

Committee Independence and Financial Institution Performance during the 2007–08 Credit Crunch: Evidence from a Multi-country Study

Yin-Hua Yeh, Huimin Chung, and Chih-Liang Liu*

ABSTRACT

Manuscript Type: Empirical

Research Question/Issue: Using the data of the 20 largest financial institutions from G8 countries, we explore whether the performance is higher for financial institutions with more independent directors on different committees during the 2007–08 financial crisis. We also examine the moderating effect of a country-level civil law dummy and firm-level excessive risk-taking behaviors on the independence-performance relationships.

Research Findings/Insights: The empirical evidence shows that the performance during the crisis period is higher for financial institutions with more independent directors on auditing and risk committees. The influence of committee independence on the performance is particularly stronger for civil law countries. In addition, the independence-performance relationships are more significant in financial institutions with excessive risk-taking behaviors.

Theoretical/Academic Implications: Our findings complement existing works to partially resolve the independence-performance relationship controversies by exploring the independence of different committees. The moderating effects of civil law countries and excessive risk-taking firms further address the governance environment's role in the effectiveness of director independence.

Practitioner/Policy Implications: Our results provide important policy implications for financial institutions. The regulation authorities should enhance regulation compliance to improve director independence, particularly for auditing and risk committees in banking industry. Independent directors in the banking industry are supposed to put more emphasis on excessive risk-taking behaviors, as the financial institutions profit from risk-bearing earnings.

Keywords: Corporate Governance, Committee Independence, Legal Origin, Excessive Risk-taking, Financial Crisis

INTRODUCTION

This study explores whether the performance during the 2007–08 financial crisis is higher for financial institutions with more independent directors on their board committees. Using hand-collected data of financial institutions from the G8 countries, the empirical evidence shows that independence in auditing and risk committees helps improve crisis performance. We also find that such an effect is particularly significant for civil law countries, which are characterized as the legal origin with poor shareholder

protection practices. In addition, committee independence is found to provide higher performance for those financial institutions having more excessive risk-taking behaviors. We suggest that the effect of committee independence on financial institution performance is significant not only during the crisis, but also particularly in civil law countries and excessive risk-taking financial institutions.

Although the relationship between financial institution performance and board of directors' independence has been extensively explored, the effect of the independence from different board committees remains controversial. Since independent director appointments are prevalent in many countries, the recent global financial crisis presents a natural laboratory to examine which committee independence helps improve crisis-period performance. This study explores the

*Address for correspondence: National Yunlin University of Science and Technology, no. 123, University Road, Sec. 3, Douliou, Yunlin 64002, Taiwan. Tel: 886-5-5342601; Fax: 886-5-5312079; E-mail: chlliu@yuntech.edu.tw

effectiveness of independent directors on different board committees, and our evidence shows that financial institution performance during the financial crisis is positively related to the independence of auditing and risk committees.

The independence-performance relationships are affected by country-level differences. Judge, Gaur, and Muller-Kahle (2010) indicate that the effect of governance mechanisms varies in different legal system environments. Aggarwal, Erel, Stulz, and Williamson (2008) find that board independence is positively related to firm value only in countries with poor investor protections. Since ownership structure and the level of investor protection are quite different between common-law and civil-law countries (La Porta, Lopez-de-Silanes, Shleifer, & Vishny, 1997), we therefore examine whether the relationship between committee independence and financial institution performance is influenced by their legal origins. The evidence on the positive moderating effect of a civil-law environment on the independence-performance relationships is consistent with Durnev and Kim (2005) in that firms operating under poor legal environments still have high valuations if they adopt high quality governance. Our results also confirm La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1998), whereby firms seem to adapt to poor legal frameworks so as to establish better efficient governance practices.

Firm-level differences such as the level of risk-taking in the banking industry also affect the independence-performance relationship. Since financial institutions make profits by bearing a certain level of risk, depositors and stakeholders are burdened with (un)discernible costs from the credit crunch, and exploring the failure of financial institution governance is therefore of crucial importance (Macey & O'hara, 2003). Adams, Hermalin, and Weisbach (2010) indicate that one future topic that needs to be explored on the issue of the financial crisis is how board members matter. A board's incapability to monitor its firm's risk-taking level is the major cause for economic crises (Greenspan, 1999; Mitton, 2002; Stiglitz, 1998). One of the problems causing the 2007–09 credit crunch was excessive risk-taking behaviors.¹ To understand the role of independent directors in financial institutions, we explore the moderating effect of excessive risk-taking behaviors in the independence-performance relationship. Our evidence shows that excessive risk-taking behaviors provide higher performance during the normal period of 2005–06, while the effects are inverse during the 2007–08 crisis. In addition, the independence-performance relationship is particularly significant for financial institutions with more excessive risk-taking behaviors. We provide potential contributions as follows.

First, the findings that financial institution performance is higher only for auditing and risk committees partially resolve the anomalies of the independence-performance relationship. Although previous crisis-related studies have shown that performance is lower for firms with poor governance (Baek, Kang, & Park, 2004; Joh, 2003; Lemmon & Lins, 2003; Mitton, 2002), these examinations are limited by the "board independence in non-financial institution" framework, and several studies find inconsistent results with different data settings. Instead of focusing on the board of directors' independence, we focus on the role of independent directors on different board sub-committees, including

the auditing, nominating, compensation, and risk committees. Since each committee functions well only for specific criteria and the expertise and professions of the independent directors on different committees are varied, they can contribute to the performance from different dimensions. The independence-performance relationship therefore depends on the problems faced by the firm and the capability of the independent directors responsible for resolving it. Our results suggest that only the independence of auditing and risk committees in financial institutions helps improve their crisis-period performance.

Second, this research examines the independence-performance relationship with multi-country settings for 2005–06 (ordinary time) and 2007–08 (financial crisis). One of the problems of governance-related studies is that the literature focuses on the relationship between performance, governance, or financial crisis under a single country only (Hagendorff, Collins, & Keasey, 2007). In contrast, our research encompasses committee independence with multi-national settings, instead of one single country.

Aside from examining the independence-performance relationship with multi-country settings, with committee independence data, and with a financial institution sample, we also partially resolve the relationship controversies by exploring the moderating effect of country- and firm-level differences. Since governance practices vary between common-law and civil-law systems, the effectiveness of independent directors on each committee is different. We therefore examine the moderating effect of a civil-law dummy on the independence-performance relationship. The excessive risk-taking behaviors in financial institutions are also taken as the firm-level moderator. We find that the influence of committee independence on financial institution performance is particularly significant in excessive risk-taking financial institutions and countries with a civil-law environment. Such evidence explains that the effects of board independence are largely different after considering various governance environments.

There are several motivations for independent directors to improve financial institution performance. First, independent directors provide not only monitoring and disciplining, but also have expertise in the decision making process. Anderson and Fraser (2000) suggest that a board's effectiveness in its monitoring function is determined by its independence. Since independent directors are in a better position to discipline management, they are expected to be more effective in prohibiting opportunistic behaviors, thereby reducing potential agency conflicts (Altunbas, Evans, & Molyneux, 2001; Hermalin & Weisbach, 1998; Kren & Kerr, 1997; Ryan Jr & Wiggins, 2004; Bebchuk, Grinstein, & Peyer, 2010; Choi, Park, & Yoo, 2007; Pathan, 2009). Hossain, Cahan, and Adams (2000) indicate that the value of independent directors is related to their capability of making objective decisions. We therefore suggest that independent directors can help a firm by actively providing their expert prestige and monitoring power.

The competitive directorship market in the banking industry causes independent directors to be actively concerned more about their own reputations (Pathan, 2009). Gilson (1990) finds that directors who leave distressed firms hold fewer directorships in the future. The need to maintain

independent directors' reputation in such a labor market is therefore a major incentive for them to be effective supervisors (Fama & Jensen, 1983; Deutsch, Keil, & Laamanen, 2007; Judge and Zeithaml, 1992; Kesner & Johnson, 1990). Ferris, Jaganathan, & Pritchard (2003) also indicate that the positive performance-directorship relationship is attributed to the influence of their reputation. An independent director in financial institutions can therefore be induced by reputation incentives to be constrained from excessive risk-taking behaviors in order to improve governance mechanisms and performance (Adams & Ferreira, 2008; Fama & Jensen, 1983; Yermack, 2004).

Independent directors can benefit from their ownership by increasing their firm's market values. Ravina and Sapienza (2010) find that independent directors can follow informed executive's decision on change in ownership. In ordinary times, an independent director's ownership can be maximized by providing more expertise and monitoring (Beasley, 1996; Becker-Blease & Irani, 2008; Chou, Li, & Yin, 2010; Jensen, 1983; Shivdasani, 1993). During a financial crisis, however, funding problems make their shareholdings difficult to liquidate. The only way to reduce their loss in ownership is to actively steer the banks away from the turmoil. We therefore suggest that a committee's effectiveness can improve the firm's crisis-period performance by enhancing its downside-market protection.

During a financial crisis, independent directors can help the financial institution to improve performance by reducing excessive risk-taking behaviors. Although there are many mechanisms through which higher performance is attributed to the independent directors, the mechanisms particularly helpful in a financial crisis period are rarely explored. Ertugrul and Hegde (2008) and Pathan (2009) note that firms with more independent boards conduct less risk-taking, as independent directors may view their role as balancing between the interests of shareholders and the other stakeholders. Whidbee and Wohar (1999) also find that independent directors influence hedging decisions, suggesting that they monitor and discipline risk-taking behaviors. We therefore suggest that independent directors' risk preferences are largely different from those of other directors and executives, and independent directors in financial institutions reduce their firms' excessive risk-taking behaviors during a crisis period.

The remainder of this paper is organized as follows. Section 3 provides the theories within the extant literature with regard to the role of financial institution governance in a financial crisis. Section 3 further develops this paper's hypothesis. Section 4 presents our empirical results. Finally, the conclusions drawn from this study are in Section 5.

LITERATURE AND THEORIES

Financial Institution Governance and the Financial Crisis

Corporate governance plays an important role in financial market development and firm value around the world (La Porta et al., 1997, 1998, 2000), and this is the case particularly during the time of a financial crisis. It is generally recognized that one of the main reasons for the eruption of a financial

crisis is a poor governance system (Choi, 2000). In addition, the deregulation of financial institutions means the expropriation from the minority shareholders is more severe during the crisis, since the expected returns in the financial market fall (Beck, Levine, & Levkov, 2010; Johnson, Boone, Breach, & Friedman, 2000; Lemmon & Lins, 2003; Mitton, 2002). As such, corporate governance provides one way to resolve the resulting economic shocks.

