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RESEARCH ARTICLE

Board Capital, Board Independence, and Bank Risk-Taking: The Case of a Small Emerging Country

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Abstract: This study investigates the effect of board capital on commercial bank risk-taking, and the moderating effect of board independence in commercial bank risk-taking. This study extends prior literature by integrating the resource dependence and agency theories in examining the specific attributes of board capital and board independence and their effect on risk-taking. Data from eight Malaysian commercial banks from 2002 to 2014 were analyzed using generalized least squares (GLS) panel data regression technique to estimate the effect of board capital and moderating effect of board independence on bank risk-taking. The board capital data is hand-collected from the bank annual reports. The financial data is obtained from Bankscope. Directors' experience in risk management, high status, and political connection significantly affect bank risk-taking and the effect is non-linear. Board independence moderates the relationship between the board capital and risk-taking. The findings suggest that it is not sufficient to just focus on the board independence because the directors' ability to perform monitoring and advisory roles vary, depending on human and social capital resources they bring to the board. Thus, the contribution of the board oversight role should be evaluated in combination with the board capital. The findings are useful for the board of commercial banks and regulatory bodies to strengthen the board oversight role in risk-taking and enhance board diversity. This research highlights how board composition can be configured to control risk-taking in terms of the extent of its independence and the specific attributes board capital. The finding reaffirms the integration of the resource dependence and agency theory perspectives in corporate governance research. To the best of our knowledge, this study is a preliminary attempt to explore the value of board capital and its interaction with board independence in banking institutions in affecting risk-taking based on the integration of resource dependence and agency theories.

Keywords: Bank risk-taking, board capital, board independence, resource dependence theory, agency theory

Prior studies have long been focusing on the role of corporate boards in influencing firm outcomes in a variety of academic disciplines. The enormous interest in a corporate board largely stems from the fact that it is the highest decision making authority and the key internal governance mechanism in an organization (Fama & Jensen, 1983). Numerous studies have investigated the role of independent directors in corporate boards pursuant to the seminal paper of Jensen and Meckling (1976). However, prior research reported inconclusive findings on the effect of board governance on firm outcomes, making board-related studies a subject of further empirical investigation. Further, there is little consensus as to what the optimal board composition and attributes is, as well the characteristics of individuals to be

selected into corporate boards. Empirical studies mainly examined the influence of board composition in terms of size and independence on firm outcomes (see Rachdi & Ameur, 2011; Johnson et al., 2013). This paper, however, focuses beyond such important board attributes. In line with the approach of Dalziel et al., (2011), this paper concentrates on the board capital and its interaction with board independence that could potentially influence the way banks take risk.

This paper has three objectives. The first objective is to investigate the collective impact of the board capital on bank risk-taking. Board capital refers to the sum of the human and social capital of the board of directors, and an indicator for the ability of the board to provide resources to the firm (Hillman & Dalziel, 2003). Human capital refers to an individual director's expertise, experience, knowledge, reputation, and skills (Coleman, 1988). Social capital refers to a director's socially valuable personal characteristics and network relationships (Lester et al., 2008). Directors' board capital is expected to contribute towards a more measured and careful decisions in undertaking risky projects and lending.

The second objective is to examine the board-level interaction between the board capital and board independence in predicting bank risk-taking. Independent directors play key control role in the boards of directors and integrating this important oversight mechanism with board capital could potentially control excessive bank risk-taking. This paper asserts that human capital and social capital characteristics are central to augmenting and strengthening the ability of independent directors to perform their oversight and advisory roles and ensure the management team performs its various duties. Thus, board capital can strengthen the overall function of the board.

Third, this paper extends the work of Hillman and Dalziel (2003) by examining specific human capital and social capital elements of directors and their effect on bank risk-taking. They highlighted the limitations of agency theory and suggested improvements to the theory by integrating it with resource dependence theory of Pfeffer and Salancik (1978). They expected that board capital may be a vital antecedent for boards to perform its role. Board capital of directors affects the ability of the board to provide advice and direction to the top management team so that they can make best managerial decisions in evaluating risky financing and investment deals. This notion is consistent with a growing theoretical work on board capital, which contends that while independent directors may have the inspiration to be powerful screens, a board likewise needs adequate capacity, as pertinent experience, to settle on the best choices (Hillman & Dalziel, 2003).

Three factors motivate this paper. First, past occurrences of financial and banking crises were largely due to the lack of risk control and governance that led to excessive exposure to risky loans due to irresponsible risk-taking. Instability in the financial sector exposes the vulnerability of the economy to such a shock that could potentially lead to systemic collapses of the entire banking system. Against this background, this paper argues that studying bank risk-taking and board attributes to control such behavior is far more vital today than ever before. Second, following a series of banking crisis, the Basel Committee on Banking Supervision (2006) had introduced several regulatory measures to strengthen regulations with respect to risk control and monitoring of bank activities. The regulatory measures emphasized the oversight role of the board of directors and independent directors in risk management. Third, this study uses Malaysian data to capture the influence of directors' political connection as a source of social capital on bank risk-taking. Malaysia provides a particularly suitable setting for examining directors' political connection because prior studies have found that there was intimate relationship between politics and business enterprises in Malaysia (see Gomez & Jomo, 1997; Claessens et al., 2000).

Using a sample of eight Malaysian listed banks over a period of 2002–2014, this paper finds that directors' having experience in banking and financial services lower credit risk and earning risk, but increases insolvency risk. Multiple board appointments increase insolvency risk but political connection reduces insolvency risk. Risk management experience and high status directors do not have a significant effect on bank risk-taking. Further, board independence moderates the relationship between board capital and risk-taking. This finding suggests that, together, the resources that directors bring to the board and monitoring by a highly independent board can better explain the variation in bank risk-taking.

This paper has three distinct contributions. First, prior literature mainly examines bank risk-taking from the perspectives of capital regulation, market discipline, and ownership structure. This paper, on

the other hand, explores the value of board capital and its interaction with board independence in influencing bank risk-taking, which has not been done before. This paper is similar to Jermias and Gani (2014) in terms of board capital but they examined performance of S&P 500 firms excluding banks. They also looked at board dependence as opposed to board independence. The current paper shows that board capital and board governance influence bank risk-taking from the integrated resource dependence and agency theory perspectives. Second, this paper identifies specific aspects of human and social capital of directors that influence bank risk-taking. For example, political connection is a desirable social capital attribute because the strong connection with the government enables the board to access advantageous economic information, which in turn reduces credit risk and earning risk. Third, the results of interaction models confirm that the contribution of the board oversight role should be evaluated in combination with the directors' human and social capital. Finally, this work adds further evidence on how board composition can be configured to manage risk-taking not only to the extent of its independence from the senior management but also to the types of board capital or resources that are beneficial or detrimental to the bank.

This paper is organized as follows. The next section provides an overview of the corporate governance in the Malaysian banking institutions, Section 3 reviews the applicable theories with the view of integrating the resources dependence theory and agency theory. Section 4 reviews the relevant prior literature and explains the basis for developing the hypotheses. Section 5 discusses the research methodology. Section 6 presents and discusses the results of the statistical analysis. The final section provides the concluding comments.

