically significant at the 1 percent level with a negative relationship to the capital risk. The result indicated that raising of the earnings level in Islamic banks were caused by a better position of capital ratio, thence lowering capital risk. The study highlighted that greater returns among the Islamic banks were generated through financing assets. Therefore, the Islamic banks were very concerned in generating more earnings so as to increase the capital adequacy ratio and simultaneously reducing capital risk exposure. Moreover, having an adequate amount of capital is important because it acts as a buffer for sudden shocks. The Islamic banks are expected to generate more earnings so

as to improve capital formation. However, the Islamic banks may be exposed to credit risk in order to increase their earnings. The result is concurrent to Bougatef and Mgadmi (2016) and Magnis and Iatridis (2017).

In the sense of liquidity, the result showed that it is statistically significant at the 1 percent level with a positive relationship towards capital risk of Islamic banks. The result proposes that Islamic banks have to provide liquidity whenever the customers demand for withdrawals. This is due to banks experiencing asset-liability mismatch as a result of the fact that depositors commonly deposit their money in the banks for a short-term period. On the other hand, the financing offered by the banks ranges from short term to longer term period. Basically, banks operate by taking deposits from customers and giving out financing to borrowers. In the case of a tight liquidity position, the deposit taking, and financing activities induce a lower capital ratio in order for the banks to provide a liquidity position for their customers. This showed that, Islamic banks have to tradeoff between a liquidity position and a capital adequacy ratio as both move in the opposite direction. In the context of this study, a greater liquidity position among Islamic banks brings on a lower capital ratio, thus a larger capital risk exposure. The result affirms that of DeAngelo and Stulz (2015).

The study also found the economy to be statistically significant at the 5 percent level with a positive relationship to capital risk of Islamic banks. A booming economy portrays the expansion of the economic growth of a country. The result showed that Islamic banks tend to experience a lower capital ratio in the expansion of the economy as a result of great demands for credit facilities from customers. During a booming economy, Islamic banks are devoted to fulfilling the demands for credit from customers. In the meantime, the banks are able to create more earnings rather than just holding capital to buffer for uncertain shocks. Additionally, people spend more especially during the growing of an economy because they have better purchasing power. These people are highly likely to demand for more credit facilities from banks to fulfill their wishes. As a result, the Islamic banks provide more credit facilities to the economy and at the same time are able to take advantage of economy of scale. The finding synchronizes with Mili et al. (2017) that emphasized that greater economic growth leads to lower capital ratio, hence escalating capital risk exposure. On the contrary, Mahdi and Abbes (2018) opined that banks lessen their risk-taking activities

during a downturn of the economy. The bank increases its capital position as expecting more losses during the downturn of an economy, thereby low capital risk.

CONCLUSION AND RECOMMENDATIONS

Islamic banks deal with various types of risks in their banking operations, which are costly and contribute to losses. Realizing the risks in banking is inevitable, thus the mitigation of these risks is very crucial so as to assure a healthy Islamic bank in a country, consequently encouraging the development of the country.

The number of samples included in this study were nine major market players that consisted of Bahrain, Indonesia, Kuwait, Malaysia, Pakistan, Qatar, Saudi Arabia, Turkey, and United Arab Emirates. The study acknowledges the increment of Islamic banks' assets growth among the samples, hence the motivation to investigate on the possible factors influencing the Islamic banks' capital risk based on the CAMELS+1 elements (C-capital, A-asset quality, M-management quality, E-earnings, L-liquidity, S-Shariah compliancy and +1-moral hazard).

The model estimation revealed that capital adequacy, earnings, liquidity and economy were significant determinants of Islamic banks' capital risk. The Islamic banks have to hold adequate capital ratio, obtain greater earnings, maintain an adequate liquidity position and take into account the thriving of the economy in mitigating the level of capital risk exposure. As a result, Islamic banks are capable of absorbing the losses given an adequate capital ratio hold to buffer. The study discovered capital adequacy as the most influential factor amongst the aforementioned factors in the model. Evidently, Islamic banks have to maintain adequate capital to buffer for sudden losses. Knowing the unique characteristic of capital that wipes out the risks or losses in the banks strengthen the importance of capital in cushioning the banks, henceforth extenuating the vulnerability to capital risk. The nature of Islamic banks' practices that engage in profit and loss sharing principles more or less contribute to capital risk exposure. Mirza et al. (2015) disclosed that Islamic banks engage in equity financing and do not transfer risks to customers. In this study setting, the Islamic banks