Governance practices affect the way in which banks expand their business activities (Illueca, Norden, & Udell, 2009). Many large commercial banks have transitioned their main businesses away from the traditional originate-and-hold lending business that relies on interest income generated from borrower-lender relationships and toward the originate-and-distribute securitization business that relies heavily on fee income (e.g., mortgage-backed securities). Such excessive risk-taking business strategies expose high risk-sensitive banks to greater systemic risk, further leading to financial stress. Since those banks responsible for origination (or securitization) do not hold any financial products that they securitize, the incentives for assessing the credit-worthiness standards met by the borrowers (or correspondingly the originators) are rarely provided (Hellwig, 2009). Since both originating and securitizing institutions are more interested in volume creation than in quality control, the fee-income business therefore leads to higher revenue volatility and earnings variability (DeYoung & Roland, 2001).

Governance practices determine the level of excessive risk-taking in financial firms (Dinc, 2005; Gorton & Rosen, 1995). In the framework of financial institution governance, the capital markets are expected to prevent deteriorations before a crisis (Hanazaki & Horiuchi, 2003), but their current business is extraordinarily complex and opaque (Morgan, 2002), particularly in the risk-bearing credit market. Pathan (2009) finds that banks with a less restrictive board are burdened with more excessive risks. The governance structure for bank management is therefore an important factor in its non-performing business. Similarly, Laeven and Levine (2009) indicate that banks with powerful owners will take on more risks since equity owners have stronger incentives and lower costs to benefit from bearing such higher risks. The influence of regulations on excessive risk-taking therefore depends on the governance structure, and the dependence is particularly significant for those with deposit insurance protection. Therefore, boards with better monitoring power could be helpful in steering the banks away from the turmoil.

Independent Directors and Financial Crisis

Board independence can improve financial institution governance. On the one hand, from a strategic view, independent directors provide expertise and experiences for the decision making process. Financial institutions benefit from the helpful suggestions provided by the independent directors, further reducing the likelihood of excessive risk-taking behaviors. On the other hand, independent directors enhance the power of the board and its committees, thereby reducing potential agency conflicts and expropriations by the management.

Independent directors are effective in enhancing the function of board committees.² Mace (1971) suggests that directors serve as a source of advice, counsel, or discipline, and act in crisis situations. Similarly, Westphal (1999) and Dallas (2001) indicate that outside directors put the boards in a better position to monitor management and to assist in business decisions. For example, firms with greater board independence are more likely to fire non-performing CEOs following their poor performance (Frank, Mayer, & Renneboog, 2001; Weisbach, 1988). Also, Dahya and McConnell (2005) note a significantly positive relationship between the likelihood of outside CEO appointment and the proportion of outside directors on the board.

Although a bank board that is responsible for protecting shareholders' interests would prefer to take on excessive risk-taking premiums (Galai & Masulis, 1976; John, John, & Senbet, 1991; Pathan, 2009; Saunders, Strock, & Travlos, 1990), independent directors should be capable at effectively monitoring the excessive risks that their banks potentially take on which are underestimated. In addition, independent directors and governance mechanisms also reduce excessive risks in the absence of external regulations (Brick & Chidambaran, 2008; Williams & Nguyen, 2005). Prendergast (2000), Raheja (2005), and Brick and Chidambaran (2008) find a negative relationship between board monitoring and firm risk, and the monitoring is more crucial in uncertain environments. Furthermore, Erkens, Hung, and Matos (2009) present that CEO turnover is more sensitive to poor performance for firms with more independent directors. This is consistent with the argument that the role of independent directors is crucially important in a financial crisis during which regulations on credit derivatives is not comprehensive.

Recent investigations have increasingly focused on the different influences of board independence. One of the major criticisms of a corporate board is the problem of objectivity in decision making and monitoring management (Lipton & Lorsch, 1992). Boards of directors that are more independent from management provide effective monitoring on firm management, which in turn minimizes opportunistic managerial behaviors and to discipline them so as to run the firm more efficiently (Fama & Jensen, 1983). During a financial crisis, firms with insider-dominant boards and entrenched inside ownerships can improve performance by adding independent directors and being actively involved in major corporate affairs (Choi et al., 2007). We therefore suggest that independent directors on the board can perform their duties at providing expertise and monitoring to reduce (in)discernible costs caused by economic shocks.

HYPOTHESIS DEVELOPMENT

The apparent premise underlying the movement towards greater outside director representation is that more outside directors lead to better decisions by the board (Dahya & McConnell, 2005). For example, several studies find a positive relationship between outside directors and corporate performance, suggesting that outside directors can protect stockholder interest by monitoring strategic decisions.³ Oxelheim and Randøy (2003) show that firms with more

Anglo-American outside board members have a higher valuation in Scandinavian stock markets. However, some of the empirical studies find a neutral relationship between board independence and performance,⁴ and other studies in the literature even find inverse associations.⁵ The results on board independence and performance are inconsistent, because of the choice of variables or the data used for exploration. Our data, however, encompass the 20 largest financial institutions from each of the G8 countries, likely reducing such potential problems.

Better governance in financial institutions lead to higher performances. Berger, Clarke, Cull, Klapper, and Udell (2005) indicate that banks with better governance ownership tend to change their portfolio allocations, further leading to higher performance. Moreover, Berger et al. (2005), Adams and Mehran (2008), and Andres and Vallelado (2008) find higher performance arising from changes in banking governance. These studies suggest that a board in a financial institution not only can reduce agency conflicts, but also monitor business operations, resulting in a better performance. Independent directors also provide expertise and experience on limiting excessive risk-taking behaviors (Brick & Chidambaran, 2008). Such a balancing act for the interests between owners and stakeholders can bring several discernible benefits and better performance.

Committee Independence

Since board committees reflect different dimensions of expertise, independent directors on different committees allow for varied involvements in representing the interests of the shareholders (Ravina & Sapienza, 2010; Brennan & McDermott, 2004). John and Senbet (1998) indicate that there is a strong propensity towards non-insiders serving on board committees. Klein (1998) indicates that independent directors only perform the monitoring function if they are embedded in appropriate committee structures. In the event of economic shocks, boards turn proactive, and the potential benefits of an independent board are likely to be realized (Chatterjee, Harrison, & Bergh, 2003; Choi et al., 2007; Daily, 1996). The expertise and experiences provided by independent directors on each committee are thus crucial in helping the banks deal with crisis problems. It is therefore preferable to use our unique data to discriminate which board committees are more effective during crisis period. We suggest that independent directors on different committees contribute to financial institution governance in a varied effectiveness. In the following, we take advantage of two natural experimental settings – 2005–06 (ordinary time) and 2007–08 (credit crunch) – to examine whether bank performance increases by enhancing the independence of board committees (auditing, compensation, nominating, or risk committee).

(i) Auditing Committee. Since inside directors elected as audit committee members may be biased toward management, firms with better governance mechanisms will appoint more independent directors on the audit committee (Klein, 2002). The responsibility of an audit committee is to oversee the transparency of financial reports and ensure the objectivity of an external audit by providing a channel of

communication (Vicknair, Hickman, & Carnes, 1993). This committee should be free from any relationship that would interfere with independent judgment. Brick and Chidambaram (2008), Chan and Li (2008), and Aggarwal et al. (2008) find that the level of board monitoring and financial performance increase after firms have more independent directors on the audit committee. Dyck, Morse, and Zingales (2010) indicate that outside auditors are more sensitive to shareholders' needs. Therefore, we suggest that independent directors on audit committee are helpful at improving financial institution governance.

Hypothesis 1a. Financial institutions with more independent directors on the auditing committee show a better performance during the 2007–08 crisis, compared to those with fewer independent directors.

(ii) Compensation Committee. The compensation contract in which bonuses and excessive risk-taking incentives are appropriately balanced can be more likely achieved through the expertise and experiences provided by independent directors on the compensation committee. If CEO compensation includes more fixed remunerations, then a CEO may take a risk-averse attitude in selecting investment projects since the profit from those investments do not provide additional personal incentives (Guay, 1999; John, Litov, & Yeung, 2008; May, 1995; Saunders & Cornett, 2006). Thus, excessive risk-taking behaviors decrease after taking up a conservative investment (Demsetz & Lehn, 1985; Kane, 1985). However, if there are more short-term equity- or option-based contracts for a bank's CEO compensation arrangement, then the CEO could select business projects bearing a higher level of risk in order to create greater values in their options or ownership. Bank risks are thus higher in the latter case and long-term performance is lower (Agrawal & Mandelker, 1987; Nam, 2004). Bryan and Klein (2004) argue that independent directors provide more effective monitoring, which reduce the need for equity-based compensation for directors. We therefore suggest that independent directors on the compensation committee can improve performance during a crisis.

Hypothesis 1b. Financial institutions with more independent directors on the compensation committee show a better performance during the 2007–08 crisis, compared to those with fewer independent directors.

(iii) Nominating Committee. When there are more independent directors on the nominating committee, the board of directors is more capable of selecting higher qualified management and further monitoring the managers effectively. The Sarbanes-Oxley Act in 2002 requires nominating committees to function more effectively by enhancing the monitoring quality of directors. Mace (1971) and Patton and Baker (1987) suggest that management may inherently dominate boards through the nomination and election process. We therefore suggest that financial institutions with more independent directors on nominating committee perform better during a crisis.

Hypothesis 1c. Financial institutions with more independent directors on the nominating committee show a better performance during the 2007–08 crisis, compared to those with fewer independent directors.

(iv) Risk Committee. Financial institution governance plays an important role in risk management (BIS, 2005, 2006). The governance for risk control may not be able to provide downside-market protection if the members do not have enough information needed for assessing the risk exposures (Hellwig, 2009). Therefore, during financial crisis, the internal governance of risk control is incapable of monitoring and taking a comprehensive account of such risk exposures (Hellwig, 2009). Independent directors on risk committees, by contrast, stand in a better position against any managerial power. Free from any potential pressure, they can acquire the information needed for a risk-exposure assessment. We therefore suggest that the governance for risk control can be achieved by risk committee independence, thereby improving firm performance during a crisis.

Hypothesis 1d. Financial institutions with more independent directors on the risk committee show a better performance during the 2007–08 crisis, compared to those with fewer independent directors.

Legal System Environment

Since there are huge differences in outside director liability under varied legal rules (Black, Cheffins, & Klausner, 2005), the national legal context may affect the independence-performance relationship. First, ownership structure in civil-law countries is controlled by blockholders, which give them more incentives to expropriate from minority shareholders. In common-law countries, firms are controlled by managers, but owned predominately by outside shareholders, while firms in civil law countries are owned predominately by inside shareholders who also wield control over management (La Porta et al., 1997). Hence, insider-dominated civil law countries are characterized by a concentrated ownership, pyramidal structure, and family control. Independent directors in civil law countries are essential for monitoring business operations and to have supervisory functions work effectively (Mizuno & Tabner, 2009). Aggarwal et al. (2008) find that the positive independence-performance relationship is particularly significant when firms have controlling shareholders. We suggest that the effect of committee independence on performance is particularly higher in civil-law countries.