Corporate Governance of Banking Institutions in Malaysia

Corporate governance of Malaysian banks is primarily under the purview of the Central Bank of Malaysia, being the regulator for the financial institutions in Malaysia. The Central Bank of Malaysia issued a policy document to guide the licensed financial institutions operating in Malaysia on the implementation of corporate governance. Malaysian commercial banks are also listed companies as they are required to comply with the corporate governance guidelines issued by the Malaysian stock exchange and adopt the recommendations of the Malaysian Code on Corporate Governance (MCGG) 2020 (Securities Commission Malaysia, n.d.). The primary purpose of these corporate governance guidelines is to guide the board of directors in implementing sound oversight mechanisms while taking cognizance of the complexity, needs, and financial capability of each individual listed company.

The Central Bank of Malaysia laid down 14 principles of corporate governance, which focused on the key responsibilities of the board, board appointments and removal, board meetings, board composition, board committees, board evaluation and development, responsibilities of senior management, conflicts of interest, culture, remuneration, auditors, transparency, and group governance. All licensed financial institutions in Malaysia are required to implement the minimum standards specified in the policy document and show that they have effective and appropriate corporate governance arrangements. The Central Bank, however, encourages the board of directors to take into consideration the size, nature of business, complexity of activities, and structure in implementing the corporate governance principles.

According to the Central Bank's policy document, the board of directors plays the central role in ensuring sound corporate governance in the licensed financial institutions. Such issues relating to board composition and diversity are of critical importance to ensure the boards can play an effective oversight role within each financial institution. The board of directors must determine a set of key competencies and criteria for each board member as well as for the board as a whole. Such criteria and key competencies must be based on the needs of the boards and reviewed by the board regularly. The periodic review of board composition and diversity are important to ensure the board expertise is aligned to the corporate strategy of an individual bank and the board is well prepared to face the emerging challenges in the financial services industry. The MCCG (2020) also stated the board composition is an important determinant of the board's ability to perform its oversight role (Securities Commission Malaysia, n.d.). Therefore, the board of directors must comprise not only qualified directors. More importantly, it should have members with an

appropriate mix of skills, knowledge, and experience that are in line with the objectives and strategic imperatives of each company.

In terms of board leadership structure, the policy document requires that the chairman of the board of directors must not be an executive, and must not have served as a CEO of the financial institution in the past five years. This requirement is meant to ensure the board is independent from the potential influence and domination of the executive management of the financial institution. The board must also have a majority independent directors at all times to further enhanced its independence. This requirement is consistent with the recommendation of the MCCG (2020) in which at least half of the board members comprise independent directors. Additionally, the board must not have more than one executive director unless the Central Bank gives a written approval to be exempted from this requirement (Securities Commission Malaysia, n.d.). The approval is normally subject to the board that has an independent director as its chairman and its effectiveness is not compromised. The policy document and MCCG (2020) place a great emphasis on the board independence to support objective and independent deliberation in decision-making (Securities Commission Malaysia, n.d.). A board comprising a majority of independent directors allows for more effective oversight of management.

Integrating Resource Dependence and Agency Perspectives

The study on the relationship between board capital and risk-taking is based on the resource dependence theory. In each board appointment, the firm expects that a director is able to contribute his or her expertise, skills, knowledge, and experience to improve the quality of boards decisions (Zahra & Pearce, 1989); initiate networking with other establishments (Pfeffer & Salancik, 1978); add legitimacy and reputation to the firm (Daily & Schwenk, 1996); improve the board's screening and appraisal abilities (Baysinger & Hoskisson, 1990); and assist in strategy formulation (Dallas, 2001). Board capital enables the directors to effectively advise, scrutinize, and evaluate risky investment and financing proposals. For example, directors with risk management experience can assess or judge the extent of risk associated with the financing and investment proposals more accurately and ensure it is in line with the risk preference and policy of the bank. They can suggest effective risk mitigation strategies and at the same time the bank can earn higher return. Such directors' expertise might prevent reckless and imprudent risk-taking.

The agency theory helps to explain that the extent to which the board is able to perform its oversight role largely depends on its degree of independence from the management. Board of directors should be configured in such a way that can enhance monitoring of top managers (Fama & Jensen, 1983). Boards that are infested with inside directors cannot be expected to be effective monitors because they tend to collude with managers to expropriate wealth from shareholders (Fama & Jensen, 1983). Therefore, corporate governance reforms have emphasized the role of independent director in manager-monitoring activities. This paper integrates the arguments of resource dependence theory and agency theory in which the link between directors' board capital and risk-taking depends critically on the extent of independent directors' participation in each bank board, such that the relation between board capital and bank risk-taking can change sign and strength, depending on the degree of board independence.

By integrating resource dependence theory and agency theory, this paper suggests that the ability of the board to perform manager-monitoring activities and advise the top management can differ due to the human and social capital attributes that the directors bring to the board, which make them valuable resources for commercial banks. Heterogeneity of human and social capital of directors contributes to heterogeneous boards, which enables the boards to have more knowledge, creativity, experiences, and more access to external valuable resources. Further, this paper argues that merely examining the path between the structural board characteristics such as the ratio of independent directors-executive directors ignores the fact that board members engage in a social process of decision making (Forbes & Milliken, 1999). Hence, this study considers the board as a group making strategic decisions collectively, which requires board members to contribute their experience and expertise as well as their social ties.

Prior Literature and Hypotheses Development

Risk Management Experience and Bank Risk-Taking

Resource dependence theory suggests that experience of directors in specific area of business may influence firm outcomes. Directors bring in such expertise to the board and contribute to deliberation of issues that could enhance quality of decisions. Banks take risks on a daily basis because it is in their nature of business as financial intermediaries. Hence, risk management plays a crucial role to ensure adequate and timely assessment of risks prior to channeling funds for investments and lending. Hence, bank boards that have a broad fiduciary duty towards a wide range of stakeholders should have the relevant risk management experience to contribute to sound decision-making so as to curb excessive exposure to risks.

Risk management experience of directors would develop and enhance task expertise, which has an important tacit element as the knowledge is not readily obtainable from other sources (Tian et al., 2011). Directors with risk management experience can advise, scrutinize, and evaluate risky investment and financing proposals effectively to ensure they are in line with the risk preference and policy of the bank. Such ability is derived from their experience of assessing or judging the extent of risk associated with the financing and investment proposals in prior or existing position. Ellul and Yerramilli (2013), in a study of 74 large U.S. bank holding companies, found that boards that consist of higher percentage of directors with risk management experience tend to take less risk. Aebi et al. (2012) reaffirmed this finding in which they observe a negative relationship between directors with risk management experience and bank risk-taking. Directors with risk management experience help board of directors to understand risk more deeply and be more vigilant in risk-taking; thus:

H1: Risk management experience of directors will be negatively related to bank risk-taking.

