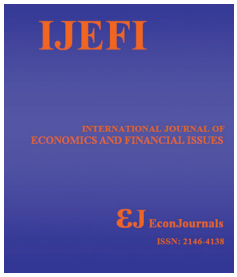

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Sharia Supervision Board, Board Independence, Risk Committee and Risk-taking of Islamic Banks in Malaysia

Zulkufly Ramly[1]*, Nurusysyifa Datuk Haji Mohamad Nordin[2]

[1]Department of Finance, International Islamic University Malaysia, Gombak Campus, 53100 Kuala Lumpur, Malaysia, [2]Institute of Islamic Banking and Finance, International Islamic University Malaysia, Gombak, 53100 Kuala Lumpur, Malaysia.
*Email: zul_ramly@iium.edu.my

ABSTRACT

This paper investigates the moderating effects of Sharia Supervision Boards (SSBs) on the links between board independence and risk committee (RC) independence and Islamic banks' (IBs) risk-taking in Malaysia from 2010 to 2015. The paper highlights four important findings: (1) SSB's expertise in Sharia and banking-related areas lower credit risk, (2) higher board independence is likely to reduce credit risk when SSBs consist of Sharia advisors with expertise in Sharia and banking-related areas, (3) higher RC independence is likely to reduce credit risk when SSBs consist of Sharia advisors with expertise in Sharia and banking-related areas and (4) the reducing effect of RC on credit risk is conditional upon higher participation of female Sharia advisors in SSBs. This study suggests that the resources in terms of valuable experience that SSB advisors bring to IBs combined with the typical oversight mechanisms such as board independence and RC as suggested by corporate governance literature are beneficial to control risk-taking in the Malaysian IBs. Further, this paper demonstrates that integrating agency theory and resource dependence view in a corporate governance study produces a more meaningful result.

Keywords: Islamic Banks, Risk-taking, Sharia Supervision Board
JEL Classifications: G21, G32

1. INTRODUCTION

Motivated by public policy consideration this study investigates the effect of Sharia Supervision Boards (SSBs), board independence and risk committee (RC) independence on the risk-taking of Islamic banks (IBs) in Malaysia from 2010 to 2015. Banking industry is exposed to risk-taking activities, which could potentially enhance or dampen profitability. Whilst risk-taking is necessary in any business model stakeholders are concerned about the tendency of poor and unmitigated risk-taking by the bank senior management as evidenced by the argument of agency theory. In fact, one of the key contributing factors to prior financial crises such as the Asian financial crisis in 1998 and the Global Financial Crisis in 2008 was the poor risk taking in the banking industry. The past financial crises witnessed the collapse of banking giants such as Lehman Brothers and Solomon Smith Barney. Excessive risk-taking and poor risk oversight were also the key contributing factors in the collapse of Barings Bank Plc in the 1990s. In Malaysia, the pioneer IB, Bank Islam Malaysia Berhad suffered great financial loss in 2005 due to excessive risk taking and poor risk management, which required two capital injections from shareholders to stay solvent. In a banking business, excessive risk-taking mainly occurs in lending decisions where senior management approves financing proposals without adequate due diligence, which may result in poor asset quality. IBs that are exposed to high level of poor asset quality bear the risk of massive losses in the event of failed recovery efforts. As it appears the recurring banking scandals suggest that something is lacking in the understanding of factors that could control risk-taking.

This study focuses on IBs because they are exposed to a multitude of risks given the fact that they rely on a variety of Islamic financial contracts in their products and services in order to avoid prohibited elements of *Riba*, *Gharar* and *Maysir* (Chapra and Ahmed, 2002). For example, the *Murabahah* financing contract exposes IBs to not only credit risk from the customer but also potential counterparty default risk from commodity traders that are also contracting parties in this financing arrangement. In

addition, Islamic financing principles that are based on profit and loss (PLS) sharing (equity-based) such as *Musharakah* and *Mudarabah* also expose IBs to equity risk in the event of business failure (Obaidullah, 2005). IBs cannot mitigate credit risk or risk of business failure because the financing relationship is established based on partnership and they also do not have strong control over the management of the projects underfinanced (Usmani, 2010). Under the *Musharakah* financing arrangement both the IB and financing client share the risk associated with the project or business venture. Financing principle based on *Mudarabah* is even riskier in which both the IB and financing client share profits earned from the project based on a pre-determined profit sharing ratio. However, in the event of a loss, the IB bears it all. The financing client loses its effort and time spent on managing the project or business venture. The PLS financing arrangement is primarily based on trust. IBs can only mitigate their risks of losing their capital contribution to the project by ensuring a stringent credit evaluation and business viability. To achieve this objective IBs must put in place robust oversight mechanisms such as boards that are not beholden to the management, an independent risk committee (RC) and additionally, a SSB.

SSB can be defined as an independent body that consists of Sharia scholars who have sound knowledge in *Fiqh Muamalat*. The establishment of a SSB is compulsory in each IB in Malaysia. Shareholders appoint members of SSBs based on the recommendation from the board of directors. The main role of SSBs is to ensure compliance with the Sharia rules and principles in the products, services and daily operations of the IBs. SSBs are responsible primarily to approve (ex-ante) financial products and services and monitor (ex-post) the operations and activities on behalf of stakeholders to ensure conformance to Sharia. The board of directors are duty bound to implement the decisions of the SSBs. In short, a SSB can be considered as an additional layer of corporate governance to complement the oversight role of the board of directors (Mollah and Zaman, 2015). SSBs play an important role in not only ensuring the financing contracts are permissible based on Sharia but also advising the board of directors on the risk aspects of the contracts because Islam prohibits unnecessary and excessive risk-taking (Abedifar et al., 2013; Mollah et al., 2017). This study asserts that together the SSBs, board independence and RC independence could potentially curb the tendency of the bank senior management to take excessive risks.

