The financial crisis as a wake-up call: corporate governance and bank performance in an emerging economy

Nurlan Orazalin and Monowar Mahmood

Abstract

Purpose – *This paper aims to investigate the effects of different sets of corporate governance (CG) practices on bank performance before, during and after the financial crisis. The study proposes some policy measures for improved CG practices to protect banks from the detrimental effects of future financial crises and economic meltdowns in the context of emerging markets such as Kazakhstan.*

Design/methodology/approach – *The study analyses data from all commercial banks listed in Kazakhstan Stock Exchange for the pre-economic crisis, during the crisis and after the economic crisis periods. The study uses the panel regression model to control unobserved time-constant heterogeneity.*

Findings – *The study found that better CG practices led to better operating performance of the banks after the financial crisis periods. The changes in CG codes, board structures, disclosure requirements and board members' competencies over time had a significant influence on CG practices and subsequently improved operating performance of the banks.*

Originality/value – *This is one of the first studies to examine the effects of CG practices on bank performance in central Asian transition economies, which are still heavily influenced by Soviet heritage and legacy.*

Keywords *Kazakhstan, Financial crisis, Emerging economies, Bank performance, Corporate governance reforms*

Paper type *Research paper*

Nurlan Orazalin and Monowar Mahmood are both based at Bang College of Business, KIMEP University, Almaty, Kazakhstan.

1. Introduction

This paper investigates the effects of corporate governance (CG) practices on bank performance in Kazakhstan before, during and after the recent financial crisis. The impact of CG on accounting and market performance is still a subject of debate in the academic literature. Prior studies on the relationship between CG practices and firm performance have provided mixed results. Al-Hussein and Johnson (2009), Gompers *et al.* (2003), Jackling and Johl (2009), Orazalin *et al.* (2016) and Wang *et al.* (2012) provide evidence that effective CG leads to better firm performance. Other studies, across a range of market settings, provide no conclusive evidence that better CG improves firm performance (Bhagat and Bolton, 2008; Core *et al.*, 2006). This indicates that global investors still remain skeptical about the strong and positive association between CG and performance measurements.

The relationships between CG practices and organizational performance in developed capitalist countries with stable economic conditions are well-documented in research (De Haan and Vlahu, 2016; Wang *et al.*, 2012). However, in transition economies, where governments frequently initiate institutional reforms to improve CG measures, the effects of different sets of CG practices on organizational performance in times of economic uncertainties and financial crises have not been incontestably validated to date (Haß *et al.*, 2016; Liu *et al.*, 2012). A dearth

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of credible research in transition economies hinders CG reforms, and governments and policymakers in transition countries are looking for more empirical research to develop appropriate GC practices to prevent the detrimental effects of financial crises and economic meltdowns (Black *et al.*, 2014; Khan *et al.*, 2013). Within the backdrop of research on CG practices in transition economies, this paper investigates the effects of different sets of CG practices on bank performance in the pre-crisis (2004-2006), during-the-crisis (2007-2009) and the post-crisis (2010-2012) periods in a post-communist transition economy, i.e. Kazakhstan.

The present study focuses primarily on internal CG practices such as board composition, ownership structure, corporate disclosures and executive education and examines their effects on bank performance before, during and after the financial crisis in the context of Kazakhstan. External macro-economic factors are constantly changing in emerging markets and are difficult to manage at a bank-level. Thus, to investigate the impact of CG on bank performance in Kazakhstan, we assess the effectiveness of changes in internal aspects of CG, which are influenced by primary stakeholders and internal bank-specific factors.

Since gaining independence in 1991, Kazakhstan has been in transitional change from a traditional planned economy to a market economy, carrying out large-scale privatization and financial market reforms. Being among the world's top oil and gas producers, Kazakhstan is the ninth largest country in the world and the largest of all the landlocked nations by its territory, though its population density is amongst the lowest (approximately 6 people/km^2 with an estimated 17 million people as of 2015). Over the past two decades, Kazakhstan has attracted over $130bn of investments, and it is currently regarded as one of the most attractive countries in the Commonwealth of Independent States (CIS) region for foreign investors. The banking sector of Kazakhstan is significantly different from those of other CIS and Asian countries due to the country's geographical, social and economic characteristics. It has a two-tier system whereby The National Bank of Kazakhstan (NBK), as the central bank of Kazakhstan, represents the first tier and all other commercial and investment banks represent the second tier. Banks play a significant role in the financial system of Kazakhstan and account for approximately 77 per cent of all financial system assets and 44 per cent of gross domestic product (GDP) as of December 31, 2012.