Banking and Financial Services Experience and Bank Risk-Taking

In 2010, the European Commission reported that one of the major reasons for the governance failures that are partly responsible for the 2018 Global Financial Crisis was the inadequate banking expertise. Industry-specific experience is a valuable, rare, and hard-to-imitate resource (Castanias & Helfat, 1991) and firms operating in the same industry are faced with similar industry environment such as technologies, competitive rules, customer needs, supplier capabilities, and government regulations (Kor & Misangyi, 2008). Directors with previous work experience in the same industry will outperform those who are new to the industry as the former will have relevant specific valuable knowledge of that industry.

Directors with financial experience have a sound understanding of the financial statements and accounting principles (Aebi et al., 2012), which contributes to greater board surveillance. A few prior studies observe a negative relationship between directors with financial experience in the board with bank risk-taking (Minton et al., 2010; Beltratti & Stulz, 2012). Further, financial experts in the board would influence the finance and investment policies of the firms they serve (Güner et al., 2008). The appointment of investment bankers to board of directors lowers the sensitivity of investment to cash flow as they may extend higher loans through their own bank.

Le et al., (2006) found that industry-specific experience enables boards to make acquisition decisions that are positively received by investors. Schoar and Zuo (2011) found that CEOs with experience in the target industry bargain better and secure a larger fraction of the surplus for their shareholders than CEOs who are new. Empirically, Georges et al., (2019) found that firms with financially literate directors have a more robust hedging than average firms. Ettredge et al. (2021) observed that executive board members with accounting-based experience use their knowledge and experience to decrease information asymmetry at the IPO, leading to lower underpricing. Likewise, Naheed et al. (2021) found that board's financial expertise has a positive relationship with the corporate social responsibility disclosure in Chinese listed firms. Tian et al. (2014) found that board performance depends on the degree to which directors have human capital developed through their job and industry-specific experience; thus:

H2: Directors with banking and financial services experience will be negatively related to bank risk-taking.

Multiple Board Appointments and Bank Risk-Taking

Multiple board appointments refer to directors who hold more than one directorship concurrently in listed or unlisted firms (Johnson et al., 2013). Pfeffer and Salancik (1978, p. 145) proposed that multiple directorships provide channels for exchanging strategic knowledge "which may impinge on or affect the focal organization." From resource dependence perspective, holding multiple directorships serve as a channel for accessing resources outside the firm to the boards' decision-making process, which enables directors to influence bank risk-taking. Further, multiple directorship is also a form of relational ties that aid the transfer of knowledge about the decision-making process and accountability systems, among others (Palmer et al., 1993). Directors holding multiple directorships often have access to specific knowledge about the industry due to their valuable networking with industry players, which makes them more aware of the development in the risks or issues in the industry. Such directors have valuable information resources that contribute to quality advice and counsel they provide to the board (Zhang, 2008). A recent empirical study on Brazilian banks documented that busy directors are associated with high bank risks in foreign-owned banks while they disproportionately reduce bank risks in state-owned banks (Mbanyele, 2020). Further, from the integrated resource dependence–agency perspective, directors holding multiple board positions are well-informed and inclined to question the viability of clients' projects and the risks associated with the financing such projects; thus:

H3a: Directors with multiple board appointments will be negatively related to bank risk-taking.

On the other hand, multiple directorships are often associated with busyness of a director. Most directors are reluctant to take up multiple board appointments because they will be having lesser time to deliver their professional responsibilities efficiently (Ferris et al., 2003). Busy directors can be ineffective in executing their responsibilities in multiple boards as they cannot dedicate enough time to carefully study management proposals and financial reports. Hence, boards tend to take higher risk due to lack of time to realize the exposure of risk. Cooper and Uzun (2012) reinforced this finding in which they show banks take higher risk when they have higher number of directors holding simultaneous board appointments. Further, directors with additional board appointments usually fail to come up with the right solution in handling bank risk and exercise fewer monitoring, which resulted in excessive CEO compensation and poorer firm performance (Hoitash, 2011). In a more recent study, Kutubi et al. (2021) found that multiple directorships tend to delay the recognition of the loan loss provision of a sample of South Asian banks due to the busyness of the directors. This is consistent with the studies of Lee and Lok (2020) and Lee et al., (2021) who found that multiple directorships increase risk-taking in Malaysian banks. In consequence of this argument, the following alternative hypothesis is suggested:

H3b: Directors with multiple board appointments will be positively related to bank risk-taking.

High Status Directors and Bank Risk-taking

The board literature examines prestige or high status as one type of board social capital. Status is derived from a person's personal associations and achievements in life. D'Aveni (1990) suggested that directors with high status are able to influence the perceptions of external parties, which is beneficial to the firm. Membership in elite groups gives prestige to directors and the board, which in turn provides legitimacy. Potential investors and trading clients perceive boards that consist of prestigious directors as legitimate and valuable entities (Certo, 2003). One of the many ways to attain high status or prestige is membership in educational elite by graduating from an Ivy League or prestigious universities (D'Aveni, 1990). High status directors would be cautious about their reputational risk. They are unwilling to participate in risky decisions without proper due diligence, which, if such decisions turn bad, could affect their reputation. Hence, high status directors in a bank's boards signal quality board decisions (Miller & Triana, 2009). Further, directors who receive their tertiary education at Ivy League schools are more optimistic and have high self-confidence as well as able to predict risk-taking better (McElroy et al., 2007). Certo et al. (2001) found that high status directors are positively associated with better performance at initial public offering (IPO). Thus, the following hypothesis is suggested:

H4: High status directors will be negatively related to bank risk-taking.

Political Connection and Bank Risk-taking

Prior studies observed that political connection was a form of social capital that directors brought into the board, which affected firm outcomes (Lester et al., 2008; Bliss & Gul, 2012). Yet, it is unknown whether this type of social capital influences bank risk-taking. Political connection can be derived from holding top position in the civil service. Directors who formerly served as top civil servants are related to social capital in a way that they provide resources and information that are valuable to the firm through their connection with the government. Konishi and Yasuda (2004) investigated the relationship between the involvement of high ranked Ministry of Finance in Japan on bank's board and bank risk. They found that former top government officers serving on bank's board aid in the smooth flow of information between managers and regulatory authorities (Schaede, 1995), which in turn lowers bank risk-taking. Likewise, Horiuchi and Shimizu (2001) observed that directors, whether a former or current government officer, lower risk-taking level. Jae et al. (2017) found that former government officials as politically connected directors in a sample of Korean Chaebol firms increase firm financial performance. In a recent study of all listed financial companies in the London Stock Exchange over the period 1999–2016, Farag and Dickinson (2020) observed that bank directors with both government and regulatory bodies' connections reduce company risk. In contrast, banks tend to hire former top government servants to serve their boards, hoping that the concentration of monitoring by regulatory authorities can be reduced, which will result in higher level of bank risk. Thus, boards with former top government officers increase bank risk-taking (Horiuchi & Shimizu, 2001).