Further, this area of research has received little attention as of to-date. Prior studies on SSBs mostly focused on studying the Shari'ah governance framework (Hassan, 2011; Grassa, 2013, Muneeza and Hassan, 2014), the impact of Shari'ah governance on Sharia compliance of IBs (Alkhamees, 2013) and the effectiveness of Shari'ah supervision model (Hamza, 2013). Little is known as to how the structure of SSBs, resources that Shari'ah advisors contribute to IBs and other SSB attributes affect bank outcomes. The current study is related to the studies of Mollah and Zaman (2015), Nomran et al. (2017) and Nomran et al. (2018) on the direct effect of SSBs on the performance of IBs. This study is more closely related to Fakhrunnas and Ramly (2017) and Mollah et al., 2017) in which the dependent variable was the bank risk-taking. This study is different, however, from such studies in which it also investigates the interaction effect of SSBs. Specifically, other than focusing on the monitoring aspect of risk-taking based on the premise of the agency theory this study also takes a resource dependence view in examining the effect of the resources that the SSB members bring to IBs on risk-taking. In short, this study attempts to integrate the arguments of agency theory and resource dependence view to support the assertion that the objective of corporate governance could be better achieved by interacting or combining corporate governance mechanisms than merely relying on a single element of corporate governance as typically done in prior studies. Hence, the second objective of this study is to examine the interaction or moderating effects of SSBs on the link between (1) board independence and risk-taking and (2) between RC independence and risk-taking.

Malaysia is a suitable setting to undertake this study on risk-taking because it is one of the global leaders in the provision of Islamic financial services. According to the Global Report on Islamic Finance, Malaysia is a leading country that has largest Islamic banking assets with total asset worth US$156.7 billion (World Bank and Islamic Development Bank Group, 2016). Further, the Islamic Development Bank in Saudi Arabia stated that Malaysia hold the second position among the countries that have the largest economy in terms of Sharia compliance financial assets. Malaysia also has a relatively well-developed Islamic financial market with clear and comprehensive regulatory frameworks governing the Islamic financial services sector including the SSBs and risk governance in IBs. The Central Bank of Malaysia has established guidelines and framework in the form of policy documents for the IBs operating in Malaysia. The risk governance policy consists of comprehensive principles to guide the board of directors and senior management to perform their functions with respect to risk monitoring. The risk governance framework emphasizes the roles of board of directors and senior management in identifying the types of risk and managing them to prevent unnecessary and uncontrollable exposure to excessive risk-taking activities. Further the Central Bank of Malaysia has issued guidelines on the role, competency and personal qualities of Sharia advisors as well as the structure of SSBs in Malaysia. The guidelines are in line with the Accounting and Auditing Organization for Islamic Financial Institutions standards on SSBs.

The remainder of this article is organized as follows. Section 2 reviews the relevant extant literature and develops the hypotheses of this study. Section 3 outlines the research methodology. Section 4 describes the data and presents the results. Finally, Section 5 concludes.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

This study focuses on three attributes of SSBs, namely the experience of Sharia advisors in Sharia/baking/finance/Takaful, the education level of the Sharia advisors and the extent of gender diversity in SSBs. The choice of the attributes focuses on the resources that SSBs contribute to IBs towards decisions that have risk implications. As there is a scarce empirical literature on the

SSBs influence on bank outcomes (Garas and Pierce, 2010; Mollah and Zaman, 2015) this study relies on the literature of board of directors to develop arguments to support the hypotheses.

2.1. SSB Expertise

Resource dependence theory suggests that organisations require resources that they can obtain from the environment in which they operate to survive (Pfeffer and Salancik, 1978). Directors bring in valuable resources to the boards in which they contribute their knowledge, skills and expertise that they obtain from their educational qualification and work experience (Hillman and Dalziel, 2003). They utilise their resources in board's deliberation of issues and decision-making. They also rely on their resources to exercise their power to control and steer the organisations into the right direction (Ulrich and Barney, 1984). In terms of risk-taking, the boards that have a wide set of skills and have greater experience are prudent in risk-taking due to their good understanding of the organisation's risk appetite (McNulty, 2012). Further, board members should be financial literate to make risky decisions (Jensen, 1993; Chhaochharia and Grinstein, 2007). Similarly, SSB members consist of Sharia scholars who contribute their resources in SSB's deliberations and decision-making. Alman (2012) stated that SSBs represent shareholders and depositors of the IBs to certify and ensure financial contracts, transactions and banking activities are in accordance Sharia. Hence, SSB members who are Sharia experts must have educational qualification and experience in Sharia (Samra, 2016). In addition, SSBs should also compose of members who have financial knowledge or banking experience that enable them to carefully assess financial contracts applied to banking products and services of IBs (Matoussi and Grassa, 2012; Grassa, 2015). Thus, this study hypothesizes that:

H_1: Higher percentage of Sharia advisors with Sharia and banking-related experience in SSBs reduces risk-taking.

2.2. Educational Level of SSB Members

Educational qualification is a vital resource that board members bring to the organisation so that the boards can have the ability to make quality decision (Kakabadse et al., 2010) and deal with complex issues (Hambrick and Mason, 1984). Ingley and Van der Walt (2001) assert that qualified board members are strategic resources of an organisation. Further, qualified board members could enhance the competitiveness of the organisation (Gabrielsson and Huse, 2005) because they can contribute towards the formulation of strategy (Herrmann, 2005). In terms of the SSBs, Sharia scholars who are suitably qualified in Islamic Finance and banking will be able to contribute towards SSBs' deliberation of issues pertaining to the risk aspect of the financial contracts to be applied to banking products and services. Further, SSB members with doctorate qualifications in Islamic Finance are highly conversant in the procedure and structure of Islamic financial products (Rahman and Bukair, 2013). Thus, this study hypothesizes that:

H_2: Higher percentage of SSB members with postgraduate educational qualification reduces risk-taking.

2.3. Gender Diversity

Extant literature on board of directors suggests that board diversity can improve organisational performance due to unique characteristics that members have and contribute to the board (Carter et al., 2003; Erhardt et al., 2003). Performance improvement can be attained because a diverse board contributes to high quality decisions, increase in creativity and innovation (Westphal and Milton, 2000), and enhance problem-solving ability (Dallas, 2002). Gender diversity is one aspect of board diversity that has received great attention in the empirical literature. According to Liao et al. (2014), females are different from males in terms of personality, communication style, educational background and career experience and expertise. Such differences if exist in the board of directors will contribute to a broader perspective in decision making. Women, in general, also have noble characteristics such as more diligent (Nielsen and Huse, 2010), more committed and involved (Adams and Ferreira, 2009), more benevolent, universally concerned, less self-interest oriented (Carter et al., 2003; Cox and Blake, 1991; Liao et al., 2014), and less power oriented and risk loving than male directors (Adams and Funk, 2012). Some prior studies have found positive relationship between gender diversity and firm performance (for instance Campbell and Mínguez-Vera, 2008; Krishnan and Park, 2005; Nguyen et al., 2014) but overall, the link remains inconclusive. Recent studies found positive effect of gender diversity on firm performance when the corporate governance is weak because women directors provided additional oversight on the board of directors (Adams and Ferreira, 2009; Gul et al., 2011). In the context of SSBs, women Sharia advisors could be relied upon to carefully identify the Sharia risk and credit risks arising from the financial contracts applied to financing products because they tend to be more diligent, less self-interest oriented and wary of risk. Thus, this study hypothesizes that:

H_3: Higher participation of female Sharia advisors in SSBs reduces risk taking.