would manage to lessen the capital risk vulnerability as they bring off greater earnings. To be clear, higher earnings encourage capital formation in the banks, hence mitigating capital risk exposure. Despite providing financing to the economies, Islamic banks also play the role of a liquidity provider that provides liquidity whenever the customers demand for withdrawals. The study noticed that Islamic banks face greater capital risk exposure in order for the banks to meet the demand for withdrawals from customers. In that case, the Islamic banks have to tradeoff between a liquidity position and capital risk due to the fact that both are not moving in the same wave. Therefore, Islamic banks have to face the vulnerability of capital risk in order to meet the demand withdrawals from customers. However, it is worth noting that Islamic banks should be able to manage capital risk in their banks so as to function as a liquidity provider.

Moreover, Islamic banks have to consider the economic performance as well in mitigating capital risk. These banks are exposed to susceptibility of capital risk particularly during the booming of an economy. Thus, Islamic banks supposedly prepare a buffer of capital so as to avoid further losses incurred which trigger capital risk exposure.

In response to the above findings, the study proposes that policy makers and regulators, in particular the central banks ensure that all Islamic banks comply to the minimum capital adequacy policy. During a crisis and recession, the central banks should encourage banks to have a greater capital buffer on top of the minimum capital requirement in order to absorb potential losses during the period. The determination of the capital adequacy ratio for Islamic banks is based on the Islamic Financial Services Board standard, which is aligned to the Basel requirement for the conventional banks. Regardless, it is suggested that the Islamic Financial Services Board standard to keep abreast with the changes in the market should there be any need for more stringent capital requirement. While the Islamic banking operations is in its infancy compared to conventional banks, Basel standards are considered as matured policy makers in the industry. Hence, it is wise for the Islamic Financial Services Board to use Basel as the benchmark in revising the standard of capital requirement for Islamic banks.

The study further urges that policy makers and regulators fully utilize reserve requirement and make relevant adjustments in coping with the

current needs of the banking industry. The central bank is advocated to increase the reserve requirement during a prosperous economy, as the study identified a more capital risk during this period. Moreover, greater reserve requirement motivates Islamic banks to strive for higher earnings, which lessen capital risk. In order to maintain sufficient reserve, Islamic banks aim for profitable businesses to maximize shareholder wealth. Another significant effect of the reserve requirement is, its moderate Islamic banks liquidity level in particular during a booming economy, thus are capable to minimize capital risk.

There was no significant difference of capital risk exposure between countries with a stringent Shariah regulatory framework and countries with a relatively less stringent Shariah regulatory framework. Although the banks have different stringency levels of the Shariah regulatory framework, these banks follow similar guidelines on the minimum percentage of capital holding in the banks as proposed by the regulator. The banks have to maintain at least 8% of their risk-weighted assets all the time so as to ensure stability of the banks.

Interestingly, the result revealed that Islamic banks are less likely to face the moral hazard issue of too-big-to-fail. This portrays that the larger Islamic banks relative to smaller Islamic banks manage the capital risk similarly. The Islamic banks have quite a huge range of the total assets held, still the range is not materialized. This is because Islamic banks are still infants to the Islamic banking and finance industry. Thus, the range of total assets held by the Islamic banks have yet to halt to the moral hazard of too-big-to-fail likelihood.

In short, the findings revealed that there is no moral hazard issue and noted that, Shariah compliancy does not matter in investigating capital risk of Islamic banks for the nine major market players of Islamic banks. Due to that reason, proper capital risk mitigation is crucial so as to ensure that the Islamic banks are immune to risk exposure in consequence to fragility and disruption of the banks resulting from their imprudent management of risks. To a large extent, it disrupts the Islamic banking and finance industry as well as deteriorating a country's growth and development.

Future research should investigate risks in Islamic banks based on the contracts involved in their banking and business activities. This would require the future research to have additional data on the list of the contracts, proportion of the contracts and perhaps the incumbency of the contracts.

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