The government promulgated the law on banks and the banking system in Kazakhstan in January 1996, which provided specific guidelines for bank supervision. From the very beginning, the banking industry of Kazakhstan has operated under strict regulations and close supervision of the NBK. Commercial banks are not allowed to deal with equity and securities' markets, while investment banks are prohibited from retail banking services. Banks in Kazakhstan had been obliged to follow the Basle G10 norm since 1996. The NBK also initiated other regulatory measures on liquidity, lending limits, loan portfolio classification, insider transactions, internal audit system, as well as minimum reserve requirements. However, after the financial crisis of 2007-2009, the banking industry has undergone significant changes. The NBK initiated different measures to improve the situation, including provisions local and foreign ownerships, board memberships, reporting practices, loan portfolio classifications and adjustment of non-performing loans. The immediate response from the government side was important to stabilize the national financial system and support a quick recovery from the crisis. By the end of 2008, the government had injected approximately US$5bn into four of the major banks of Kazakhstan (Prodengi, 2010). Another important financial support from the government side was refinancing mortgage loans. To refinance high-interest loans with low-interest loans, the government spent 145 billion tenge or approximately US$1bn in 2009 (Prodengi, 2010).

Other measures to stabilize the national financial system included the introduction of banking mechanisms focusing on creating provisions, increasing equity capital and reserves and improving liquidity in growth periods and using them in recession periods

(Kalyuzhnova and Nygaard, 2011). As a result of reforms, signs of stabilization in the banking sector started appearing in the first half of 2010. At the end of June 2010, the total amount of assets of all commercial banks decreased by only 3.1 per cent in nominal terms. In 2011, the total assets of the banking sector increased by 5.9 per cent. By the beginning of 2012, the average amount of total assets in Kazakh banks amounted to US$2.3bn, which is substantially higher than US$1.3bn in Russia and US$1.0bn in Belarus, thereby indicating that Kazakhstan is taking a leading position among the CIS countries in terms of average bank size.

Like CG systems of other central Asian countries, the CG model of Kazakhstan is still at the infant level (Johannesson *et al.*, 2012). A lack of standards of practices, poor law enforcement capabilities, distorted or inaccurate stock market information, a lack of qualified CG professionals, etc. could be reasons for such governance conditions. However, the country needs to improve CG practices to ensure transparency and accountability of the board members and the top executives and, ultimately, to improve organizational performance and efficiency. Johannesson *et al.* (2012) conclude that Kazakhstan needs to improve CG practices to attract more international investors to a relatively risky environment. Developing better governance practices will enhance investors' trust in both privately and publicly listed companies, improve the reputation of Kazakhstan as a country that runs businesses fairly and provide a good governance indicator. However, none of the previous studies provides empirical evidence as to whether CG improves bank performance in the context of Kazakhstan. Therefore, this study attempts to determine whether CG practices affect bank performance in transition economies, such as Kazakhstan's.

The study contributes to CG literature in several ways. First, to the best of our knowledge, this study describes the first attempt to examine the effects of CG practices on bank performance in any central Asian transition economies, which are still heavily influenced by Soviet heritage and legacy. Second, the study will contribute to the existing literature by providing empirical evidence of the effects of CG on bank performance in different time periods, i.e. before and after the financial crises. Only several previous studies in developed markets focused on governance–performance relationships in different time periods (Minichilli *et al.*, 2016; Peni and Vähämaa, 2012; Saghi-Zedek and Tarazi, 2014). Finally, most prior studies have focused on accounting performance measures, mostly on return on assets (ROA) and return on equity (ROE) ratios (Aebi *et al.*, 2012; Akhigbe *et al.*, 2017; Grove *et al.*, 2011; Larcker *et al.*, 2007). This study extends the current literature by including other key operating performance indicators, such as growth, liquidity, management quality and capital adequacy attributes.