2.4. Board Independence

Agency theory proposes that board of directors plays a crucial role of protecting the interest of shareholders in the presence of agency conflicts (Fama and Jensen, 1983). However, the extent to which the board is able to exert its monitoring over the management team depends on its degree of independence (Jensen and Meckling, 1976). Boards that are independent from the influence and control of a powerful CEO are better able to exercise their monitoring ability. Theoretical and empirical literatures suggest that higher percentage of independent directors implies greater monitoring ability of the board of directors. IFSB (2014) emphasises the role of independent directors in the oversight of risk-taking activities in IBs. Lack of board independence was found to be one of the contributing factors for governance failures during the Global Financial Crisis in 2008. Pathan (2009) asserts that independent directors who are free from the influence of the management team are symbol of integrity and accountability of the board. Rachdi et al. (2013) suggests that the influence of independent directors can be seen from the percentage of independent directors in the board of directors. In IBs, a high degree of board independence can prevent them from taking excessive risks without a strong risk mitigation system. Independent directors could be relied upon to scrutinize financing and investment proposals objectively so as to provide a check and balance against the executive management team. Pathan (2009) observed that higher degree of board

independence reduces risk-taking activities. Mollah and Zaman (2015) found that the board of directors of IBs dominated by independent directors were better able to supervise and control the management team. Thus, this study hypothesizes that:

H_4: Greater board independence reduces risk taking.

2.5. RC Independence

RC is an independent committee of the board of directors that is responsible for formulating risk management policies and monitoring their implementation. RCs assist the board in performing the oversight role with respect to risk-taking activities of a firm and ensure compliance to the risk management policies and framework. RCs are crucial to protect the interest of bank stakeholders from unnecessary and excessive exposure to risks(Srinivas et al., 2015). In Malaysia, it is compulsory to have an independent RCs in financial institutions, including IBs. Mongiardino and Plath (2010) highlight three important attributes of banking risk governance (1) a dedicated board-level RC, (2) the RC should consist of majority independent directors and (3) the appointment of Chief Risk Officer as an executive member of the board. This study expects that having a RC indicates a stronger risk management and therefore, better corporate governance. However, similar to board independence, the extent to which a RC is an effective monitor of risk management largely depends on this independence from the executive management team. Prior empirical literature on the RCs is limited. Ellul and Yeramili (2011) found that a strong and independent risk management reduced risk-taking activities in a sample of 74 large US banks. Thus, this study hypothesizes that:

H_5: Greater RC independence reduces risk taking.

2.6. Moderating Effect of SSB Attributes on the Link between Board Independence and Risk-taking

According to the agency theory, board of directors has an oversight role to control the self-interested tendency of the executive management. Boards that consist of majority independent directors could be relied upon to protect the interest of shareholders and enhance their wealth. However, board members must also have the necessary resources such as relevant experience, diverse gender and good education background to be able to contribute to an effective oversight and better quality decisions. This study argues that integrating the oversight role of the board with the SSB attributes could contribute to better decisions to control risk-taking in IBs. SSBs serve as an additional layer of governance to ensure that IBs operate according to Sharia (Mollah and Zaman, 2015). SSBs provide advisory services to the board of directors by looking at the financial contracts applied to the banking products and services. They need to examine the risk aspects of the contract, in addition to the strict adherence to Sharia because Islam restraints excessive risk-taking. Together, the board monitoring and SBBs can improve risky decisions, which will reduce the possibility of excessive risk-taking as it will limit the authorities of executives in making a decision based on their interest. The combination of board independence and SSBs could potentially strengthen corporate governance that will reduce the level of risk taking as they will set up corporate strategies that are less risky (Namazi and Hosseini-Nia, 2017). SSBs will strengthen the relationship between board independence and risk-taking in which its combination can potentially curb excessive risk-taking. Thus, this study hypothesizes that:

H_6: SSB attributes (Sharia and banking-related experience, postgraduate qualification and greater diversity) moderate the relationship between board independence and risk-taking.

2.7. Moderating Effect of SSB Attributes on the Link between RC Independence and Risk-taking

The agency theory emphasises on oversight mechanisms to curb the opportunistic tendency of the executive management. An independent RC is one of such mechanisms available in IBs because it is mandatory to have it. The oversight role of RCs is even more crucial in IBs because they have unique risks that are distinct from CBs. IBs have different risk exposure from CBs especially in terms of financial contracts. The involvement in equity financing for example exposed IBs to the risk that is not exposed in CBs. This is where the experience and knowledge of SSBs are needed to mitigate the risk. SSBs play an important role in educating and advising the boards and senior management to ensure that the operations and activities are in line with Sharia. The knowledge and experience of SSB members are the valuable resources to improve not only the performance but also to curb excessive risk. Islam prohibits unnecessary and excessive risk-taking that could be harmful to the well-being of an organization (Abedifar et al., 2013). Hence, SSBs have an important role to ensure that the Islamic financial products adhere to this rule with respect to risky aspect of the contracts. SSBs. To be effective SSBs should consist of Sharia scholars with banking-related experience, good relevant qualification and gender diverse. Thus, this study hypothesizes that:

H_7: SSB attributes (Sharia and banking-related experience, postgraduate qualification and greater diversity) moderate the relationship between RC independence and risk-taking.

3. METHODOLOGY

3.1. Data Collection

This study consists of all the 16 IBs in Malaysia covering the period from 2010 to 2015. The financial and governance data were extracted from the individual banks' annual reports, which were obtained from the websites of Bursa Malaysia and/or the banks. Table 1 shows the list of IBs included in this study.