Second, countries with civil-law systems offer lower levels of investor rights, as well as a relationship-based systems. La Porta et al. (1997) and Barros, Ferreira, and Williams (2007) indicate that common law countries are superior to civil law nations in equity participant protection. Since firm-level governance and country-level investor protection are substitutes and firms from common law countries invest more in governance (Aggarwal et al., 2008), the role of independent directors in those countries with poor shareholder protection should be more important. They also find that board independence is positively related to firm value in countries with poor investor protections and expect that the

independence-performance relationship is more significant in civil law countries. Based on the above arguments, we follow Durnev and Kim (2005) and Judge, Gaur, and Muller-Kahle (2010) to take the legal system as a moderator to explore whether the effect of committee independence on performance is particularly higher for civil-law countries.

Hypothesis 2. The positive effect of committee independence on financial institution performance is stronger in civil-law countries than in common-law countries.

Excessive Risk-taking Behaviors

Investors appear to perceive that bank boards with substantial independent director representation make better decisions and are more likely to control the damage from a financial crisis. For example, Pathan, Skully, and Wickramanayake (2008) find that improved financial institution governance is related to stock returns during a financial crisis. Cornett, Marcus, and Tehranian (2008) also note a more independent board is positively related to crisis performance of banks. Responding to the demands from the International Monetary Fund for providing a relief program, South Korean authorities addressed several policy reforms on governance mechanisms in which listed companies are required to appoint more independent directors to enhance board independence. The arguments suggest that during a financial crisis, the authorities of a board can be enhanced after outside directors become the majority on a board, further improving a firm's governance practices.

Since excessive risks taken by financial institutions are the key contributing factors to the 2007–08 financial crisis, it is interesting to understand the role of excessive risk-taking behaviors¹ in the relationship between financial institution performance and committee independence. Anderson and Fraser (2000) suggest that inside directors' preference for risk may be substantially different from that of independent directors, while Deutsch et al. (2007) suggest that due to different attitudes toward risk, a potential conflict in goals exists between shareholders and outside directors. Therefore, independent directors view themselves as taking up the role of balancing the interests of shareholders and other stakeholders (depositors or regulators), which is negatively related to a bank's excessive risk-taking (Pathan, 2009).

One of the most important policies regarding the 2007–08 credit crunch is whether financial institution boards are capable of objective judgment on risk-taking businesses (OECD, 2009a, 2009b; Rost & Osterloh, 2010). Although Yermack (1996) suggests that firms incur costs in expanding their boards to include more outside directors, board independence is in fact costly to a firm, even as such internal governance mechanisms are crucial to prevent large losses during a crisis. Pathan (2009) finds a negative relation between independent directors and banking risks and further notes that independent directors could balance the interests of shareholders and other relevant bank stakeholders. Similarly, Whidbee and Wohar (1999) find that bank-holding companies with a high proportion of equity held by independent directors are less likely to use derivatives. This suggests that the shareholdings owned by independent directors have a negative influence on the decision to use

derivatives, which is consistent with Shivdasani (1993) and Subrahmanyam, Rangan, and Rosenstein (1997) that shareholdings by outside directors have an important influence on the risk decisions made by a firm. Therefore, less risk-taking behaviors can be achieved by enhancing board independence in financial institutions, further leading to lower losses in a financial crisis (Illueca et al., 2009; Minton, Tailard, & Williamson, 2010).

Committee independence helps discipline excessive risk-taking behaviors, further improving firm performance. The motivations for independent directors to reduce a firm's excessive risk-taking behaviors are related to internal mechanisms and external practices. For example, independent directors are in a better position to monitor excessive risk-taking behaviors, and they are also independent from bank shareholders. Such independence results in less risk-taking business (Pathan, 2009). In addition, the compensation arrangements for board directors provide varied influences on risk-taking behaviors, further affecting a bank's performance in a financial crisis (Belkhir & Chazi, 2010; Chen & Ma, 2011; Guo, Jalal, & Khaksari, 2010). In other external practices, independent directors are more sensitive to regulatory compliance, and they are more likely to be concerned about any risk-taking business and risk-bearing investment (Pathan, 2009). Based upon the theories in past literature, we argue that a positive relationship between committee independence and performance is more significant in financial institutions with excessive risk-taking behaviors.

Hypothesis 3. The positive effect of committee independence on performance is stronger in financial institutions with more excessive risk-taking behaviors.

EMPIRICAL EVIDENCE

Data

From the settings of the 20 largest financial institutions from each of the G8 countries (Australia, Canada, France, German, Italy, Japan, United Kingdom, and United States), the information on the board members of auditing, nominating, compensation, and risk committees is hand-collected from their annual reports from 2005 to 2008. Once the 2007–08 financial crisis occurred, the G8 countries were the fastest to respond to governance-related problems. Their statements on the financial crisis are issued at the same time with the OECD report (*Corporate Governance and the Financial Crisis: Key Findings and Main Messages*). In addition, four of the nations belong to the common law system (Australia, Canada, UK, and the US), while the other four belong to the civil law system (France, Germany, Italy, and Japan). We therefore select the G8 countries as our sample to examine the moderating effect of a legal system's environment on the independence-performance relationship.

Since firms listed on public stock exchanges have a greater propensity for voluntary disclosure (Collett & Hraskey, 2005), our sample selection considers only listed financial institutions. Committee independence is labeled as the proportion of independent directors. The term "Auditing Independence" indicates the proportion of independent directors on

the auditing committee; the term "Compensation Independence" indicates the proportion of independent directors on the compensation committee; the term "Nominating Independence" indicates the proportion of independent directors on the nominating committee; and the term "Risk Independence" indicates the proportion of independent directors on the risk committee.

Financial institution performance encompasses three proxies. Since the crisis represents an exogenous shock to individual banks, the stock returns efficiently reflect investors' perception of governance mechanisms on the market valuation. Mitton (2002) finds that firms with better governance mechanisms have higher stock returns. We therefore follow Mitton (2002), Lemmon and Lins (2003), and Baek et al. (2004) to take a bank's yearly returns of shares outstanding (*Stock Returns*) as the market-based performance. With regard to the accounting-based performance, the return on assets of bank *i* (*ROA*) is measured by the ratio of net income to total assets, and the return on equity of bank *i* (*ROE*) is measured by the ratio of net income to shareholders' equity. The variables are obtained from the OSIRIS database, with Panel A of Table 1 providing the descriptive summaries and the correlation coefficients.

Through Panel B of Table 1, we find that the financial institutions gain profits during the years 2005 to 2006, but have severe losses from 2007 to 2008. The proportions of independent directors on the board committees are particularly lower in France, because of its weak investor protection system. After discarding subsidiaries, leasing companies, and financial institutions with missing data, the final data yield 338 firm-year observations. In the following, we examine the relationship between financial institution performance and committee independence and the moderating effect of the type of legal system and excessive risk-taking behaviors.

Committee Independence and Performance

We first examine whether financial institutions with better committee independence show a better performance by adopting the OLS regressions.

$$FIP_i = \alpha + \gamma_1 \text{ Auditing Independence} + \beta_1 \text{ Firm Size} + \beta_2 \text{ Equity Ratio} + \beta_3 \text{ Current Ratio} + \beta_4 \text{ Subsidiaries} + \beta_5 \text{ Margin} + \beta_6 \text{ Diversity} + \varepsilon_i \quad (1)$$

Following Saunders and Schumacher (2000), Barros et al. (2007), Valverde and Fernandez (2007), Lin and Zhang (2009), and Berger, Hasan, and Zhou (2010), the control variables include Firm Size measured by the log of total assets, Equity Ratio measured by the ratio of total equity to total assets, Current Ratio measured by the ratio of current assets to current liabilities, the Subsidiaries measured by the natural log of number of subsidiaries, Margin measured by the ratio of the difference between interest income and interest paid to total assets, and Diversity measured by the level of ownership diversity index from the BvDEP database. Terms α , γ , and β are the parameters to be estimated.

The coefficients of *Auditing Independence* in Table 2 are insignificant, revealing that financial institutions with more independent directors on the auditing committee may not

see any improved performance. The evidence does not support Hypothesis 1a, suggesting that more independent directors on the auditing committee do not show a better performance. Hypotheses 1b, 1c, and 1d are retested to examine the influence of other committee independence on financial institution performance by replacing *Auditing Independence* with *Compensation Independence*, *Nominating Independence*, or *Risk Independence* into Model (1). The coefficients are similarly insignificant and the results do not support Hypotheses 1b, 1c, and 1d.

Committee Independence and Performance during a Crisis

For highlighting the role of committee independence during the 2007–08 financial crisis, we examine the independence-performance relationship by moderating the crisis period dummy.

$$FIP_i = \alpha + \gamma_1 \text{ Auditing Independence} * Y0708 + \gamma_2 \text{ Auditing Independence} + \gamma_3 Y0708 + \beta_1 \text{ Firm Size} + \beta_2 \text{ Equity Ratio} + \beta_3 \text{ Current Ratio} + \beta_4 \text{ Subsidiaries} + \beta_5 \text{ Margin} + \beta_6 \text{ Diversity} + \varepsilon_i \quad (2)$$

We decompose the data into two periods – the subsample in ordinary times from 2005 to 2006 and the one during the credit crunch from 2007 to 2008. Here, Y0708 is the year dummy equaling 1 if the year falls on 2007 and 2008, or 0 otherwise.

Table 3 shows that the cross-term of Y0708 and the independence of auditing and risk committees are significantly related to the financial institution performances (0.199 and 0.069 for SR; 5.039 and 1.074 for ROA; 4.802 and 8.594 for ROE), supporting Hypotheses 1a and 1d. It suggests that independent directors on the auditing and risk committees help improve financial institution performances particularly during the 2007–08 crisis. However, the coefficients for the independence of compensation and nominating committees are insignificant. We therefore argue that financial institutions with more independent auditing and risk committees have better performances during the 2007–08 credit crunch, while independent directors on other committees are of little help for improving the performance.

Legal System Environment

Since our data include different legal origin systems, their varied governance practices could bias our results. We therefore explore Hypothesis 2 by examining the moderating effect of the legal system environment on the relationship between committee independence and financial institution performance. The civil-law countries are characterized by the legal system with a concentrated ownership and a lower degree of shareholder protection. Independent directors in civil-law countries could contribute more to disciplining and monitoring the operating business, further improving performance. It is expected that committee independence in civil-law countries show a better performance during the crisis.