In Malaysia, the government commonly holds substantial ownership in many commercial banks. Hence, it is a common practice to appoint top civil servants to represent the government's interest in the bank boards. Politically connected directors may have better connections with government agencies, and are more likely to get government help during the financial difficulties, but such situation may result in higher risk-taking (Firth et al., 2009). Bliss and Gul (2012) found that politically connected firms tend to have higher leverage, higher likelihood in reporting loss, and high likelihood of negative equity as well as incurring higher interest charges due to high perceived risk level. Wu et al., (2010) suggested that political appointed directors tend to serve the government's interests rather than the interest of the shareholders, which may also increase the risk of the bank. Liang et al. (2013) showed that the degree of board political connections in banks negatively affects the bank performance and asset quality. This is supported by the finding of Yeh et al. (2013) that the preferential bank loans increase due to political connections in the Taiwanese banks, which affect the asset quality. Boateng et al. (2019), in their study of Chinese commercial banks, found that a board with political connections have higher credit risk than otherwise, suggesting that they are prone to financial instability. This paper exploits the prevalent interaction between politics and business in Malaysia by incorporating political connection of directors as a social capital that they bring into the board. Directors' political connection (as an element of social capital) has a potential effect on bank risk-taking behavior; thus:

H5: Directors with political connection will be positively related to bank risk-taking.

Interaction Effect of Board Independence and Board Capital

Prior literature, various corporate governance codes, and related legislations have emphasized on the role of independent directors in ensuring board independence. Boards that are infested by the executive directors are said to be inclined to be "rubber stamp" to self-interested managerial agenda. McAlister & Ferrel (2003) proposed that one of the characteristics of quality boards is the high degree of independence of the non-executive directors from the management team and the CEO, which serves as a good indicator of greater accountability to shareholders. Independent directors are expected to bring unbiased views and specific expertise that restrict the excessive risk-taking tendency of the credit managers by carefully scrutinizing the risk aspect of financing proposals. This is because in view of their lack of intimate knowledge of the business and of the executive directors, they are anticipated to be impartial in making decisions and in scrutinizing the information provided by the company (Ezzamel and Watson, 1997).

Independent directors also complement the role of executive directors, whereas the latter provides valuable information about the firm's activities. The

former may contribute expertise and objectivity in evaluating the managers' decisions. The agency theory asserts that independent directors are better able to serve the shareholders' interests due to the usual "arms' length" relationship (Zahra & Pearce, 1989). Therefore, higher ratio of independent directors implies a strong board control and vigilance (Pathan, 2009). Independent directors reduce managerial consumption of prerequisites (Brickley & James, 1987), prompt the management to remove a poorly performing manager (Hermalin & Weisbach, 2003), make boards effective monitors of CEO, offer a variety of perspectives in deriving a decision (Westphal, 1999) and ultimately improves firm performance (Gutierrez & Pombo, 2011).

In this study, board independence serves as a moderator of the paths between directors' human and social capital and bank risk-taking. Higher degree of board independence should enable independent directors to not only exert monitoring influence due to their larger "voice" in the board's decision-making process but also allow them to provide prominent advice and counsel based on their expertise, experience, and social ties on risk-taking. For example, bank risk-taking can be influenced with the existence of directors with risk management experience on the board. Similarly, higher degree of board independence mitigates the potential adverse effect of political connection on bank risk-taking. Further, independent directors play control and support roles in making the best decision by virtue of their expertise in managing risk (Aebi et al., 2012). They are able to influence and convince other directors to make optimal risky decisions.

Empirical evidence also supports this theoretical argument. Ben Bouheni et al. (2018), in their examination of French banking groups for the period 2005–2011, stated that the independent directors in the banks' board have a positive influence on their risk-taking behavior. This finding is in line with the result of Boateng et al. (2019) who found that independent directors had an adverse influence on the credit risk of a sample Chinese banks over the period 2003–2014. Meanwhile, Harkin et al. (2020) found that the oversight of independent directors reduces insolvency risk of a sample of U.K. banks over the period of 2003–2012. Brogi and Lasario (2022) reaffirmed this finding in which they observed that board independence reduces insolvency risk of Eurostoxx banks. Georges et al. (2019) observed that financial expertise of directors increases firm value through the risk management channel. Further, the independent directors on the board and audit committee strengthen this positive effect. In contrast, boards dominated by the executive directors tend to have imbalance of power in decision-making, which weakens the effects of human and social capital of directors on bank risk-taking because top managers will be able to dominate decision making in the board and push ahead with their personal agenda.

Prior studies mainly treated independent directors as a homogeneous group, which in actual fact they are not. They bring in a vast variety of background, knowledge, skills, experience, and social network. Hence, this paper integrates agency theory with the resource dependence theory to investigate the influence of board capital on risk-taking of commercial banks. This approach captures not only the oversight ability of an independent board but also the valuable human and social resources that individual directors and their potential effect in controlling or encouraging risk-taking in commercial banks. Thus, the following conditional hypothesis expresses the conjecture:

H6**:** Higher degree of board independence will moderate the effects of board capital on bank risk-taking.

Research Method

Data and Sample

The data of this study was collected from eight Malaysian commercial banks listed in Malaysian Bourse for the period 2002–2014, creating 104 bank-year observations. The eight listed commercial banks are Malayan Banking Berhad, CIMB Bank Berhad, Public Bank Berhad, Ambank (M) Berhad, Hong Leong Bank Berhad, Affin Bank Berhad, Alliance Bank Malaysia Berhad, and RHB Bank Berhad. The relevant profile and governance data are hand collected from the individual bank's annual reports downloaded from their websites. The financial data are collected from Bankscope database.

Empirical Models

This study employs generalized least squares (GLS) panel data regression technique to estimate the effects of board capital and board independence on bank risk-taking. GLS provides estimates for

random-effect (RE) and fixed-effect (FE). The RE estimation is robust to first-order autoregressive (AR1) disturbances within the balanced panel data and cross-sectional correlation with heteroscedasticity across the sample banks. In addition, FE estimation is commonly suggested (Wooldridge, 2002) when there is a presence of unobserved bank individual fixed-effect. Using Equation (1), this study estimates the relationship between board capital and board independence on bank risk-taking. This equation includes the square of the board capital variables to test for the non-linearity relationships with risk-taking. For example, the quadratic value of $RMit$ is simply its square, represented by $RM2it$ so on so forth.

$$RT_{it} = \beta_0 + \beta_1 RM_{it} + \beta_2 FIN_{it} + \beta_3 MB_{it} + \beta_4 PRES_{it} + \beta_5 POL_{it} + \beta_6 RM2_{it} + \beta_7 FIN2_{it} + \beta_8 MB2_{it} + \beta_9 PRES2_{it} + \beta_{10} POL2_{it} + \beta_{11} BSIZE_{it} + \beta_{12} LNTA_{it} + \beta_{13} CHART_{it} + \beta_{14} ETA_{it} + \beta_{15} FREQ_{it} + \varepsilon_{it} \quad (1)$$

The dependent variable is bank risk-taking (RT_{it}). Three proxy variables for bank risk-taking are credit risk (CR_{it}), insolvency risk (IR_{it}), and earning risks. CR_{it} is measured by the ratio of non-performing loans to the total loans (Srairi, 2013; Rachdi et al., 2013). IR_{it} is the z-score, measured by the mean return on assets plus the capital asset ratio (equity capital/total assets) divided by the standard deviation of asset returns (Chen et al., 2006; Srairi, 2013). A high z-score indicates low insolvency risk. Standard deviation of return on assets ($STDROA_{it}$) and standard deviation of return on equity ($STDROE_{it}$) represent earning risk (Anderson & Fraser, 2000).