3.2. Empirical Model

The empirical model is based on the generalize least square (GLS) panel data regression techniques, which has been widely used in similar prior studies on bank risk taking (Pathan, 2009); Rachdi et al., 2013; Mollah and Zaman 2015; Mokni et al., 2016; Chan et al., 2016). According to Wooldrige (2013), GLS takes into consideration the unknown parameter of the error variance (heteroscedasticity), serial correlation pattern in the errors or both through transformation of the original model. GLS estimates are designed to test repeated data, correlated data and have ability to measure different variety of growth curve models (Ugrinowitsch et al., 2004).

Table 1: List of Islamic banks

Affin Islamic Bank
Al Rajhi Bank
Alliance Islamic Bank Berhad
Am Islamic Bank
Asian Finance House
Bank Islam Malaysia Berhad
Bank Muamalat Malaysia Berhad
CIMB Islamic Bank
Hong Leong Islamic Bank
HSBC Amanah Malaysia
Kuwait Finance House
Maybank Islamic Berhad
OCBC Al-Amin Bank
Public Islamic Bank
RHB Islamic Bank
Standard Chartered Saadiq

The base estimation model to examine the influence of SSB attributes, board independence and RC independence on risk taking of IBs is as follows:

$$\text{Risk Taking}_{it}=\beta_0+\beta_1 SSB_{it}+\beta_2 Board\_Ined_{it}+\beta_3 RC\_Ined_{it}+\beta_4 B\_Size_{it}+\beta_5 ETA_{it}+\beta_6 ROA_{it}+\beta_7 C\_Value_{it}+\beta_8 B\_age_{it}+\beta_9 GDP_{it}+\varepsilon_{it} \quad (1)$$

Where,

Risk Taking_{it}=Insolvency risk and credit risk for bank i^{th} at time t,

SSB_{it}=SSB attributes (expertise in Sharia and banking-related areas such as finance/Takaful/insurance, educational qualification and gender diversity) for bank i^{th} at time t,

$Board\_Ined_{it}$=Board independence measured by the percentage of independent directors in bank board for bank i^{th} at time t,

RC_Ined_{it}=RC independence measured by the percentage of independent directors in the RC for bank i^{th} at time t,

B_Size_{it}=Bank size measured by the algorithm of total assets for bank i^{th} at time t,

ETA_{it}=The ratio of equity to total assets for bank i^{th} at time t,

ROA_{it}=Bank performance measured by the ratio of net income total assets for bank i^{th} at time t,

C_Value_{it}=Bank charter value measured by the book value of liabilities over market value of assets for bank i^{th} at time t,

B_Age_{it}=Age of bank measured by the number of years since the bank was incorporated for bank i^{th} at time t,

GDP_{it}=Annualised growth rate of gross domestic product per capita,

ε_{it}=Error term.

To examine the moderating effect of SSB attributes on the relationship between board independence, RC independence and risk-taking two interaction terms are created, namely the BIND X SSB and BIND X RC_IND using the multiplication function in Stata software. The SSB attributes have moderating effect if the interaction terms are statistically significant. The estimation model for this purpose is as follows:

$$\text{Risk Taking}_{it}=\beta_0+\beta_1 SSB_{it}+\beta_2 Board\_Ined_{it}+\beta_3 RC\_Ined_{it}+\beta_4 Board\_Ined_{it}\times SSB_{it}+\beta_5 Board\_Ined_{it}\times RC\_Ined_{it}+\beta_6 B\_Size_{it}+\beta_7 ETA_{it}+\beta_8 ROA_{it}+\beta_9 C\_Value_{it}+\beta_{10} B\_Age_{it}+\beta_{11} GDP_{it}+\varepsilon_{it} \quad (2)$$

This study utilises the variance inflation factor (VIF) test to detect problems of multicollinearity prior to performing the regression analysis. The results show the VIF values are below 10, indicating that the explanatory variables are free from multicollinearity problem (Gujarati, 1995).

3.3. Dependent Variables

This study uses two measures of risk to represent the extent of IBs' risk taking, namely insolvency risk and credit risk. Insolvency risk can be defined as the risk that IB will be unable to satisfy its debts (Lepetit and Strobel, 2015). It is the situation where the IBs hold more liabilities as compared to assets, which gives rise to liquidity problem and insolvency (Ghassan, 2017). In this study, following Rachdi et al. (2013) and Abedifar et al. (2013) Z-score represents insolvency risk, which is calculated as follows:

$$Z=\frac{E(ROA)+CAR}{SD(ROA)}$$

Where,

E (ROA)=Expected return on asset

CAR=Equity capital to asset

SD (ROA)=Standard deviation of ROA.

The variability of ROA provides comprehensive measures that will reflect most of the risk such as interest rate risk, operating risk and other risk related to the bank earning and standard deviation of ROA are good choice in measuring the variability of ROA (Naimy, 2005). Higher value of z-score indicates lower exposure to insolvency risk. The second measure of risk taking is credit risk, which can be defined as the probability that a debtor fails to fulfil his or her financial obligation at times or not at all (Bourakba and Zerargui, 2015). In IBs, the source of credit risk is from the use of Sharia-based contracts in their financing products. The default or non-payment is not only between the IBs and their financing customers but also from the third party involved in the financing contracts. Consistent with prior studies, the three measures of credit risk are the ratio of loan-loss provision to average gross loan (Loss_P) (Abedifar et al., 2013), ratio of impaired loans to gross financing (Impaired) (Abedifar et al., 2013) and the loan loss reserves (Loss_R) (Abedifar et al., 2013).

3.4. Explanatory Variables

The study focuses on three important attributes of SSBs, namely the expertise (SSB_Exp) and education level of SSB members (SSB_Edu) and gender diversity (SSB_Gen) in SSBs. The experience of Sharia advisors is measured by the number of Sharia advisors having work experience in Sharia and banking-related fields divided by the total number of Sharia advisors in SSB of each bank in each year (Amanullah, 2015). The education level of SSB members is measured by a binary variable of 1 for those who have a postgraduate (Master/PhD) and 0, otherwise (Rammal, 2010). Following Ramly et al. (2017) gender diversity is measured by dividing the number of female Sharia advisors with the total number of Sharia advisors in SSB of each bank in each year. Next, the degree of board independence represents the monitoring aspect of the board of directors in risk taking activities of IBs. Consistent with prior studies and agency theory, board decisions would be more objective and in line with the interest of stakeholders if there

is greater representation of independent directors in the board. Independent directors can be defined as directors that do not have any business and personal relationships with the officers of the firm that they serve. Board independence (Board_Ined) is measured by the number of independent directors divided by the total number of directors in bank board (Pathan, 2009).