TABLE 1
Variable Summaries

	Mean	Standard deviation	2	3	4	5	6	7	8	9	10	11	12	13
Panel A Descriptive descriptions and correlation coefficients														
1. Stock Returns	-.02	.46	.19	.30	-.05	-.01	-.12	.00	-.14	-.02	.09	-.12	-.07	.01
2. ROA	1.54	5.63	1.00	.40	.03	-.01	-.09	.01	-.11	.20	-.19	-.04	.14	.02
3. ROE	12.92	22.49		1.00	-.04	-.02	-.03	-.11	.00	.00	.02	.01	.11	.02
4. Auditing independence	.97	.09			1.00	.27	.12	.40	.01	.09	.05	.06	.02	.25
5. Compensation independence	.96	.16				1.00	.46	.28	-.09	.07	.03	-.14	.03	.14
6. Nominating independence	.95	.14					1.00	.01	-.04	-.13	-.07	-.09	-.05	.07
7. Risk independence	.90	.21						1.00	.00	.14	-.04	-.15	.02	.06
8. Firm size	8.58	8.77							1.00	-.15	-.04	.54	-.07	.10
9. Equity ratio	13.49	21.90								1.00	.26	-.11	.05	.02
10. Current ratio	1.76	12.64									1.00	-.04	-.09	.05
11. Subsidiaries	27.12	56.64										1.00	-.06	.17
12. Margin	2.02	4.65											1.00	-.03
13. Diversity	8.64	2.91												1.00

Country	Percentage of independent directors				2005–2006				2007–2008				Difference	
	Auditing Committee	Compensation Committee	Nomination Committee	Risk Committee	Stock Returns	ROA	ROE	Stock Returns	ROA	ROE	Stock Returns	ROA	ROE	Difference
Panel B Committee independence and financial institution performance														
Australia	93.14%	88.50%	93.94%	87.88%	.02	4.12	23.40	-.07	1.74	17.89	-.09	-.237	-5.51	
Canada	99.78%	99.73%	99.63%	95.20%	.27	3.54	24.52	-.15	2.10	13.75	-.42	-1.44	-10.77	
France	51.39%	31.62%	38.52%	51.28%	.14	1.31	12.31	-.34	1.08	9.37	-.48	-.23	-2.94	
German	100.00%	100.00%	100.00%	100.00%	.27	.97	13.53	-.24	.07	4.07	-.52	-.91	-9.46	
Italy	92.57%	92.86%	95.16%	92.14%	.25	1.38	15.09	-.31	1.07	4.07	-.56	-.31	-11.03	
Japan	98.49%	96.80%	97.74%	92.00%	.12	.92	16.04	-.20	.01	-2.39	-.32	-.91	-18.42	
UK	100.00%	97.49%	87.10%	92.51%	.24	6.77	22.47	-.17	-1.15	5.83	-.41	-7.92	-16.64	
US	99.36%	95.83%	97.32%	78.83%	.03	1.72	25.44	-.31	.25	4.91	-.34	-1.47	-20.52	

Market-based performance is the Stock Returns measured by the bank *i* yearly stock returns of shares outstanding. Accounting-based performance includes Returns on Assets and Returns on Equity. Auditing (Compensation, Nominating, and Risk) Independence is the proportion of independent directors on the auditing (compensation, nominating, and risk corresponding) committee. Earnings Sources equals one if the percentile of the bank's ratio of earnings before taxes to operating income is larger than 80 per cent and the percentile of the ratio of total loans to total deposits is less than 20 per cent, and zero otherwise. Loan Loss Reserve equals one if the percentile of the bank's ratio of earnings before taxes to operating income is larger than 80 per cent and the percentile of the ratio of loan loss reserve to total loan value is less than 20 per cent, and zero otherwise. The control variables include Firm Size measured by the log of total assets, Equity Ratio measured by the ratio of total equity to total assets, Current Ratio measured by the ratio of current assets to current liabilities, the Subsidiaries measured by the natural log of number of subsidiaries, Margin measured by the ratio of the difference between interest income and interest paid to total assets, and Diversity measured by the level of ownership diversity index from the ByDEP database.

TABLE 2
Committee Independence and Performance with OLS Regressions

	Stock returns					ROA					ROE				
	Coefficient	t-stat	TOL	VIF	EV	Coefficient	t-stat	TOL	VIF	EV	Coefficient	t-stat	TOL	VIF	EV
Auditing independence															
Intercept	.61	1.77†	.94	.00	5.35	3.24	1.76†	.94	.00	5.35	-4.74	-20	.93	.00	5.35
Firm size	.34	1.29	.71	1.07	1.15	.31	.22	.94	1.07	1.15	24.40	1.36	.70	1.07	1.15
Equity ratio	-.02	-1.18	.84	1.41	.78	-.16	-2.21*	.71	1.41	.78	1.58	1.70†	.84	1.42	.77
Current ratio	-.01	-2.67**	.86	1.19	.45	-.01	-1.06	.84	1.19	.45	.04	.22	.86	1.18	.45
Subsidiaries	.00	2.02*	.76	1.17	.20	-.04	-3.76***	.86	1.17	.20	.04	.31	.86	1.17	.20
Margin	-.00	-1.71†	.90	1.31	.07	.00	.69	.76	1.31	.07	.02	.69	.76	1.32	.07
Diversity	-.01	-.42	.91	1.11	.01	.32	2.68**	.90	1.11	.01	4.77	3.12**	.91	1.10	.01
R ²	.04	.66	.91	1.10	.00	.11	1.09	.91	1.10	.00	.11	.19	.90	1.11	.00
MSE	.36					1.90					24.01				
Compensation independence															
Intercept	.34	1.12	.96	.00	5.35	2.89	1.79†	.96	.00	5.35	-16.50	-82	.96	.00	5.35
Firm size	.01	.07	.73	1.04	1.14	.08	.10	.73	1.04	1.14	7.72	.74	.73	1.04	1.15
Equity ratio	-.02	-1.03	.85	1.36	.78	-.15	-2.01*	.85	1.36	.78	1.60	1.66†	.85	1.37	.77
Current ratio	-.01	-2.70**	.86	1.18	.45	-.02	-1.14	.85	1.18	.45	.03	.20	.85	1.18	.45
Subsidiaries	.00	1.96†	.76	1.17	.19	-.04	-3.64***	.86	1.17	.19	.03	.28	.86	1.17	.20
Margin	-.00	-2.10*	.92	1.31	.07	.00	.54	.76	1.31	.07	.01	.34	.76	1.32	.07
Diversity	-.01	-.61	.94	1.09	.02	.31	2.45*	.92	1.09	.02	4.56	2.87**	.92	1.08	.02
R ²	.04	-.36	.94	1.06	.00	.10	.78	.94	1.06	.00	-.34	-.57	.94	1.06	.00
MSE	.36					1.95					24.44				
Observations	338					338					338				
Nominating independence															
Intercept	.58	1.77†	.98	.00	5.35	3.36	1.83†	.98	.00	5.35	-14.73	-81	.98	.00	5.35
Firm size	.25	1.34	.72	1.02	1.15	.51	.49	.72	1.02	1.15	7.63	.73	.72	1.02	1.15
Equity ratio	-.02	-1.56	.84	1.38	.76	-.21	-2.52*	.84	1.38	.76	1.28	1.57	.84	1.39	.76
Current ratio	-.01	-2.57*	.86	1.19	.46	-.02	-1.21	.84	1.19	.46	-.01	-.07	.84	1.19	.46
Subsidiaries	.00	1.90†	.77	1.17	.20	-.04	-3.60***	.86	1.17	.20	.03	.25	.86	1.17	.20
Margin	-.00	-1.60	.91	1.30	.06	.00	.67	.77	1.30	.06	.01	.47	.77	1.31	.06
Diversity	.01	.14	.95	1.10	.01	.29	2.13*	.95	1.10	.01	4.16	3.11**	.95	1.10	.01
R ²	.05	.91	.95	1.06	.00	.11	1.11	.95	1.06	.00	.28	.54	.95	1.06	.00
MSE	.36					2.00					19.85				
Risk independence															
Intercept	.30	.99	.95	.00	5.37	3.32	1.99*	.95	.00	5.37	-13.05	-64	.95	.00	5.38
Firm size	.06	.44	.68	1.05	1.16	.45	.58	.68	1.05	1.16	17.10	1.81†	.67	1.05	1.16
Equity ratio	-.02	-1.41	.81	1.48	.76	-.16	-1.95†	.81	1.48	.76	1.74	1.74†	.81	1.49	.76
Current ratio	-.01	-2.59*	.83	1.24	.43	-.03	-1.86†	.83	1.24	.43	-.02	-.09	.81	1.24	.43
Subsidiaries	.00	2.00*	.73	1.21	.19	-.03	-3.19**	.83	1.21	.19	.06	.45	.83	1.21	.19
Margin	-.00	-.69	.87	1.37	.06	.00	.59	.73	1.37	.06	.01	.37	.72	1.38	.06
Diversity	-.00	-.08	.95	1.15	.02	.38	2.80**	.87	1.15	.02	4.80	2.88**	.87	1.15	.02
R ²	.02	.45	.95	1.06	.00	.04	.87	.95	1.06	.00	-.10	-.16	.94	1.06	.00
MSE	.35					1.96					24.05				
Observations	338					338					338				

Market-based performance is the Stock Returns measured by the bank *i* yearly stock returns of shares outstanding. Accounting-based performance includes Returns on Assets and Returns on Equity. Auditing (Compensation, Nominating, and Risk) Independence is the proportion of independent directors on the auditing (compensation, nominating, and risk correspondingly) committee. The control variables include Firm Size measured by the log of total assets, Equity Ratio measured by the ratio of total equity to total assets, Current Ratio measured by the ratio of current assets to current liabilities, the Subsidiaries measured by the natural log of number of subsidiaries, Margin measured by the ratio of the difference between interest income and interest paid to total assets, and Diversity measured by the level of ownership diversity index from the BvDPEP database. **Indicates significance at the .1% level; *Indicates the 1 per cent level; †Indicates the 5 per cent level; ‡Indicates the 10 per cent level; R² is the power of explanation, and MSE is the mean squared error. VIF is the variance inflation factors; TOL is the tolerance and EV is the Eigen value.