The independent variables are the measures of each individual director's human and social capital or collectively known as the board capital. They are all identified from the section on the profile of directors in the annual report of individual banks. In Malaysia, in addition to the demographic data, it is compulsory for each listed firm to provide detail profile of each director, including their qualification, the university that they graduated from, experience, expertise, and the number of board appointments. The definition of Ivy League institutions is based on the studies of Dalziel et al. (2011) and Johnson et al. (2013). Ivy League institutions comprise eight universities in the north-eastern of the United States that have high academic status and social status. The universities are Harvard University, Columbia University, University of Pennsylvania, Yale University, Princeton University, Brown University, Cornell University, and Dartmouth College. Meanwhile, in this study, prestigious institutions other than the Ivy League ones refer to the Top 100 Universities in the Annual QS World University Rankings, which also include the eight Ivy League institutions.

The percentage of directors with experience in risk management (RM_{it}) and the directors with banking and financial services experience (FIN_{it}) represent human capital. The percentage of directors holding multiple board appointments (MB_{it}) and the percentage of directors with degrees from Ivy League or prestigious institutions ($PRES_{it}$) and the percentage of directors who were top civil servants/a member or a Member of Parliament/a Minister or a Deputy Minister (POL_{it}) represent social capital. A quadratic term of each board capital attribute (e.g. $RM2_{it}$) is created to test the non-linearity of the relationship between the board capital and risk-taking.

The control variables are the board size ($BSIZE_{it}$), bank size ($LNTA_{it}$), bank charter value ($CHART_{it}$), bank capitalization (ETA_{it}), and trading frequency ($FREQ_{it}$). The measure of bank size is the natural logarithm of the bank's total asset. Prior studies show that bank size affects bank risk-taking (Pathan, 2009). $CHART_{it}$ represents the health of a bank. The measure of $CHART_{it}$ is Keely's Q, which is the sum of the market value of equity and the book value of liabilities divided by the book value of total assets. A higher $CHART_{it}$ means that the bank has lower default risk and this is due to the lower risk premiums on large, uninsured certificates of deposits. Next, the measure of ETA_{it} is the equity to total assets ratio. A higher ratio indicates that the bank has a strong capital base. A well-capitalized bank is less risky due to its capital strength, which makes it more accessible to a wide variety of funding options at a reduced cost in order to meet their liquidity requirement (Kosmidou et al., 2007). $FREQ_{it}$ represents the speed of adjustment of the banks' stock price towards new information. $FREQ_{it}$ correlates with the variances of a bank's assets, liabilities, and off-balance sheet portfolios (Anderson & Fraser, 2000). Specifically, is the error term. Table 1 summarizes the descriptions of the research variables and their sources.

Table 1

Variable Descriptions and Sources for Bank i in Year t

Variable	Description	Source
Dependent:		
CR_{it}	Non-performing loans to total loan ratio for bank *i* in year *t*	Srairi (2013) and Rachdi et al. 2013)
IR_{it}	z-score; mean of return on assets plus the capital asset ratio (equity capital/total assets) divided by the standard deviation of asset returns for bank *i* in year *t*	Chen et al. (2006) and Srairi (2013)
$STDROA_{it}$	Standard deviation of return on asset for bank *i* in year *t*,	Anderson & Fraser (2000)
$STDROE_{it}$	Standard deviation of return on equity for bank *i* in year *t*	
Independent:		
Human capital		
RM_{it}	The percentage of director's risk management experience for bank *i* in year *t*	Johnson et al. (2013)
FIN_{it}	The percentage of directors with banking and financial services experience for bank *i* in year *t*	
$RM2_{it}$	Quadratic term of the percentage of director's risk management experience for bank *i* in year *t*	
$FIN2_{it}$	Quadratic term of the percentage of directors with banking and financial services experience for bank *i* in year *t*	
Social capital		
MB_{it}	The percentage of directors holding multiple board appointments for bank *i* in year *t*	Johnson et al. (2013)
$PRES_{it}$	The percentage of directors with degrees from Ivy League or prestigious institutions for bank *i* in year *t*	
POL_{it}	The percentage of directors who were top civil servants/a member or a former member of Parliament/a Minister or a Deputy Minister for bank *i* in year *t*	
$MB2_{it}$	Quadratic term of the percentage of directors holding multiple board appointments for bank *i* in year *t*	
$PRES2_{it}$	Quadratic term of the percentage of directors with degrees from Ivy League or prestigious institutions for bank *i* in year *t*	
$POL2_{it}$	Quadratic term of the percentage of directors who were top civil servants/a member or a former member of Parliament/a Minister or a Deputy Minister for bank *i* in year *t*	
Moderator:		
$BIND_{it}$	Board independence for bank *i* in year *t*, measured by the percentage of independent directors on the board	Pathan (2009)
$BIND2_{it}$	Quadratic term of the board independence for bank *i* in year *t*, measured by the percentage of independent directors on the board	
Control:		
$BSIZE_{it}$	Board size for bank *i* in year *t*, measured by total number of directors in bank board	Pathan (2009)
$LNTA_{it}$	Bank size for bank *i* in year *t*	
$CHART_{it}$	Bank charter value for bank *i* in year *t*, defined as Keeley's Q which calculated by the sum of market value of equity and book value of liabilities divided by book value of total assets	Srairi (2013) and Anderson & Fraser (2000)
ETA_{it}:	Bank capitalization for bank *i* in year *t*, expressed as the ratio of equity to total assets	
$FREQ_{it}$	The average daily trading volume of shares in a year divided by the number of bank's total outstanding shares at the beginning of each year for bank *i* in year *t*	Anderson & Fraser (2000)

Next, this study re-estimates Equation 1 by adding an interaction term between the measures of board capital of directors and the board independence (BIND*it*) as presented in Equations 2 to 6. This approach is for examining the moderating effect of board independence on the link between board capital and risk-taking. Higher percentage of independent directors implies a greater degree of board independence that enhances the board's oversight ability, which in turn reduces credit risk, insolvency risk, and earnings variability.