The extent of RC independence (RC_Ined) is an indicator of its ability to exercise greater oversight towards risk taking activities and risk management system in IBs. RCs play a critical oversight role in the board in which they scrutinize the strategic risk aspects of financing proposals, products and operations of IBs. A highly independent RC contributes to an effective risk management (Ellul and Yerramilli, 2011; Aebi et al., 2012). RC independence is measured by the number of independent directors divided by the total number of directors in RC (Amoozegar et al., 2017). Following pior studies (Pathan, 2009; Abedifar, et al., 2013; Mollah and Zaman, 2015; Hamza, 2016; Nomran et al., 2017) six other variables are included to control for bank financial performance (ROA), equity to total assets (ETA), economic growth (GDP), bank age (B_Age) and charter value (C_Value).

Table 1a presents the descriptive statistics of all variables. The mean of z-score is about 69.23%, which suggests that the IBs have a moderate financial health and creditworthiness. As for the measures of credit risk overall the IBs have a relatively low average credit risk (impaired) of 9.32%. Moving on to the SBB_Exp on average about 96% of SSB members have experience in Sharia and banking-related fields, which suggests that they have the appropriate mix of expertise to perform their role. Next, the average size of SSB is five members while the largest and smallest sizes are nine and three members respectively. As for the extent of gender diversity, the result shows that male dominates the SSBs in Malaysian IBs. The average female participation is merely 13.20%, which indicates that IBs have a relatively low participation of female Sharia advisors in SSBs. It appears that there is still a lot room for improvement in attaining gender diversity in SSBs. As for the Board_Ined, on average the board of directors in Malaysian IBs consist of 53.42% independent directors, which is in line with the regulatory requirement. Similarly, the RCs, on average consist of 75.55% independent directors, which imply that they are highly independent.

Table 1a: Descriptive statistics (n=96)

Variable	Mean±SD	Minimum	Maximum
Z score	69.23±83.58	0.948	400.3
Loss_P	0.0076±0.0138	0.0004	0.124
Impaired	0.0932±0.250	0.0028	1.809
Loss_R	0.287±1.053	0.022	7.969
SSB_Exper	95.68±11.17	50	100
SSB_Edu	5±1.124	3	9
SSB_Gend	13.20±14.59	0	50
Board_Ined	53.42±14.89	25	86
RC_Ined	75.55±24.86	20	100
B_Size	7.962±1.416	6.790	11.85
ETA	0.197±0.274	0.0457	0.999
ROA	0.0403±0.0511	0.00280	0.320
GDP	5.570±0.757	4.693	6.981
B_Age	12±6.237	7	34
C_Value	98.82±192.5	19.38	858.9

SD: Standard deviation, *Z*_score is insolvency risk, Loss_P is the ratio of financing-loss provision to average gross financing, Impaired is the ratio of impaired loans to gross financing, Loss_R is the financing loss reserves, SSB_Exp refers to the number of Sharia advisors having work experience in Sharia and banking-related fields divided by the total number of Sharia advisors, SSB_Edu is The education level of SSB members is measured by a binary variable of 1 for those who have a postgraduate (master/Ph. D) and 0, SSB_Gend is the number of female Sharia advisors divided by the total number of Sharia advisors in SSB, Board_Ined refers to the number of independent directors divided by the total number of directors in bank board, RC_Ined refers to the number of independent directors divided by the total number of directors in in RC, B_Size is the bank size, ETA refers to the ratio of equity to total assets, ROA is the ratio of net income to total assets, GDP is the domestic growth product, B_Age refers to bank age in years, C_Value is the charter value

4. RESULTS AND DISCUSSIONS

4.1. SSBs, Board Independence, RC Independence and Risk-taking

Table 2 shows the result on SSB expertise and risk-taking of IBs. Consistent with hypothesis 1 of this study, higher percentage of Sharia advisors having skills and experience in Sharia and banking-related fields is likely to lower credit risk as measured by log of loss reserve at 5% significance level. This result is in line with the assertion of the resource dependency theory in which the resources the Sharia advisors bring to the SSBs could have beneficial contribution to risks taking of IBs. Specifically, the result implies that such resources could produce a desirable effect in curbing excessive risk-taking in financing portfolios of IBs. SSBs that have greater participation of Sharia advisors with relevant experience have better understanding of not only the financing products but also the Sharia contracts applied to the products. Hence, they would be able to give a sound advice to the board of directors on the credit risk associated with the products their suitability before introducing them to the market. The SSB members' educational qualification and gender diversity are not statistically significant. Tables 2a and 2b display the results of the effects of board independence and RC independence on risk-taking, which indicate that both variables are not statistically significant.

4.2. Moderating Effect of SSBs

This research also aims to examine the moderating effect of SSBs on (1) the relationship between board independence and risk taking and (2) the link between RC independence and risk-taking. Table 3 shows the result of the moderating effect of SSB's expertise in the relationship between board independence and risk-taking of IBs. Only one interaction term (Board_Ined*SSB_Exp) is statistically significant, indicating the moderating effect of SSB's expertise on the link between board independence and risk-taking. The educational level of SSB members does not have moderating effect at all. The result is consistent with the fourth hypothesis that greater board independence is likely to reduce risk-taking when the SSBs consist of higher percentage of Sharia advisors who have prior experience in Sharia and banking-related fields. The result of the main effect of board independence on risk-taking is not statistically significant (Table 2a), which suggests that on its own the board independence does not have significant influence on risk-taking in IBs. However, its combination with the SSBs' expertise reduces credit risk. This finding is also in line with the assertion of this study that integrating the resource dependency theory with agency theory could produce a more desirable effect in curbing excessive risk-taking by providing various experience and skills

Table 2: Sharia supervision boards attributes and risk-taking (n=96)