TABLE 3
Moderating Effect of Crisis-period Dummy on the Relationship between Committee Independence and Performance

	Stock returns		ROA		ROE		Stock Returns		ROA		ROE		
	Coefficient	t-stat.	Coefficient	t-stat.	Coefficient	t-stat.	Coefficient	t-stat.	Coefficient	t-stat.	Coefficient	t-stat.	
Intercept	.48	1.50	1.28	.63	-22.41	-.89	Intercept	.54	1.80†	2.35	1.23	-12.25	-.52
Auditing independence	.20	2.46*	5.04	1.85†	4.80	2.22*	Compensation independence	.03	.11	1.70	1.00	6.02	.28
* Y0708							* Y0708						
Auditing independence							Compensation independence						
Y0708	-.24	-.58	3.76	1.42	24.45	.74	Y0708	-.41	-1.57	.52	.31	-10.44	-.51
	.05	.18	2.54	1.44	4.45	.20		.00	.01	1.17	.82	4.75	.27
Firm size	-.02	-1.57	-.18	-2.52*	1.46	1.65†	Firm size	-.02	-1.35	-.16	-2.15*	1.58	1.72†
Equity ratio	-.01	-3.61***	-.01	-1.20	.02	.11	Equity ratio	-.01	-3.57***	-.02	-1.32	.01	.09
Current ratio	.00	2.07*	-.04	-4.18***	.01	.08	Current ratio	.00	2.07*	-.04	-3.93***	.02	.13
Subsidiaries	.00	-.05	.00	1.60	.05	1.69†	Subsidiaries	.00	-.51	.00	1.34	.04	1.29
Margin	.00	.23	.36	3.08**	5.25	3.62***	Margin	.00	.08	.36	2.92**	5.17	3.41***
Diversity	.00	.26	.05	1.17	.02	.04	Diversity	-.00	-.32	.04	.87	-.33	-.59
R2	.38		.19		.13		R2	.38		.17		.12	
MSE	.29		1.81		22.71		MSE	.29		1.87		23.18	
Intercept	.64	1.71†	3.03	1.23	-9.70	-.41	Intercept	.38	1.52	3.22	1.88†	-12.48	-.60
Nominating independence	.14	.39	1.08	.46	1.11	.05	Risk independence	.07	2.30*	1.07	2.69*	8.59	2.45*
* Y0708							* Y0708						
Y0708	-.29	-.86	-.19	-.09	-14.92	-.69	Y0708	-.37	-1.71†	-.12	-.08	-7.21	-.41
Nominating independence	.14	.48	1.32	.66	6.49	.34	Risk independence	.21	1.57	.23	.25	9.68	.88
Firm size	-.02	-1.63	-.20	-2.49*	1.43	1.90†	Firm size	-.02	-1.77†	-.16	-1.98*	1.79	1.87†
Equity ratio	-.01	-3.57***	-.02	-1.47	-.04	-.32	Equity ratio	-.01	-3.15**	-.03	-1.87†	-.01	-.04
Current ratio	.00	2.02*	-.04	-3.91***	.01	.09	Current ratio	.00	1.94†	-.03	-3.53***	.03	.21
Subsidiaries	.00	-.04	.00	1.51	.04	1.61	Subsidiaries	.00	.89	.00	1.21	.04	1.07
Margin	.01	.65	.31	2.38*	4.54	3.64***	Margin	.01	.27	.40	3.03**	5.01	3.16**
Diversity	.01	.73	.05	1.02	.13	.26	Diversity	.00	.12	.04	.77	-.24	-.39
R2	.37		.19		.17		R2	.38		.18		.11	
MSE	.29		1.92		18.31		MSE	.28		1.89		22.96	
Observations	338		338		338		Observations	338		338		338	

Market-based performance is the Stock Returns measured by the bank i yearly stock returns of shares outstanding. Accounting-based performance includes Returns on Assets and Returns on Equity. Auditing (Compensation, Nominating, and Risk) Independence is the proportion of independent directors on the auditing (compensation, nominating, and risk correspondingly) committee. Y0708 = 1 if the year falls on 2007 and 2008. The control variables include Firm Size measured by the log of total assets, Equity Ratio measured by the ratio of total equity to total assets, Current Ratio measured by the ratio of current assets to current liabilities, the Subsidiaries measured by the natural log of number of subsidiaries, Margin measured by the ratio of the difference between interest income and interest paid to total assets, and Diversity measured by the level of ownership diversity index from the BvDEP database. ***:indicates significance at the .1 per cent level; **:indicates the 1 per cent level; *:indicates the 5 per cent level; †indicates the 10 per cent level; and MSE is the mean squared error.

$$\begin{aligned}
 FIP_i = & \alpha + \gamma_1 \text{ Auditing Independence} * Y0708 * \text{Civil} \\
 & + \gamma_2 \text{ Auditing Independence} + \gamma_3 Y0708 + \gamma_4 \text{ Civil} \\
 & + \beta_1 \text{ Firm Size} + \beta_2 \text{ Equity Ratio} + \beta_3 \text{ Current Ratio} \\
 & + \beta_4 \text{ Subsidiaries} + \beta_5 \text{ Margin} + \beta_6 \text{ Diversity} + \varepsilon_i \quad (3)
 \end{aligned}$$

Here, *Civil* equals 1 for firms belonging to civil-law countries and 0 for others belonging to common-law countries.

Table 4 shows that, during the financial crisis, financial institutions with more independent directors on the auditing and risk committees have higher stock returns and ROE, particularly for those civil-law countries practicing poor shareholder protection. The evidence supports Hypotheses 1a and 1d that committee independence in civil-law countries is particularly helpful for improving performance during the financial crisis. However, the coefficients of the compensation and nominating committees are insignificant.

Excessive Risk-taking Behaviors

The above evidence indicates that committee independence has a positive influence on financial institution performance during the crisis, and the effects are particularly significant for the auditing and risk committees under civil law countries. Although the results indicate that committee independence improves performance and the contribution is more crucial in civil-law countries, the role of independent directors in banking risk-taking behaviors is controversial. Since the 2007–08 credit crunch is characterized with systemic risk and excessive risk-taking, it is therefore interesting to explore whether the influence of committee independence on performance is particularly significant in excessive risk-taking financial institutions.

The Basel committee in recent years has suggested that financial institutions around the world adopt risk-measuring methodologies toward an “internal rating approach,” instead of an inflexible “standard approach.” The risk-bearing capacities are varied among different financial institutions, and we therefore adopt an indirect way to identify such excessive risk-taking behaviors. First, we include excessive risk-taking behaviours (*Earnings Sources* and *Loan Loss Reserve*) into the models. Here, *Earnings Sources* is the dummy equaling 1 if the percentile of the ratio of earnings before taxes to operating income (*EBT*) is larger than 80 per cent and the percentile of the ratio of total loans to total deposits is less than 20 per cent, or 0 otherwise. Similarly, *Loan Loss Reserve* is the second dummy of excessive risk-taking behaviors, equaling 1 if the percentile of the *EBT* ratio is larger than 80 per cent and the percentile of the ratio of loan loss reserves to total loan value is less than 20 per cent, or 0 otherwise.

We label *Earnings Sources* for the excessive risk-taking behaviors that most financial institutions faced during the 2007–08 credit crunch, because they adopted an extremely large proportion of the originate-and-distribute business. Since information on the profits or losses from the originate-and-distribute business cannot be acquired from their annual financial reports, we measure such risk-taking behaviors in an indirect way. If financial institutions’ earnings are extremely high and those earnings depend largely on the originate-and-distribute business, then their

proportions of earnings from the originate-and-hold business are extremely lower correspondingly, thereby reducing the ratio of loans to total deposits. With regard to *Loan Loss Reserve*, if the financial institutions’ earnings are extremely higher and the loan loss reserves are relatively low, then they are burdened with severe credit risks.

We first expect to see that the excessive risk-taking behaviors bring in large earnings in 2005–06 ordinary times, yet cause enormous losses in the 2007–08 crisis period.

$$\begin{aligned}
 FIP_i = & \alpha + \gamma_1 \text{ Excessive Risk-taking} + \beta_1 \text{ Firm Size} \\
 & + \beta_2 \text{ Equity Ratio} + \beta_3 \text{ Current Ratio} + \beta_4 \text{ Subsidiaries} \\
 & + \beta_5 \text{ Margin} + \beta_6 \text{ Diversity} + \varepsilon_i \quad (4)
 \end{aligned}$$

Table 5 shows that the excessive risk-taking behaviors do in fact bring significantly higher performances for the financial institutions during 2005–06 (ordinary times)

$$\begin{aligned}
 FIP_i = & \alpha + \gamma_1 \text{ Excessive Risk-taking} * Y0708 \\
 & + \gamma_2 \text{ Excessive Risk-taking} + \beta_1 \text{ Firm Size} \\
 & + \beta_2 \text{ Equity Ratio} + \beta_3 \text{ Current Ratio} + \beta_4 \text{ Subsidiaries} \\
 & + \beta_5 \text{ Margin} + \beta_6 \text{ Diversity} + \varepsilon_i \quad (5)
 \end{aligned}$$

Instead of the short-term benefits in 2005–06, the financial institutions’ excessive risk-taking behaviors resulted in more severe costs and losses during the 2007–08 crisis. After including the cross term of the 2007–08 year dummy and the excessive risk-taking behaviors, Table 5 shows that the coefficients of *Excessive Risk-taking* * *Y0708* are all significantly negative, indicating that the excessive risk-taking behaviors cause large losses for the financial institutions during the financial crisis. The evidence implies that although excessive risk-taking behaviors provide short-term profits, they lead to larger losses in the long run.

Aside from excessive risk-taking behavior being ill-performed in the long run, it is interesting to explore whether the effect of committee independence on performance is more crucial in financial institutions with more excessive risk-taking behaviors. We further examine the moderating effect of excessive risk-taking behaviors on the relationship between committee independence and financial institution performance.

$$\begin{aligned}
 FIP_i = & \alpha + \gamma_1 \text{ Auditing Independence} * \text{Excessive Risk} \\
 & - \text{taking} * Y0708 + \gamma_2 Y0708 + \gamma_3 \text{ Auditing Independence} \\
 & + \gamma_4 \text{ Excessive Risk-taking} + \beta_1 \text{ Firm Size} \\
 & + \beta_2 \text{ Equity Ratio} + \beta_3 \text{ Current Ratio} + \beta_4 \text{ Subsidiaries} \\
 & + \beta_5 \text{ Margin} + \beta_6 \text{ Diversity} + \varepsilon_i \quad (6)
 \end{aligned}$$

The coefficients of *Auditing (Compensation, Nominating, and Risk) Independence* * *Excessive Risk-taking* * *Y0708* in Table 6 are positively significant, regardless of the market or accounting-based performance, indicating that committee independence in financial institutions with more excessive risk-taking behaviors positively influences their performance in the 2007–2008 crisis period. This result also suggests that the role of committee independence in resolving the excessive risk-taking problems is particularly significant during the crisis period, and controlling the excess-risk behaviors can effectively steer the financial institutions away from a crisis turmoil.