The effect of board capital on risk-taking is expected to be stronger when there is greater board independence. Equations 2 to 6 show the interaction models to test the quadratic or non-linear moderation effect of the moderator, $BIND_{it}$ in the relationship between each attribute of board capital and bank risk-taking. Following Baron and Kenny (1986) and Jose (2013), the quadratic moderation models include all the five board capital attributes, namely RM_{it}, FIN_{it}, MB_{it}, $PRES_{it}$, and POL_{it}, for the main effect and the moderator, $BIND_{it}$. Then, three interaction terms are created: (a) the interaction between each attribute of board capital and the moderator (e.g. RM_{it}*$BIND_{it}$), (b) the quadratic term, $BIND2_{it}$, which is created by squaring the moderator, and (c) the quadratic moderation term of each board capital attribute (e.g., RM_{it}*$BIND2_{it}$), which is created by multiplying the quadratic term of the moderator by each of the board capital attribute. The moderating effect exists if the interaction term, for example RM_{it}*$BIND_{it}$, is statistically significant; thus, supporting *H6*, otherwise $BIND_{it}$ is just an independent variable. The function of the moderator is to interact as a third variable between the exogenous variable and endogenous variable in such a way that impact the strength or direction of the predictor-outcome relationship (Baron & Kenny, 1986).

$$RT_{it} = \beta_0 + \beta_1 RM_{it} + \beta_2 BIND_{it} + \beta_3 (RM_{it} \times BIND_{it}) + \beta_4 BIND2_{it} + \beta_5 (RM_{it} \times BIND2_{it}) + \beta_6 BSIZE_{it} + \beta_7 LNTA_{it} + \beta_8 CHART_{it} + \beta_9 ETA_{it} + \beta_{10} FREQ_{it} + \varepsilon_{it} \quad (2)$$

$$RT_{it} = \beta_0 + \beta_1 FIN_{it} + \beta_2 BIND_{it} + \beta_3 (FIN_{it} \times BIND_{it}) + \beta_4 BIND2_{it} + \beta_5 (FIN_{it} \times BIND2_{it}) + \beta_6 BSIZE_{it} + \beta_7 LNTA_{it} + \beta_8 CHART_{it} + \beta_9 ETA_{it} + \beta_{10} FREQ_{it} + \varepsilon_{it} \quad (3)$$

$$RT_{it} = \beta_0 + \beta_1 MB_{it} + \beta_2 BIND_{it} + \beta_3 (MB_{it} \times BIND_{it}) + \beta_4 BIND2_{it} + \beta_5 (MB_{it} \times BIND2_{it}) + \beta_6 BSIZE_{it} + \beta_7 LNTA_{it} + \beta_8 CHART_{it} + \beta_9 ETA_{it} + \beta_{10} FREQ_{it} + \varepsilon_{it} \quad (4)$$

$$RT_{it} = \beta_0 + \beta_1 PRES_{it} + \beta_2 BIND_{it} + \beta_3 (PRES_{it} \times BIND_{it}) + \beta_4 BIND2_{it} + \beta_5 (PRES_{it} \times BIND2_{it}) + \beta_6 BSIZE_{it} + \beta_7 LNTA_{it} + \beta_8 CHART_{it} + \beta_9 ETA_{it} + \beta_{10} FREQ_{it} + \varepsilon_{it} \quad (5)$$

$$RT_{it} = \beta_0 + \beta_1 POL_{it} + \beta_2 BIND_{it} + \beta_3 (POL_{it} \times BIND_{it}) + \beta_4 BIND2_{it} + \beta_5 (POL_{it} \times BIND2_{it}) + \beta_6 BSIZE_{it} + \beta_7 LNTA_{it} + \beta_8 CHART_{it} + \beta_9 ETA_{it} + \beta_{10} FREQ_{it} + \varepsilon_{it} \quad (6)$$

Results and Discussions

Descriptive Statistics

This section focuses on the descriptive statistics of the insolvency risk, credit risk, board capital attributes, and board independence as per Table 2. Correlation analysis plays a factor in statistically establishing a moderator variable. A preliminary consideration to determine a moderation under desirable conditions indicates that the "moderator variable be uncorrelated with both the predictor and the criterion (dependent variable) to provide a clearly interpretable interaction term" (Baron & Kenny, 1986, p. 1174). A moderator variable that is highly correlated with the predictor would cause multicollinearity problems. The result of the correlation analysis indicates that the independent and moderator variables do not have multicollinearity problems.

Regression Results: Board Capital and Bank Risk-Taking

Table 3 shows the main effect of the board capital on bank risk-taking. This study finds mixed evidence on the effect of board capital on bank risk-taking. First, in relation to *H1*, the results of Model 3 and Model 4 show that directors with risk management experience (RM_{it}) lowers earning risk only, which does not support the hypothesis entirely. Further, the relationship is non-linear because the quadratic term of $RM2_{it}$ is statistically significant. The reducing effect is observed up to 52% and 63% of board members with RM_{it} respectively; beyond these points the earning risk will increase. *H2* and *H3* are not supported because, as shown in Models 1 to 4, the human capital of banking and financial services experience and multiple board appointments are not statistically significant.

Second, the results of high status directors ($PRES_{it}$) are mixed, which partially support *H4*. High status directors lower the insolvency risk as indicated in Model 2, but in Model 3 and Model 4, they increase earning risk. The relationships observed are non-linear in which high status directors reduce insolvency risk up to about 11%. This result suggests that banks with more than 11% of high status directors have higher insolvency risk. Meanwhile, the results of Model 3 and Model 4 indicate that directors with high status increase earning risk up to a percentage of 22% and 24% respectively but the relationship is non-linear. If banks have higher percentage of high status directors beyond these percentage points, it will result in a lower volatility of return on equity and return on assets.

Third, with respect to *H5*, the results of Model 1, Model 4, and Model 5 show that political connection has a significant reducing effect on credit risk and earning risk respectively, which is not in line with the expectation. In addition, the relationships observed with respect to earning risks (Model 4 and Model 5) are non-linear because the quadratic term of political connection ($POL2_{it}$) is also statistically significant. The reducing effect on the earning risk is observed up to 25% and 23%p of board members with political connection respectively; beyond these points the earning risk will rise.

Taken together, these findings suggest that board capital is an important determinant of bank risk-taking. In particular, risk management experience and political connection are significant attributes that reduce risk-taking. Meanwhile, the findings of high status directors are mixed. High status directors reduce insolvency risk but increase earning risks. The finding also revealed that slightly more than half of board members with risk management experience is needed to reduce the earning risk. This finding implies that if they outnumbered other directors in the board, they will have more clout to steer the board into the right direction in controlling risk-taking. This finding is in line with the assertions of the agency theory and resource dependence theory and the studies of Tian et al. (2011), Ellul and Yerramilli (2013), and Aebi et al. (2012). However, a higher percentage of more than 50% will probably deprive the board to have a greater diversity of experience that could potentially beneficial in controlling risky decisions.

Interestingly, this study finds that political connection and high status directors can reduce risk-taking. However, only a relatively smaller percentage of directors with political connection and high status are more desirable to lower credit risk and insolvency risk at 18% and 11%, respectively. This finding implies that although political connection and high status directors are desirable, banks should keep their participation in the board at a lower level so as to prevent the negative effect. The desire to protect their high status in the business community may motivate directors to be cautious about participating and supporting risky activities without a robust due diligence. In this study, Table 2 shows that, on average, about 18% of directors has political connection, which does not deviate much from the minimum point found in this study. This result corroborates the argument of Certo (2003) and Miller and Triana (2009).