Variable	Log_*Z*_score	Log_loss_P	Log_Impaired	Log_loss_R
SSB_Exp	−0.00543 (−0.35)	−0.0120 (−1.01)	0.00296 (0.36)	0.00936* (2.11)
SSB_Edu	−0.000446 (−0.00)	0.0189 (0.17)	−0.107 (−1.78)	−0.0537 (−0.68)
SSB_Gen	−0.00905 (−0.97)	−0.00148 (−0.14)	−0.00742 (−1.53)	0.00466 (0.95)
B_Size	0.0427 (0.46)	−0.157 (−1.33)	−0.0993 (−1.71)	−0.0409 (−0.84)
ETA	0.401 (0.69)	0.665 (0.51)	1.761 (1.81)	0.534** (2.61)
ROA	−8.209 (−1.22)	−1.935 (−1.06)	6.919* (2.42)	7.493** (2.72)
GDP	−0.344 (−1.85)	0.465*** (3.45)	0.301* (2.41)	0.175 (1.86)
B_Age	0.0432** (2.67)	−0.0200 (−1.87)	−0.00251 (−0.24)	−0.0448*** (−3.56)
C_Value	0.000726 (0.43)	−0.00220 (−1.21)	−0.000513 (−0.37)	0.000847 (0.98)
_cons	5.444* (2.48)	−5.418* (−2.26)	−4.516*** (−3.68)	−3.734*** (−3.62)
Hauman test	11.13	2.70	5.03	8.18
R^2	0.1584	0.1812	0.4443	0.5938

z_score is insolvency risk; Loss_P is the ratio of financing-loss provision to average gross financing; Impaired is the ratio of impaired loans to gross financing; Loss_R is the financing loss reserves; SSB_Exp refers to the number of Sharia advisors having work experience in Sharia and banking-related fields divided by the total number of Sharia advisors; SSB_Edu is The education level of SSB members is measured by a binary variable of 1 for those who have a postgraduate (master/Ph. D) and 0; SSB_Gend is the number of female Sharia advisors divided by the total number of Sharia advisors in SSB; Board_Ined refers to the number of independent directors divided by the total number of directors in bank board; RC_Ined refers to the number of independent directors divided by the total number of directors in in RC. Control variables include: B_Size is the bank size; ETA refers to the ratio of equity to total assets; ROA is the ratio of net income to total assets; GDP is the Domestic Growth Product; B_Age refers to bank age in years; C_Value is the charter value. ***/**/*Denotes significant level at 0.1%/1%/5%, respectively

Table 2a: Board independence and risk-taking (n=96)

Variable	Log_*Z*_score	Log_loss_P	Log_Impaired	Log_loss_R
Board_Ined	0.00921 (1.06)	−0.0106 (−1.10)	0.00562 (1.01)	−0.00554 (−1.02)
B_Size	0.0636 (0.78)	−0.147 (−1.44)	−0.108 (−1.76)	−0.0644 (−1.42)
ETA	0.690 (1.03)	0.548 (0.44)	2.169* (2.12)	0.473 (1.79)
ROA	−8.513 (−1.31)	−1.687 (−1.00)	6.565* (2.44)	7.321** (2.65)
GDP	−0.306 (−1.92)	0.425*** (3.56)	0.390*** (3.45)	0.184 (1.92)
B_Age	0.0460** (3.03)	−0.0313** (−3.03)	−0.00369 (−0.28)	−0.0473*** (−4.06)
C_Value	0.0000311 (0.02)	−0.00229 (−1.30)	−0.00112 (−0.72)	0.00124 (1.20)
_cons	3.922** (2.59)	−5.622*** (−5.45)	−5.580*** (−5.74)	−2.601** (−3.20)
Hauman Test	4.04	1.55	5.68	8.59
R^2	0.1578	0.1906	0.4299	0.5860

Z_score is insolvency risk, Loss_P is the ratio of financing-loss provision to average gross financing, Impaired is the ratio of impaired loans to gross financing, Loss_R is the financing loss reserves, SSB_Exp refers to the number of Sharia advisors having work experience in Sharia and banking-related fields divided by the total number of Sharia advisors, SSB_Edu is The education level of SSB members is measured by a binary variable of 1 for those who have a postgraduate (master/Ph. D) and 0, SSB_Gend is the number of female Sharia advisors divided by the total number of Sharia advisors in SSB, Board_Ined refers to the number of independent directors divided by the total number of directors in bank board, RC_Ined refers to the number of independent directors divided by the total number of directors in in RC. Control variables include: B_Size is the bank size, ETA refers to the ratio of equity to total assets, ROA is the ratio of net income to total assets, GDP is the Domestic Growth Product, B_Age refers to bank age in years, C_Value is the charter value. ***/**/* denotes significant level at 0.1%/1%/5%, respectively

Table 2b: Risk committee independence and risk-taking (n=96)

Variable	Log_*Z*_score	Log_loss_P	Log_impaired	Log_loss_R
RC_Ined	0.00764 (1.22)	0.00590 (0.87)	0.000819 (0.34)	0.000799 (0.21)
B_Size	0.0737 (0.93)	−0.143 (−1.40)	−0.106 (−1.86)	−0.0648 (−1.47)
ETA	0.304 (0.46)	0.612 (0.49)	1.958* (2.06)	0.623* (2.29)
ROA	−7.859 (−1.28)	−1.398 (−0.66)	6.665* (2.40)	7.396** (2.89)
GDP	−0.338* (−2.15)	0.456*** (3.69)	0.371*** (3.43)	0.201* (2.27)
B_Age	0.0490* (2.49)	−0.0153 (−1.11)	−0.00679 (−0.62)	−0.0421*** (−3.89)
C_Value	0.000156 (0.10)	−0.00264 (−1.56)	−0.000890 (−0.61)	0.000997 (1.05)
_cons	3.940* (2.29)	−7.023*** (−5.54)	−5.204*** (−7.36)	−3.123*** (−4.74)
Hauman test	5.48	3.61	5.42	9.12
R^2	0.1669	0.1586	0.4260	0.5802

Z_score is insolvency risk, Loss_P is the ratio of financing-loss provision to average gross financing, Impaired is the ratio of impaired loans to gross financing, Loss_R is the financing loss reserves, SSB_Exp refers to the number of Sharia advisors having work experience in Sharia and banking-related fields divided by the total number of Sharia advisors, SSB_Edu is The education level of SSB members is measured by a binary variable of 1 for those who have a postgraduate (master/Ph. D) and 0, SSB_Gend is the number of female Sharia advisors divided by the total number of Sharia advisors in SSB, Board_Ined refers to the number of independent directors divided by the total number of directors in bank board, RC_Ined refers to the number of independent directors divided by the total number of directors in in RC. Control variables include: B_Size is the bank size, ETA refers to the ratio of equity to total assets, ROA is the ratio of net income to total assets, GDP is the Domestic Growth Product, B_Age refers to bank age in years, C_Value is the charter value. ***/**/* denotes significant level at 0.1%/1%/5%, respectively

as resources available in an organization. The board of directors are more effective in their monitoring role to curb excessive credit risk when they are highly independent and at the same time, they can tap on the relevant expertise of the Sharia advisors.