TABLE 4
Committee Independence and Performance Under Different Legal Systems

	Stock returns		ROA		ROE	
	Coefficient	t-stat.	Coefficient	t-stat.	Coefficient	t-stat.
Intercept	.54	1.76†	4.00	2.04*	10.70	.44
Auditing independence * Y0708 * civil	.11	1.98*	.60	1.02	.27	2.13*
Y0708	-.41	-9.51***	-1.23	-4.50***	-15.34	-4.51***
Auditing independence	.03	.14	.25	.16	27.97	1.47
Civil	.02	.24	-.54	-1.14	-9.18	-1.57
Firm size	-.02	-1.46	-.17	-2.38*	1.58	1.81†
Equity ratio	-.01	-3.61***	-.02	-1.24	.01	.07
Current ratio	.00	2.10*	-.04	-4.10***	.01	.10
Subsidiaries	.00	-.20	.00	1.55	.04	1.49
Margin	.01	.50	.38	3.11**	6.29	4.16***
Diversity	-.00	-.11	.03	.72	-.44	-.78
R ²	.38		.18		.14	
MSE	.29		1.83		22.60	
Intercept	.47	1.88†	3.98	2.47*	-3.69	-.19
Compensation independence * Y0708 * civil	.20	2.23*	.56	.97	2.17	.31
Y0708	-.39	-8.62***	-1.25	-4.31***	-15.30	-4.28***
Compensation independence	.05	.37	.28	.33	9.83	.96
Civil	.07	1.03	-.55	-1.26	-7.07	-1.33
Firm size	-.02	-1.28	-.16	-2.16*	1.61	1.76†
Equity ratio	-.01	-3.57***	-.02	-1.31	.01	.07
Current ratio	.00	2.10*	-.04	-3.96***	.01	.07
Subsidiaries	.00	-.66	.00	1.36	.04	1.12
Margin	.01	.29	.38	2.97**	6.01	3.87***
Diversity	-.00	-.60	.03	.55	-.78	-1.30
R ²	.39		.17		.13	
MSE	.29		1.87		23.00	
Intercept	.71	2.53*	4.45	2.39*	-2.82	-.16
Nominating independence * Y0708 * civil	.10	1.07	.63	1.00	6.39	1.06
Y0708	-.40	-8.72***	-1.36	-4.46***	-17.37	-5.92***
Nominating independence	.22	1.39	.19	.18	10.60	1.06
Civil	.02	.23	-.50	-1.04	-4.86	-1.05
Firm size	-.02	-1.59	-.20	-2.59*	1.37	1.82†
Equity ratio	-.01	-3.53***	-.02	-1.49	-.05	-.37
Current ratio	.00	2.05*	-.04	-3.93***	.00	.05
Subsidiaries	.00	-.14	.00	1.56	.04	1.66†
Margin	.02	.90	.33	2.46*	4.64	3.63***
Diversity	.00	.36	.04	.73	.04	.07
R ²	.37		.19		.17	
MSE	.29		1.92		18.29	
Observations	338		338		338	
Intercept	.38	1.53	4.13	2.48*	-2.66	-.13
Risk independence * Y0708 * civil	.15	1.66†	.64	1.05	3.17	2.43*
Y0708	-.39	-8.78***	-1.25	-4.12***	-14.02	-3.81***
Risk independence	.20	1.81†	.25	.33	13.42	1.48
Civil	.05	.68	-.59	-1.29	-7.05	-1.28
Firm size	-.02	-1.67†	-.17	-2.13*	1.78	1.87†
Equity ratio	-.01	-3.16**	-.03	-1.89†	-.00	-.01
Current ratio	.00	1.97†	-.04	-3.57***	.02	.14
Subsidiaries	.00	.77	.00	1.28	.03	.93
Margin	.01	.42	.42	3.13**	5.73	3.56***
Diversity	-.00	-.21	.02	.37	-.87	-1.31
R ²	.38		.18		.13	
MSE	.28		1.89		22.77	
Observations	338		338		338	

Market-based performance is the Stock Returns measured by the bank *i* yearly stock returns of shares outstanding. Accounting-based performance includes Returns on Assets and Returns on Equity. Auditing (Compensation, Nominating, and Risk) Independence is the proportion of independent directors on the auditing (compensation, nominating, and risk correspondingly) committee. Y0708 = 1 if the year falls on 2007 and 2008. Civil = 1 if the country belongs to the civil law origin. The first proxy of excessive risk-taking behaviors include Earnings Sources, equaling one if the percentile of the bank's ratio of earnings before taxes to operating income is larger than 80 per cent and the percentile of the ratio of total loans to total deposits is less than 20 per cent, and zero otherwise. The second proxy is the Loan Loss Reserve, equaling one if the percentile of the bank's ratio of earnings before taxes to operating income is larger than 80 per cent and the percentile of the ratio of loan loss reserve to total loan value is less than 20 per cent, and zero otherwise. The control variables include Firm Size measured by the log of total assets, Equity Ratio measured by the ratio of total equity to total assets, Current Ratio measured by the ratio of current assets to current liabilities, the Subsidiaries measured by the natural log of number of subsidiaries, Margin measured by the ratio of the difference between interest income and interest paid to total assets, and Diversity measured by the level of ownership diversity index from the BvDEP database. ***indicates significance at the .1 per cent level; **indicates the 1 per cent level; *indicates the 5 per cent level; †indicates the 10 per cent level. R² is the power of explanation, and MSE is the mean squared error.

TABLE 5
Excessive Risk-taking Behaviors and Performance

	Stock returns				ROA				ROE			
	Earnings Sources		Loan Loss Reserve		Earnings Sources		Loan Loss Reserve		Earnings Sources		Loan Loss Reserve	
	Coefficient	t-stat.	Coefficient	t-stat.	Coefficient	t-stat.	Coefficient	t-stat.	Coefficient	t-stat.	Coefficient	t-stat.
Intercept	.46	1.83†	.35	1.42	3.18	2.57*	2.62	2.15*	-14.40	-91	-19.75	-1.29
Excessive risk-taking	.18	3.39***	.18	3.93***	.97	3.60***	1.01	4.35***	10.33	2.97**	13.64	4.68***
Firm size	-.02	-1.74†	-.02	-1.28	-.19	-2.87**	-.15	-2.41*	.92	1.10	1.18	1.47
Equity ratio	-.01	-2.96**	-.01	-3.13**	-.01	-1.16	-.02	-1.36	.01	.08	-.03	-.20
Current ratio	.00	1.76†	.00	2.24*	-.04	-4.36***	-.04	-3.87***	-.01	-.07	.05	.46
Subsidiaries	.00	-1.06	.00	-1.07	.00	1.12	.00	1.17	.03	.94	.03	1.24
Margin	-.03	-1.33	-.04	-1.74†	.27	2.61**	.23	2.25*	3.25	2.50*	2.86	2.27*
Diversity	-.00	-.09	-.00	-.39	.07	1.88†	.06	1.57	.11	.23	-.01	-.02
R2	.07		.08		.13		.15		.03		.07	
MSE	.36		.36		1.80		1.78		22.92		22.41	
Intercept	.60	2.87**	.58	2.91**	3.46	2.87**	3.12	2.63**	-10.24	-.68	-11.64	-.80
Excessive risk-taking	-.06	-2.06*	-.06	-4.08***	.53	1.61	-.48	-2.60**	-2.90	-4.69***	-2.35	-3.64***
* Y0708												
Excessive risk-taking	.05	.57	.33	1.17	.58	1.06	.74	1.60	10.94	1.58	19.13	.37
Firm size	-.43	-10.25***	-.52	-11.75***	-1.05	-4.31***	-1.12	-4.28***	-16.49	-5.44***	-19.37	-6.00***
Equity ratio	-.02	-1.58	-.02	-1.40	-.17	-2.67**	-.15	-2.42*	1.21	1.52	1.28	1.69†
Current ratio	-.01	-3.67***	-.01	-3.63***	-.02	-1.29	-.02	-1.32	-.01	-.05	-.01	-.04
Subsidiaries	.00	2.01*	.00	2.21*	-.04	-4.42***	-.04	-4.18***	.00	.02	.02	.21
Margin	.00	.37	.00	.76	.00	1.81†	.00	1.94†	.05	1.80†	.06	2.33*
Diversity	-.01	-.78	-.01	-.65	.31	3.06**	.28	2.83**	3.89	3.12**	3.81	3.18**
R2	.36		.40		.18		.20		.12		.18	
MSE	.30		.29		1.75		1.73		21.82		21.15	
Observations	334		334		334		334		334		334	

Market-based performance is the Stock Returns measured by the bank *i* yearly stock returns of shares outstanding. Accounting-based performance includes Returns on Assets and Returns on Equity. Y0708 = 1 if the year falls on 2007 and 2008. The first proxy of excessive risk-taking behaviors include Earnings Sources, equaling one if the percentile of the bank's ratio of earnings before taxes to operating income is larger than 80% and the percentile of the ratio of total loans to total deposits is less than 20 per cent, and zero otherwise. The second proxy is the Loan Loss Reserve, equaling one if the percentile of the bank's ratio of earnings before taxes to operating income is larger than 80 per cent and the percentile of the ratio of loan loss reserve to total loan value is less than 20 per cent, and zero otherwise. The control variables include Firm Size measured by the log of total assets, Equity Ratio measured by the ratio of total equity to total assets, Current Ratio measured by the ratio of current assets to current liabilities, the Subsidiaries measured by the natural log of number of subsidiaries, Margin measured by the ratio of the difference between interest income and interest paid to total assets, and Diversity measured by the level of ownership diversity index from the BvDPEP database. ***indicates significance at the .1% level; **indicates the 1 per cent level; *indicates the 5 per cent level; †indicates the 10 per cent level. R² is the power of explanation, and MSE is the mean squared error.