As for the political connection, the finding is in contrary to those of Horiuchi and Shimizu (2001), Wu et al. (2010), Liang et al. (2013), Yeh et al. (2013), and Boateng et al. (2018) but consistent with those of Schaede (1995) and Farag and Dickinson (2020). One possible explanation for this finding is the politically connected directors in Malaysia usually serve the government-linked banks whose investors are predominantly key government agencies like Employees Provident Fund (EPF), Permodalan Nasional Berhad (PNB), the Armed Forces Fund Board, and Social Security Organization (SOCSO). It seems that they know the importance of proper due diligence in risk-taking because the financial performance directly affects the return expected by the

Table 2

Descriptive Statistics

Variables	M	SD	Min	Med	Max
Dependent					
CR_{it}	0.72	7.37	0.061	0.04	0.38
IR_{it}	0.39	1.26	.001	0.04	0.07
$STDROA_{it}$	0.35	0.46	.042	0.18	2.14
$STDROE_{it}$	4.89	7.52	0.38	2.79	39.06
Independent					
Human Capital:					
RM_{it}	0.29	21.6	0.08	0.19	0.75
FIN_{it}	0.66	18.13	0.29	0.67	1.00
Social Capital:					
MB_{it}	0.95	7.49	0.60	1.00	1.00
$PRES_{it}$	0.14	11.88	0	0.11	0.56
POL_{it}	0.18	16.77	0	0.09	0.71
Moderator					
$BIND_{it}$	0.50	13.88	0.25	0.50	0.80
Control					
$BSIZE_{it}$	9.61	2.31	5.00	9.58	15.00
$LNTA_{it}$	11.50	0.84	.009	11.48	0.14
$CHART_{it}$	1.05	0.56	0.94	1.06	1.16
ETA_{it}	8.10	1.71	4.06	8.10	0.36
$FREQ_{it}$	0.11	0.06	0.02	0.94	0.36

government agencies. Failure to do so might result in far-reaching implications to the economy.

However, the finding with respect to high status directors is contradictory because it results in higher earning risk but lower insolvency risk. This implies that having a higher percentage of high status directors may persuade the board to take higher risks for maximizing short-term profit to reward short-term investors, resulting in higher volatility of earnings. However, on a longer term, they are more cautious on risk-taking in view of the need to avoid from being known as the directors leading or contributing to a bank failure, which in turn affects their professional reputation and future employability. Further, the contrasting findings also suggest a trade-off between insolvency and earning risk with respect to high status directors. Banks should have a lower percentage of high status directors to benefit from a lower insolvency risk, but doing so will result in higher earning risk and vice versa. Therefore, banks need to balance between the appetite for risky short- term aggressive strategy for maximizing short-term profit and the strategy that takes a longer term view for their survival.

As for the control variables, greater board size reduces earning risk, possibly due to the diverse background and experience that a larger board has, which contributes to better decision-making. Larger banks in terms of total assets have lower earning risks, whereas highly capitalized banks have lower credit risk and earning risks. Finally, capitalization and frequency of trading reduces earning risk but increases insolvency risk.

The Interaction Effect of Board Independence

Table 4 shows the results of the interaction effect of board capital and board independence, which

relates to the second objective of this paper. Board independence is the moderator variable that is expected to affect the nature and strength of relationship between board capital and bank risk-taking. First, for the result of the main effect in Table 3, Model 1 shows that high status directors increase credit risk but statistically insignificant. However, as shown in Table 4, Model 5 indicates that the interaction term of board independence and high status directors marginally lower credit risk. However, a greater presence of high status directors combined with a highly independent board produce an antagonistic interaction that reduces credit risk, that is, the opposite effect. This result suggests that board independence alters and strengthens, albeit marginally, the effect of high status directors on the credit risk; thus, partially supporting the *H6*.

This finding implies that a greater participation of high status directors together with greater monitoring ability of the former seem to influence the board to make more balanced risky decisions that take into account the interest of the depositors and other stakeholders. Therefore, this finding supports the assertion of this study on the importance of integrating the arguments of agency theory and resource dependence theory in predicting risk-taking behavior. High status directors contribute valuable resources in terms of their high status that motivates them to take actions that will preserve their professional reputation.

Table 3

Main Effect Regression Results: Board Capital and Risk-taking

Variables	Model 1		Model 2		Model 3		Model 4	
	CR		IR		STDROA		STDROE	
	Estimate	*t*	Estimate	*t*	Estimate	*t*	Estimate	t
RM	-.213	-1.15	-.032	-0.94	-.038	-2.34*	-.831	-3.20***
FIN	.345	1.55	.005	0.14	.0199	1.01	.330	1.06
MB	-.893	-1.02	-.075	-0.46	.011	0.14	.414	0.34
PRES	.046	0.53	.042	2.58**	.022	2.81***	.338	2.74**
POL	-.258	-2.83***	-.017	-1.05	-.030	-3.74***	-.511	-4.01***
RM2	.001	0.82	.000	1.02	.001	1.76*	.007	2.37**
FIN2	-.002	-1.65	-.000	-0.31	-.000	-1.06	-.002	-1.04
MB2	.004	0.94	.000	0.32	-.000	-0.09	-.002	-0.29
PRES2	-.003	-1.44	-.001	-4.07***	-.001	-2.68**	-.007	-2.48**
POL2	.007	4.40***	.001	2.56**	.001	4.64***	.010	4.59***
lnBS	-1.220	-0.45	.361	0.71	-.314	-1.30	-7.990	-2.09**
LnTA	-9.033	-7.70***	-.185	-0.85	-.204	-1.97*	-2.790	-1.70
CHART	-9.276	-0.72	2.936	1.23	.329	0.29	5.089	0.28
ETA	-1.744	-5.97***	-.134	-2.47**	-.048	-1.86*	-1.130	-2.76**
FREQ	-10.317	-1.16	-2.17**	-2.17**	-2.156	-2.73*	-34.125	-2.73**
cons	174.922	4.21***	4.786	0.62	3.000	0.82	45.223	0.78
Model fit:								
R-squared	0.433		0.724		0.116		0.073	
F-test	18.560***		230.99***		6.610***		7.770***	
F-test for fixed effects	8.600***		8.660***		5.640***		8.140***	
Hausman test	37.520***		19.130**		28.850***		36.340***	

Note. Total *N*=104, *, **, *** denotes 10%, 5% and 1% significance level respectively

Meanwhile, greater board independence is important for a robust board oversight on risk-taking. The effect of the interaction seems to enhance the motivation of the high status directors to protect their reputation; therefore, making them to be more cautious in a risky decision-making when the board is highly independent.