Next, Table 4 shows the results of the moderating effect of SSB's expertise on the relationship between RC independence and risk-taking. The interaction term of SSB's expertise and RC independence is negative and statistically significant at 1% level.

Table 3: Moderating effect of sharia supervision boards attributes on board independence and risk-taking (*n*=96)

Variable	Log_*Z*_score	Log_loss_P	Log_Impaired	Log_loss_R
SSB_Exp	−0.0398 (−0.90)	0.0225 (−1.19)	0.0388* (2.10)	0.0401*** (3.66)
SSB_Edu	−0.204 (−0.24)	1.035* (2.39)	−0.528* (−2.27)	−0.0299 (−0.12)
SSB_Gen	0.0264 (0.73)	0.00438 (0.11)	−0.00406 (−0.21)	0.0178 (1.51)
Board_Ined	−0.0526 (−0.43)	0.0369 (0.83)	0.0454 (1.04)	0.0520 (1.40)
Board_Ined*SSB_Exp	0.000398 (0.48)	0.000515 (1.38)	−0.000778* (−2.30)	−0.000613** (−3.04)
Board_Ined*SSB_Edu	0.00715 (0.44)	−0.0197 (−2.38)	0.00808 (1.55)	0.000691 (0.13)
Board_Ined*SSB_Gen	−0.000635 (0.47)	−0.000161 (−1.22)	−0.000117 (−2.28)	−0.000274 (−2.24)
B_Size	0.0654 (0.92)	−0.139 (−1.44)	−0.105 (−1.91)	−0.0641 (−1.43)
ETA	0.311 (0.42)	0.609 (0.48)	1.962* (2.05)	0.633* (2.28)
ROA	−7.654 (−1.18)	−1.411 (−0.62)	6.648* (2.39)	7.299** (2.91)
GDP	−0.109 (−0.59)	0.395** (2.70)	0.301 (1.95)	0.158 (1.52)
B_Age	0 (0)	−0.0542** (−3.03)	0.0136 (0.87)	−0.0523*** (−4.34)
C_Value	0.00680* (2.39)	−0.00354 (−1.83)	−0.000183 (−0.10)	0.00121 (1.03)
_cons	7.869 (0.99)	−8.342*** (−3.38)	−6.440** (−3.19)	−6.316*** (−4.09)
Hauman Test	139.777	28.42	5.94	7.06
R^2	0.141	0.2578	0.4774	0.6164

*Z*_score is insolvency risk, Loss_P is the ratio of financing-loss provision to average gross financing, Impaired is the ratio of impaired loans to gross financing, Loss_R is the financing loss reserves, SSB_Exp refers to the number of Sharia advisors having work experience in Sharia and banking-related fields divided by the total number of Sharia advisors, SSB_Edu is The education level of SSB members is measured by a binary variable of 1 for those who have a postgraduate (master/Ph.D) and 0, SSB_Gend is the number of female Sharia advisors divided by the total number of Sharia advisors in SSB, Board_Ined refers to the number of independent directors divided by the total number of directors in bank board, RC_Ined refers to the number of independent directors divided by the total number of directors in in RC, Board_Ined*SSB_Exp, Board_Ined*SSB_Edu and Board_Ined*SSB_Gen are the interaction terms to test the moderating effects. Control variables include:_Size is the bank size, ETA refers to the ratio of equity to total assets, ROA is the ratio of net income to total assets, GDP is the Domestic Growth Product, B_Age refers to bank age in years, C_Value is the charter value. ***/**/* denotes significant level at 0.1%/1%/5%, respectively

Table 4: Moderating effect of sharia supervision boards attributes on risk committee independence and risk-taking (*n*=96)

Variable	Log_*Z*_score	Log_loss_P	Log_Impaired	Log_loss_R
SSB_Exp	−0.0465 (−1.23)	0.0634** (3.56)	0.0336 (1.15)	0.0197 (1.49)
SSB_Edu	−0.470 (−1.01)	0.608 (1.52)	0.184 (1.07)	0.0255 (0.13)
SSB_Gen	0.0297 (0.79)	0.0173 (0.48)	−0.0215 (−1.38)	0.0468*** (3.40)
RC_Ined	−0.0770 (−1.01)	0.164** (4.03)	0.0665 (1.73)	0.0235 (0.93)
RC_Ined*SSB_Exp	0.000373 (0.68)	−0.00115*** (−5.26)	−0.000470 (−1.07)	−0.000160 (−0.87)
RC_Ined*SSB_Edu	0.00957 (1.30)	−0.00748 (−1.23)	−0.00412 (−1.84)	−0.000854 (−0.29)
RC_Ined*SSBGen	−0.000563 (−1.32)	−0.000252 (−0.56)	0.000159 (0.73)	−0.000544** (−3.00)
B_Size	0.0718 (0.88)	−0.135 (−1.39)	−0.110 (−1.96)	−0.0634 (−1.44)
ETA	0.312 (0.48)	0.609 (0.47)	1.975* (2.12)	0.620* (2.27)
ROA	−7.861 (−1.27)	−1.389 (−0.67)	6.668* (2.48)	7.386** (2.87)
GDP	−0.111 (−0.58)	0.525** (3.25)	0.251* (1.96)	0.202* (2.12)
B_Age	0 (0)	0 (0)	0.00145 (0.12)	−0.0584*** (−5.55)
C_Value	0.00627 (1.93)	0.00110 (0.39)	−0.000190 (−0.14)	0.000916 (1.06)
_cons	10.84 (1.86)	−16.92*** (−4.13)	−8.934*** (−3.79)	−5.287** (−2.82)
Hauman Test	175.011	175.500	8.27	7.44
R^2	0.152	0.201	0.4562	0.6276