TABLE 6
Committee Independence, Excessive Risk-taking and Performance

Dependent variables: stock returns	Earnings sources as excessive risk-taking behaviors				Loan Loss reserve as excessive risk-taking behaviors			
	Coefficient	t-stat.	Coefficient	t-stat.	Coefficient	t-stat.	Coefficient	t-stat.
Intercept	.57	2.05*	.55	1.98*	.56	2.05*	.57	2.15*
Auditing independence * Y0708 * excessive risk-taking			.16	1.60			.32	4.02***
Y0708	-.42	-11.06***	-.46	-10.56***	-.41	-10.67***	-.52	-11.27***
Auditing independence	.02	.09	.02	.07	.08	.39	.03	.14
Excessive risk-taking	.06	1.25	.00	.03	.09	2.25*	-.05	-.86
Firm size	-.02	-1.77†	-.02	-1.59	-.02	-1.60	-.02	-1.67†
Equity ratio	-.01	-3.73***	-.01	-3.82***	-.01	-3.91***	-.01	-3.80***
Current ratio	.00	2.04*	.00	2.22*	.00	2.35*	.00	2.31*
Subsidiaries	.00	.18	.00	.23	.00	.28	.00	.73
Margin	.01	.36	.01	.54	.01	.33	.01	.61
Diversity	.00	.16	.00	.09	.00	.15	.00	.06
R ²	.38		.39		.39		.43	
MSE	.29		.28		.28		.28	
Intercept	.60	2.46*	.58	2.40*	.52	2.14*	.62	2.67**
Compensation independence * Y0708 * excessive risk-taking			.16	1.57			.35	4.15***
Y0708	-.42	-10.51***	-.46	-10.03***	-.41	-10.30***	-.53	-11.11***
Compensation independence	.01	.04	.02	.16	.01	.09	.05	.41
Excessive risk-taking	.08	1.55	.02	.30	.09	2.05*	-.05	-1.02
Firm size	-.02	-1.70†	-.02	-1.50	-.02	-1.48	-.02	-1.55
Equity ratio	-.01	-3.72***	-.01	-3.83***	-.01	-3.84***	-.01	-3.77***
Current ratio	.00	2.00*	.00	2.18*	.00	2.29*	.00	2.29*
Subsidiaries	.00	-.20	.00	-.17	.00	-.17	.00	.25
Margin	.01	.24	.01	.41	.00	.15	.01	.52
Diversity	-.00	-.35	-.00	-.34	-.00	-.47	-.00	-.42
R ²	.38		.39		.39		.43	
MSE	.29		.29		.29		.28	
Intercept	.78	2.93**	.78	2.94**	.70	2.68**	.85	3.28**
Nominating independence * Y0708 * excessive risk-taking			.18	1.61			.33	3.68***
Y0708	-.40	-9.41***	-.44	-9.14***	-.39	-9.35***	-.50	-10.00***
Nominating independence	.24	1.60	.25	1.64	.22	1.47	.26	1.81†
Excessive risk-taking	.08	1.58	.03	.39	.12	2.60*	-.02	-.30
Firm size	-.02	-1.98*	-.02	-1.86†	-.02	-1.87†	-.02	-2.05*
Equity ratio	-.01	-3.70***	-.01	-3.77***	-.01	-3.89***	-.01	-3.73***
Current ratio	.00	1.97†	.00	2.12*	.00	2.33*	.00	2.26*
Subsidiaries	.00	.26	.00	.32	.00	.38	.00	.89
Margin	.02	.86	.02	.98	.02	.76	.02	.94
Diversity	.01	.68	.00	.61	.00	.61	.00	.34
R ²	.38		.38		.39		.42	
MSE	.29		.29		.29		.28	
Intercept	.45	1.89†	.47	2.25*	.40	1.68†	.46	2.05*
Risk independence * Y0708 * excessive risk-taking			.45	1.88†			.40	4.55***
Y0708	-.42	-10.58***	-.20	-1.85†	-.41	-10.30***	-.53	-11.41***
Risk independence	.19	1.69†	.45	10.34***	.17	1.56	.21	2.03*
Excessive risk-taking	.07	1.42	.18	1.69†	.11	2.57*	-.05	-.91
Firm size	-.02	-2.07*	.00	.06	-.02	-1.91†	-.02	-2.23*
Equity ratio	-.01	-3.30**	-.02	-1.96†	-.01	-3.54***	-.01	-3.61***
Current ratio	.00	1.89†	-.01	-3.52***	.00	2.27*	.00	2.29*
Subsidiaries	.00	1.17	.00	2.14*	.00	1.28	.00	1.87†
Margin	.01	.39	.00	1.22	.01	.41	.01	.68
Diversity	.00	.06	.01	.61	.00	.00	.00	.02
R ²	.38		.39		.40		.45	
MSE	.28		.28		.28		.26	

TABLE 6
Continued

Dependent variables: ROA	Earnings sources as excessive risk-taking behaviors				Loan loss reserve as excessive risk-taking behaviors			
	Coefficient	t-stat.	Coefficient	t-stat.	Coefficient	t-stat.	Coefficient	t-stat.
Intercept	3.40	1.94†	3.31	1.89†	3.24	1.87†	3.26	1.89†
Auditing independence * Y0708 * excessive risk-taking			.60	.99			.73	1.41
Y0708	-.98	-4.06***	-1.11	-4.05***	-.90	-3.71***	-1.15	-3.84***
Auditing independence	.68	.50	.69	.51	.00	.00	.12	.09
Excessive risk-taking	.83	2.84**	.61	1.66†	.89	3.48***	.58	1.72†
Firm size	-.21	-2.92**	-.20	-2.79**	-.17	-2.47*	-.17	-2.48*
Equity ratio	-.02	-1.51	-.02	-1.56	-.02	-1.68†	-.02	-1.60
Current ratio	-.04	-4.27***	-.04	-4.13***	-.03	-3.78***	-.04	-3.83***
Subsidiaries	.01	2.07*	.01	2.10*	.01	2.07*	.01	2.22*
Margin	.39	3.40***	.41	3.49***	.38	3.30**	.39	3.40***
Diversity	.04	.83	.03	.79	.04	.85	.03	.81
R ²	.20		.20		.22		.22	
MSE	1.80		1.80		1.78		1.78	
Intercept	3.89	2.53*	3.82	2.48*	3.04	1.99*	3.28	2.14*
Compensation independence * Y0708 * excessive risk-taking			.74	1.15			.77	1.40
Y0708	-.98	-3.86***	-1.14	-3.94***	-.92	-3.61***	-1.17	-3.76***
Compensation independence	.18	.23	.12	.15	.35	.44	.21	.27
Excessive risk-taking	.84	2.68**	.57	1.45	.91	3.37***	.60	1.71†
Firm size	-.21	-2.76**	-.20	-2.60**	-.17	-2.38*	-.17	-2.39*
Equity ratio	-.02	-1.55	-.02	-1.62	-.02	-1.73†	-.02	-1.67†
Current ratio	-.04	-4.11***	-.04	-3.95***	-.03	-3.65***	-.03	-3.69***
Subsidiaries	.01	1.90†	.01	1.92†	.01	1.94†	.01	2.08*
Margin	.39	3.18**	.40	3.29**	.37	3.07**	.38	3.18**
Diversity	.04	.82	.04	.83	.03	.65	.03	.67
R ²	.19		.19		.21		.21	
MSE	1.85		1.85		1.83		1.83	
Intercept	4.23	2.41*	4.23	2.41*	3.55	2.06*	3.81	2.18*
Nominating independence * Y0708 * excessive risk-taking			.69	.96			.59	.99
Y0708	-1.03	-3.66***	-1.17	-3.69***	-.98	-3.54***	-1.17	-3.47***
Nominating independence	.56	.56	.54	.54	.73	.74	.65	.66
Excessive risk-taking	.76	2.23*	.53	1.29	.93	3.18**	.69	1.81†
Firm size	-.24	-3.00**	-.23	-2.91**	-.22	-2.81**	-.22	-2.85**
Equity ratio	-.02	-1.65	-.02	-1.68†	-.02	-1.84†	-.02	-1.77†
Current ratio	-.04	-4.03***	-.04	-3.92***	-.04	-3.63***	-.04	-3.66***
Subsidiaries	.01	1.92†	.01	1.95†	.01	2.04*	.01	2.16*
Margin	.35	2.69**	.36	2.75**	.32	2.56*	.33	2.61**
Diversity	.05	.98	.05	.94	.04	.89	.04	.81
R ²	.21		.21		.23		.23	
MSE	1.90		1.90		1.87		1.87	
Intercept	4.22	2.65**	4.20	2.63**	3.48	2.23*	3.61	2.31*
Risk independence * Y0708 * excessive risk-taking			.85	1.18			.77	1.27
Y0708	-.94	-3.56***	-1.09	-3.72***	-.86	-3.29**	-1.10	-3.42***
Risk independence	.14	.18	.14	.19	.29	.40	.21	.29
Excessive risk-taking	.94	2.89**	.66	1.64	1.05	3.79***	.75	2.06*
Firm size	-.21	-2.65**	-.20	-2.57*	-.17	-2.22*	-.17	-2.29*
Equity ratio	-.03	-2.22*	-.03	-2.34*	-.03	-2.48*	-.03	-2.45*
Current ratio	-.04	-3.70***	-.03	-3.50***	-.03	-3.16**	-.03	-3.18**
Subsidiaries	.01	1.81†	.01	1.84†	.01	1.83†	.01	1.97†
Margin	.43	3.32***	.45	3.45***	.42	3.33***	.43	3.40***
Diversity	.03	.64	.03	.61	.03	.60	.03	.61
R ²	.21		.21		.23		.23	
MSE	1.86		1.85		1.83		1.83	

TABLE 6
Continued

Dependent variables: ROE	Earnings sources as excessive risk-taking behaviors				Loan loss reserve as excessive risk-taking behaviors			
	Coefficient	t-stat.	Coefficient	t-stat.	Coefficient	t-stat.	Coefficient	t-stat.
Intercept	-5.22	-.24	-7.25	-.33	-4.34	-.20	-3.99	-.19
Auditing independence * Y0708 * excessive risk-taking			13.60	1.74†			19.89	3.16**
Y0708	-14.74	-4.84***	-17.45	-5.12***	-12.76	-4.22***	-19.63	-5.34***
Auditing independence	10.30	.60	10.02	.59	20.28	1.21	16.64	1.01
Excessive risk-taking	7.80	2.08*	2.88	.61	12.91	4.05***	4.33	1.05
Firm size	1.20	1.35	1.38	1.54	1.45	1.70†	1.45	1.73†
Equity ratio	-.02	-.12	-.03	-.21	-.06	-.41	-.04	-.24
Current ratio	.01	.05	.03	.24	.07	.58	.06	.50
Subsidiaries	.06	2.00*	.06	2.05*	.07	2.32*	.08	2.69**
Margin	5.57	3.85***	5.86	4.04***	5.52	3.93***	5.82	4.21***
Diversity	-.13	-.25	-.17	-.32	-.08	-.15	-.14	-.26
R ²	.14		.15		.18		.21	
MSE	22.58		22.48		22.03		21.62	
Intercept	-4.67	-.24	-6.12	-.32	-13.71	-.73	-7.15	-.39
Compensation independence * Y0708 * excessive risk-taking			13.74	1.67†			21.01	3.15**
Y0708	-14.93	-4.68***	-17.69	-4.94***	-13.38	-4.25***	-20.38	-5.35***
Compensation independence	7.03	.71	8.25	.83	4.29	.44	7.94	.83
Excessive risk-taking	7.80	1.97*	2.88	.58	12.31	3.70***	3.75	.88
Firm size	1.14	1.22	1.34	1.43	1.34	1.50	1.34	1.53
Equity ratio	-.02	-.10	-.03	-.21	-.06	-.37	-.03	-.22
Current ratio	.00	.03	.03	.23	.06	.51	.05	.46
Subsidiaries	.05	1.66†	.05	1.68†	.06	1.95†	.07	2.31*
Margin	5.46	3.62***	5.73	3.80***	5.37	3.66***	5.77	3.99***
Diversity	-.37	-.67	-.36	-.65	-.44	-.80	-.43	-.79
R ²	.13		.14		.17		.20	
MSE	22.98		22.89		22.49		22.05	
Intercept	-5.98	-.36	-6.19	-.37	-11.83	-.73	-4.03	-.25
Nominating independence * Y0708 * excessive risk-taking			13.17	1.85†			18.12	3.27**
Y0708	-14.50	-5.33***	-16.98	-5.62***	-12.82	-4.89***	-18.74	-5.98***
Nominating independence	6.89	.72	7.16	.75	4.94	.53	7.37	.81
Excessive risk-taking	5.93	1.79†	1.79	.45	11.50	4.16***	4.07	1.16
Firm size	1.13	1.47	1.24	1.62	1.16	1.59	1.09	1.54
Equity ratio	-.06	-.49	-.07	-.56	-.10	-.82	-.07	-.60
Current ratio	.00	.01	.02	.19	.05	.54	.04	.43
Subsidiaries	.05	1.91†	.05	1.98*	.06	2.35*	.07	2.83**
Margin	4.74	3.85***	4.92	4.01***	4.63	3.91***	4.80	4.14***
Diversity	.11	.22	.07	.14	.10	.23	-.03	-.06
R ²	.18		.19		.24		.27	
MSE	18.16		18.05		17.56		17.15	
Intercept	-5.62	-.29	-6.13	-.31	-10.35	-.54	-7.02	-.37
Risk independence * Y0708 * excessive risk-taking			13.34	1.46			19.94	2.74**
Y0708	-14.01	-4.30***	-16.31	-4.52***	-12.16	-3.79***	-18.43	-4.73***
Risk independence	12.37	1.37	12.48	1.39	14.73	1.67†	12.53	1.44
Excessive risk-taking	6.37	1.56	2.02	.40	12.37	3.64***	4.48	1.01
Firm size	1.46	1.51	1.56	1.60	1.60	1.73†	1.49	1.62
Equity ratio	-.04	-.21	-.07	-.39	-.09	-.58	-.08	-.52
Current ratio	.02	.15	.04	.37	.08	.67	.07	.62
Subsidiaries	.05	1.37	.05	1.40	.05	1.67†	.06	2.01*
Margin	5.20	3.28**	5.49	3.45***	5.34	3.46***	5.57	3.66***
Diversity	-.31	-.52	-.33	-.55	-.29	-.50	-.30	-.53
R ²	.12		.13		.17		.19	
MSE	22.84		22.78		22.27		21.92	
Observations	334		334		334		334	