Second, the result of Model 6 shows that board independence moderates the link between directors with multiple board appointments and insolvency risk. The effect of the directors with multiple board appointments on insolvency risk is negative but statistically insignificant. However, board independence seems to strengthen this negative effect on insolvency risk, which is detrimental to the banks and contrary to the expectation. This result implies that together a highly independent board and directors with multiple board appointments have intensified risk-taking. Further, this result suggests that in this study, the

Table 4

Interaction Models of Board Capital and Board Independence

Variables	Model 5		Model 6		Model 7		Model 8	
	CR		IR		STDROA		STDROE	
	Estimate	*t*	Estimate	*t*	Estimate	*t*	Estimate	*t*
RM	.828	1.75)*	.0155	0.15*	.011	0.26	-.001	-.05
FIN	-.816	-1.54)	-.032	-.30	.032	.64	-.025	-.75
MB	1.745	1.26)	.607	2.05**	.126	.97	-.060	-.72
PRES	1.444	1.65	-.003	-.02	-.020	-.25	.013	.24
POL	-.889	-1.14	-.035	-.24	.227	3.10***	-.169	-3.13***
BIND	5.368	1.02	2.693	2.44**	.734	1.48	.000	.03
RM*BIND	-.028	-1.47	-.028	-2.47**	-.007	-1.49	.000	.80
FIN*BIND	.024	1.11	.000	.11	-.000	-.36	.000	.82
MB*BIND	-.061	-1.10	.000	.08	-.001	-.70	-.000	-.35
PRES*BIND	-.062	-1.68*	-.028	-2.3**	-.005	-.97	.002	3.03***
POL*BIND	.037	1.05	-.000	-.10	.000	.28	-.001	-.05
RM*BIND2	.000	1.21	.004	.62	-.010	-3.08***	-.025	-.75
FIN*BIND2	-.000	-0.81	-.000	-.28	.000	.36	-.060	-.72
MB*BIND2	.000	0.86	.001	2.41**	.000	.72	.013	.24
PRES*BIND2	.000	1.64	.000	.26	.000	1.03	-.169	-3.13***
POL*BIND2	-3.251	-1.08	-.000	-.64	-.000	-.36	.000	.03
lnBS	-3.251	-1.08	.013	0.03	-.650	-2.31**	-14.214 *	-3.15**
LnTA	-9.312	-7.78***	-.418	-2.61*	-.266	-2.36**	-3.633	-2.02**
CHART	-1.721	-0.12	.060	90.03	-.567	-0.43	-6.581	-0.31
ETA	-1.949	-6.37***	-.178	-2.99***	-.077	-2.68**	-1.534	-3.33***
FREQ	-7.744	-0.78	-5.707	-3.59***	-.099	-0.11	-4.361	-0.29
cons	-5.861	-0.05	-51.198	-2.03**	-11.863	(-1.04	-130.757	-0.72
Model fit:								
R-squared	0.519		0.028		0.164		0.095	
F-test	13.070***		3.000**		3.930***		4.450***	
F-test for fixed effects	6.620***		4.04**		3.680**		5.44***	
Hausman test	5123.190***		22.410**		20.910**		20.910**	

Note. Total *N*=104, *, **, *** *denotes 10%, 5% and 1% significance level respectively*

tendency of a highly independent board to take higher risk is more influential than its expected oversight role, and when complemented with busy directors, both threatened the solvency of the bank. Although the result supports the moderating effect hypothesis, the direction of the association is undesirable (i.e., higher insolvency risk). However, the moderating relationship is non-linear where the interaction of a highly independent board and multiple board appointments increases insolvency risk up to a point. A further increase in the interaction reduces insolvency risk.

Third, the results of Model 7 and Model 8 show that board independence moderates the link between directors with political connection and earning risk. On its own and as shown in the results of Model 3 and Model 4, directors with political connection reduce earning risk. The interaction with a highly independent board seems to reinforce this effect, thus supporting the *H6* partially. Together, the valuable resources of networking benefit and informational advantage by virtue of being politically connected and the oversight role of a highly independent board reduce the earnings volatility. The finding suggests that when the board has a higher percentage of politically-connected directors, a highly independent board takes an oversight role to protect the interest of other stakeholders, thus dampening the potential adverse effect on the earning risk. However, the moderating relationship is non-linear where the interaction of a highly independent board and political connection reduces earning risk up to a minimum point. A further increase in the interaction increases earning risk.

Overall, the empirical findings of this study is consistent with the corporate governance guidelines of the Central Bank of Malaysia, in particular, on the important role of board independence and board diversity vis-à-vis board capital. However, this study highlights that the contribution of board independence should be assessed together with the ability of the board to bring in suitable board capital attributes. Together, board independence and board capital can be a potent risk oversight mechanism in the Malaysian banks.

Conclusion

This paper aims to examine the main effect of board capital on bank risk-taking and investigate whether such an effect is contingent upon the extent of board independence in the Malaysian commercial banks from 2002 to 2014. The test of conditional effect is based on the integration of the resource dependence and agency theories. This study revealed two important findings. First, board capital is a significant determinant of bank risk-taking. In particular, risk management experience, high status directors, and political connection reduce risk-taking, thus supporting the arguments of the agency theory and resource dependence theory. Second, this study provides some evidence that a highly independent board is a significant moderator in the relationship between board capital and bank risk-taking. A highly independent board alters or strengthens the main effect of the high status directors, multiple board appointments, and political connection on risk-taking. However, the evidence is not conclusive across all measures of board capital and risk-taking. Next, more importantly, this paper highlights that the interaction between directors' resources and board independence produce a more meaningful analysis of bank risk-taking behavior. The results reinforce the notion that firms rely on a combination of corporate governance mechanisms and each mechanism interacts with each other to produce the desired effect of minimizing the agency conflicts for the benefit of various stakeholders (see Ramly, 2012, 2013; Ramly et al., 2015; Ramly & Nordin, 2018). Therefore, the finding highlights the importance of integrating the agency theory and resource dependence theory. For example, a highly independent board alters the adverse effect of high status directors on the credit risk, which seems to encourage the board to take a more prudent approach in risky decisions in view of the presence of the latter, leading to lower credit risk. This finding implies a board that has high status directors in a highly independent board environment as opposed to having one of the board attributes separately. However, a highly independent board seems to amplify the adverse effect of busy directors holding multiple board appointments on the insolvency risk.

This study has implications for the board of commercial banks and the Central Bank of Malaysia in their efforts to strengthen the board oversight role in risk-taking and to enhance board diversity, which are critical elements in a banking business. Further, the finding reaffirms the crucial role of independent directors and board diversity as indicated in the Central Bank's policy document on the corporate governance of Malaysian financial institutions. The

finding also shows how board composition can be configured to control risk-taking in terms of the extent of its independence and the specific attributes of the board capital. Board independence should not be the sole focus in risk oversight because the directors' ability to perform monitoring and advisory roles vary depending on their board capital. Thus, the contribution of the board oversight role should be evaluated in combination with the directors' board capital. In addition, the finding reaffirms the integration of the resource dependence and agency theory perspectives in corporate governance research.

This study has two main limitations. First, it is on a single country study, which does not take into account the variations in the institutional factors that may affect risk-taking activities. Second, this study relies on five board capital attributes only. Other attributes such as the role of founders in family banks and personal relationships between directors and the tenure of directorship may potentially have an influence on bank risk-taking. Future research on a larger cross-country sample, for example, in ASEAN-5, should be undertaken to reaffirm the finding of this study to enable a broader generalization with respect to the human and social capital attributes and institutional factors that could potentially affect bank risk-taking. Additionally, future research may also attempt to examine the interaction between culture and board capital and its effects on bank risk-taking as well broadening the board capital attributes.

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Declaration of Ownership

This report is our original work.

Conflict of Interest

None.

Ethical Clearance

This study was approved by our institution.

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