*Z*_score is insolvency risk, Loss_P is the ratio of financing-loss provision to average gross financing, Impaired is the ratio of impaired loans to gross financing, Loss_R is the financing loss reserves, SSB_Exp refers to the number of Sharia advisors having work experience in Sharia and banking-related fields divided by the total number of Sharia advisors, SSB_Edu is The education level of SSB members is measured by a binary variable of 1 for those who have a postgraduate (master/Ph. D) and 0, SSB_Gend is the number of female Sharia advisors divided by the total number of Sharia advisors in SSB, Board_Ined refers to the number of independent directors divided by the total number of directors in bank board, RC_Ined refers to the number of independent directors divided by the total number of directors in in RC. RC_Ined*SSB_Exp, RC_Ined*SSB_Edu and RC_Ined*SSB_Gen are the interaction terms to test the moderating effects Control variables include: B_Size is the bank size, ETA refers to the ratio of equity to total assets, ROA is the ratio of net income to total assets, GDP is the Domestic Growth Product, B_Age refers to bank age in years, C_Value is the charter value. ***/**/* denotes significant level at 0.1%/1%/5%, respectively

This result suggests that RC independence is likely to reduce risk-taking when the IBs have greater SSB's expertise in Sharia and banking-related areas. This result suggests that on its own the RC independence does not have significant influence on risk-taking in IBs. However, its combination with the SSB's experience reduces credit risk. The primary role of RC is to perform an oversight role in risk management. They are responsible to advise the board of directors on risk-related matters so as to ensure the IBs have an adequate and robust risk management mechanism. The RCs should consist of directors who have knowledge and experience in risk management especially in banking. Their oversight and advisory roles can be enhanced when they are highly independent from the influence of senior management.

The result in Table 4 also shows that the interaction term RC_Ined*SSb_Gen is statistically significant at 0.1% level, indicating that gender diversity in SSBs moderates the link between RC independence and credit risk. The interaction term of SSB's gender diversity and RC independence is negative and statistically significant at 1% level. Higher gender diversity indicates greater participation of women Sharia advisors in SSBs. This result suggests that the monitoring ability of the RC could be enhanced with greater participation female Sharia advisors in SSBs. According to Liao et al. (2014), women differ from men in terms of personality, communication style, educational background and career experience and expertise which will contribute to wider perspective in decision making of firms. In addition, women are

found to be more diligent (Nielsen and Huse, 2010), which is a crucial attribute in performing the due diligence of new product proposals in IBs. Being diligent women Sharia advisors would be able to identify and scrutinise credit risk inherent in Islamic financing products. This positive attribute combined with the monitoring ability of a highly independent RC is able to reduce credit risk in IBs.

In summary, the results of the moderating effects analysis support the key premise of this study, which is integrating the resource dependence theory with agency theory is an effective way to control risk taking, particularly, credit risk in IBs. The SSBs contribute valuable resources to the IBs whilst the RC and board of directors contribute monitoring ability in risk-taking decisions. The finding implies that the oversight role of RC and board of directors combined with the contribution of SSBs that have greater percentage of Sharia advisors with relevant experience as well as higher participation of female Sharia advisors in SSBs help to improve risky decisions and ensure that the IBs pay greater attention to control credit risk. The findings add to the existing literature on the role of SSB attributes in influencing bank outcome (Grassa, 2015; Mollah and Zaman, 2015; Fakhrunnas and Ramly, 2017; Nomran et al., 2017, Nomran et al., 2018). Such prior studies examined the IB performance only whilst this study focuses on the risk-taking aspect of the bank outcome and the interaction between SSB attributes and the key governance mechanisms in IBs i.e., board independence and RC.

5. CONCLUSION

This paper has examined the moderating role of SSB attributes in the relationships between (1) board independence and risk-taking and (2) RC independence and risk-taking of Malaysian IBs from 2010 to 2015. As risk-taking is inevitable in any business IBs must put in place the necessary oversight mechanisms as required by the banking regulators in order to protect the interest of their wide range of stakeholders. SSBs play a critical role in IBs in ensuring that financial products and services adhere to Sharia. This paper argues that SBBs that consist of Sharia scholars contribute valuable resources to IBs, which in turn could potentially influence their risky decisions. In examining the Sharia compliance, Sharia scholars also ensure that the financial products do not consist of elements that could expose IBs to unnecessary risks because Islam prohibits such risky activity. Therefore, this paper suggests that integrating the oversight role with the valuable resources that SBB members bring to IBs could benefit them in terms of controlling risk-taking activities.

The paper highlights four important findings: (1) SSB's expertise in Sharia and banking-related areas lower credit risk, (2) higher board independence is likely to reduce credit risk when SSBs consist of Sharia advisors with expertise in Sharia and banking-related areas, (3) higher RC independence is likely to reduce credit risk when SSBs consist of Sharia advisors with expertise in Sharia and banking-related areas and (4) the reducing effect of RC on credit risk is conditional upon higher participation of female Sharia advisors in SSBs. In sum, the resources in terms of valuable experience that SSB advisors bring to IBs and higher gender diversity in SSBs combined with the typical oversight mechanisms such as board independence and RC as suggested by corporate governance literature are beneficial to control risk-taking in the Malaysian IBs. Further, this paper demonstrates that integrating agency theory and resource dependence view in a corporate governance study produces a more meaningful result.

This study offers several implications for policy and literature. First, the findings could be beneficial to policymakers, regulators and IBs in the area of corporate governance and Sharia supervision. This study provides a new finding to policy makers and regulators in formulating an appropriate policy on the importance of ensuring IBs make use of the corporate governance mechanisms in a more comprehensive manner as opposed to letting each to work in isolation. Putting it differently, the banking regulators and board of directors should ensure that SSBs, the boards of directors, RCs work collectively to attain a robust risk oversight in IBs. Second, it is very important for the regulators or policymakers to strengthen the SSB members' credentials, particularly, ensuring they have relevant expertise in Sharia and banking-related fields as opposed to merely being a Sharia scholar in order to be able to contribute effectively in influencing the decision making in SSBs. SSB members that have experience in Sharia as well as good exposure in banking-related fields could make meaningful contribution to IBs as they deal with practical issues relating to banking operations. Third, this study also provides a good reference to board of directors to configure corporate governance structure in IBs. They need to recognize and be aware of the importance of SSB members' experience in Sharia supervision as well as banking and finance-related areas to the oversight role of the board and RC. Fourth, this study contributes to the extant literature on IBs, particularly on the factors that influence their risk-taking activities. Empirically, little is known about the value of SSB and RC in IBs in terms of their influence on bank outcomes. The finding revealed that the integration of agency theory that emphasizes on oversight function and resource dependence view suggests the valuable resources that SSB members bring to IBs have a positive impact on controlling risk, especially the credit risk.

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