Table 6 Footnote *Continued*

Market-based performance is the Stock Returns measured by the bank i yearly stock returns of shares outstanding. Accounting-based performance includes Returns on Assets and Returns on Equity. Auditing (Compensation, Nominating, and Risk) Independence is the proportion of independent directors on the auditing (compensation, nominating, and risk correspondingly) committee. $Y0708 = 1$ if the year falls in 2007 and 2008. The first proxy of excessive risk-taking behaviors include Earnings Sources, equaling one if the percentile of the bank's ratio of earnings before taxes to operating income is larger than 80 per cent and the percentile of the ratio of total loans to total deposits is less than 20 per cent, and zero otherwise. The second proxy is the Loan Loss Reserve, equaling one if the percentile of the bank's ratio of earnings before taxes to operating income is larger than 80 per cent and the percentile of the ratio of loan loss reserve to total loan value is less than 20 per cent, and zero otherwise. The control variables include Firm Size measured by the log of total assets, Equity Ratio measured by the ratio of total equity to total assets, Current Ratio measured by the ratio of current assets to current liabilities, the Subsidiaries measured by the natural log of number of subsidiaries, Margin measured by the ratio of the difference between interest income and interest paid to total assets, and Diversity measured by the level of ownership diversity index from the BvDEP database. ***indicates significance at the .1 per cent level; **indicates the 1 per cent level; *indicates the 5 per cent level. R^2 is the power of explanation, and MSE is the mean squared error.

Past literature provides inconclusive results on the relationship between board independence and firm performance. This controversy may be due to the variation in data settings or the governance environment. Based on this line of research, we explore the value of independent directors on different committees. Since board committees have different functions and responsibilities, independent directors on board committees could provide different dimensions of professions as well as expertise to resolve crisis problems, thereby efficiently improving their firm's performance. Our results reveal that banks with more independent directors on the auditing and risk committees show a higher financial institution performance during the crisis, and the higher value of independent directors is particularly significant in civil law countries. In addition, the independence-performance relationship is also stronger in financial institutions with excessive risk-taking behaviors.

DISCUSSION AND CONCLUSION

In this study we answer the research question of whether independent directors on different committees improve financial institution performance during the 2007–08 financial crisis. Using the 20 largest financial institutions from the G8 countries, the proportions of independent directors on different committees are hand-collected from their financial reports. First, we examine the effect of committee independence on financial institution performance. The evidence shows that the relationships between performance and independence are insignificant. The next question is which value of committee independence is particularly higher during the crisis period. After including the year dummies, the independence of both the auditing and risk committees are found to have positive influences on performance during the crisis.

We also include country-level and firm-level dummies to explore whether the independence-performance relationship varies under different governance environments. Since the civil-law system is characterized as the legal origin with weak shareholder protection and concentrated ownership, we examine the moderating effect of the civil law dummy on the independence-performance relationship. We find that the influence of committee independence on financial institution performance is particularly significant in civil-law countries, suggesting that independent directors in civil-law countries adapt to their governance environment to actively improve their governance practices, further effectively improving performance during a crisis.

The two dummy proxies of firm-level excessive risk-taking behaviors (*Earnings Sources* and *Loan Loss Reserve*) are also taken as the moderator. Here, *Earnings Sources* is the dummy equaling 1 if the percentile of the ratio of earnings before taxes to operating income (EBT) is larger than 80 per cent and the percentile of the ratio of total loans to total deposits is less than 20 per cent. Similarly, *Loan Loss Reserve* is the second dummy of excessive risk-taking behaviors, equaling 1 if the percentile of the EBT ratio is larger than 80 per cent and the percentile of the ratio of loan loss reserves to total loan value is less than 20 per cent. We find that financial institutions with more independent committees show a better performance during the 2007–2008 crisis, suggesting that during the financial crisis, the influences of committee independence on performance are stronger in financial institutions with excessive risk-taking behaviors.

When discussing the independence-performance relationships, the roles of independent directors' expertise (experiences or professions) are unexplored. This could explain the independence-performance relationship by specifically indicating the mechanisms through which the changes in performance are determined by director independence or how independent directors improve performance. For example, the narrative discussions on directors' expertise and experiences provided in financial annual reports are helpful for understanding whether the professions of independent directors satisfy the needs of certain committee to foresee any potential risks. In addition, the data used in our study encompass only parts of the banking industry. Whether the effectiveness of committee independence can be generalized and applied to other industries or to all countries can be reexamined. Those issues are left for future research.

Based on the positive relationship between committee independence and firm performance during the crisis, financial institutions are supposed to enhance board independence, particularly for their auditing and risk committees. During this current post-crisis period, the authorities should actively respond to governance practices by enhancing regulation compliance. Currently, for example, the regulations on risk management are weak, and the requirements put upon financial firms are not severely enforced. Policy makers should reexamine the role and the authority of independent directors to enhance their monitoring power and disciplining practices, which would further reduce excessive risk-taking behaviors, particularly for the banking industry which profits from risk-bearing earnings. Although weak shareholder protection practices and concentrated shareholdings are prevalent in civil law countries, independent

directors can actively adapt to the governance environment to monitor their banking business, thereby improving firm-level governance practices and crisis-period performance.

Related extensions for future research can explore other qualitative variables and interest alignment. There are other financial, organizational, operational, or strategic methods through which independent directors can help improve financial institution performance. Those potential mechanisms provide different perspectives to answer the question of how performance is influenced by director independence. The directorship market or the shares owned by independent directors are potential perspectives to understand these mechanisms. Therefore, one reasonable research question would be whether the interests of independent directors in financial institutions are aligned with shareholders (shareholders or debt holders).

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NOTES

1. Excessive risk is defined as the risk to which the degree is in excess of the one that the financial institution is capable of bearing for its operations and business.
2. Committee independence is defined as the degree of situation in which directors are free of any material conflict of interest or any potential managerial power. In our study, committee independence is measured as the proportion of independent directors on the board committee. An independent director is defined as an outside non-executive director who is not positioned as the employer in this company, is not related to any key employees, is independent from senior management, and has never worked at the company or any of its subsidiaries, consultants, major suppliers, or customers (Hooghiemstra & van Manen, 2004; Ajinkya, Bhojraj, & Sengupta, 2005; Anderson, Mansi, & Reeb, 2004; Dulewicz & Herbert, 2004; Ertugrul & Hegde, 2008; Kang, Cheng, & Gray, 2007; Ravina & Sapienza, 2010).
3. Baysinger and Butler 1985; Byrd and Hickman 1992a, 1992b; Rosenstein and Wyatt, 1990; Black, Jang, and Kim 2006; Brickley, Coles, and Jarrell 1997; Callahan, Miller, and Schilman 2003; Choe and Lee 2003; Choi et al. 2007; Chung, Wright, and Kedia 2003; Coles, Daniel, and Naveen 2008; Cornett, Marcus, and Tehranian 2008; Fich 2005; Ghosh and Sirmans 2003; Hossain et al. 2000; Kaplan and Minton 1994; Lefort and Urzua 2008; Luan and Tang 2007; Mishra and Nielsen 2000; Morck and Nakamura 1994; Oxelheim and Randøy 2003; Pearce and Zahra 1992; Ravina and Sapienza 2010; Yermack 1996.
4. Bathala and Rao 1995; Baysinger and Butler 1985; Bhagat and Black 1997, 2002; Buchholtz and Ribbens 1994; Clarke 2006; Dalton, Daily, Ellstrand, and Johnson 1998; Gilson and Kraakman 1991; Hermalin and Weisbach 1991; Hermalin and Weisbach 2003; Klein 1998; Mehran 1995; Peng 2004; Yermack 1996.
5. Agrawal and Knoeber 1996; Beatty and Zajac 1994; Bhagat and Black 2002; Chhaochharia and Grinstein 2007; Dalton et al. 1998; Hermalin and Weisbach 2003; Klein 1998; Laing and Weir 1999; Prevost, Rao, and Hossain 2002; Vafeas and Theodorou 1998; Yermack 1996.

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Yin-Hua Yeh is Commissioner at the Financial Supervisory Commission and Professor of the Graduate Institute of Finance at Fu-Jen Catholic University, Taiwan. He obtained his Ph.D. in management from the National Taiwan University. His primary research interests include corporate governance, corporate finance, and mergers and acquisitions. He is the Reviewing Editor of *Corporate Governance: An International Review*.

Huimin Chung is Director of the Executive MBA Program and Professor of the Graduate Institute of Finance at National Chiao Tung University, Taiwan. He obtained his Ph.D. in economics from Michigan State University. His primary research interests include corporate governance, financial economics, and derivatives. He is the Associate Editor of *Corporate Governance: An International Review*.

Chih-Liang Liu is Assistant Professor of Department of Finance at National Yunlin University of Science and Technology, Taiwan. He obtained his Ph.D. in management from the National Chiao Tung University. His primary research interests include corporate governance, risk management, and financial institutions.