The paper is organized in the following way. Section 2 narrates earlier research findings and related literature and justifies the rationale of the current research. Section 3 describes the data and research methods used. Section 4 discusses the empirical results, and finally, Section 5 summarizes and concludes the paper.

2. Theoretical background, literature review and hypotheses development

Macey and O'Hara (2003) argue that a broader view of CG should be adopted for banking institutions because of specific contractual forms of bank activities, and therefore, CG mechanisms for banks should encapsulate depositors as well as shareholders. Arun and Turner (2004) support this notion and suggest that the unique nature of banking institutions requires not only a broader view of CG but also government intervention to control the behavior of bank management. They also assert that the special nature of banking institutions is such that regulation is necessary to protect depositors and the whole financial system in general. Claessens and Yurtoglu (2013) argue that better CG adds to the organization and more broadly to all stakeholders through more efficient managerial mechanisms, better ownership structures, better resources allocation, better labor policies

and other efficiency improvements. The Basel Committee on Banking Supervision (BCBS, 2010) promotes sound CG practices for banking organizations and provides suggestions for enhancing CG in terms of board practices, senior management, risk management and internal controls, compensation, complex or opaque corporate structures and disclosure and transparency. Considering these definitions, a good CG could be defined as a set of systems, policies, procedures, processes and practices through which banks possess positive relationships with all stakeholders and exercise relevant power in managing assets and resources to maximize their contribution to the overall economy, together with improved accountability, optimal use of scarce resources and effective internal control system. Prior studies suggest that financial institutions with better CG mechanisms in terms of board characteristics, board-level committees, the role of multiple shareholders, executives' qualification, internal control system and corporate disclosure practices, all of which characterize good CG, yield better performance over time (Liang *et al.*, 2013; Orazalin *et al.*, 2016; Peni and Vähämaa, 2012; Saghi-Zedek and Tarazi, 2014; Wang *et al.*, 2012).

The premise of this study is based on the resource-based theory of firms or corporations (Barney, 1991). As noted by Wernerfelt (1984), economic resources possessed by a firm are the main determinants of its performance and therefore may contribute to the competitiveness and development of the firm. However, resources are heterogeneous in nature and inefficient without proper management and effective CG mechanisms (Barney, 2001). From the resource-based theory perspective, CG, as a set of formal and informal rules, regulations, policies, practices and mechanisms, could become a source of competitive advantage for any organization (Barney, 2001; Barney *et al.*, 2011; Wernerfelt, 1984). In other words, developing effective CG mechanisms is critical in developing a firm's sustainable competitive advantage and in improving its performance (James and Joseph, 2015). Therefore, we assume that banks with a higher CG index (CGI) develop comparatively better capabilities to use tangible and intangible resources and consequently could yield higher operating performance in the long run.

The theory further postulates that larger boards with a greater number of independent directors and efficient monitoring mechanisms accumulate new and more diversified resources in terms of knowledge and skills (Barney, 1991). These resources improve CG practices and consequently lead to better firm performance (Gupta *et al.*, 2013). Therefore, the board of directors plays a crucial role in achieving sustainable competitive advantage through effective CG practices. Using the resource-based view, Jermias and Gani (2014) conclude that improved board characteristics positively affect firm performance. Other studies using the resource dependence theory also conclude that highly qualified board members have a positive impact on the quality of managerial decisions and consequently improve firm performance (Hillman and Dalziel, 2003; Rosenstein and Wyatt, 1994).

Shareholders, as owners of business organizations, have a direct influence on the board of directors, top managers and other decision-makers and ultimately on firm performance (Lim *et al.*, 2014; Shahwan, 2015). Prior studies provide evidence that effective ownership structures in terms of managerial ownership, foreign ownership, state ownership and other forms of ownership improve CG practices and ultimately lead to better corporate performance (Hossain *et al.*, 2013; Orazalin *et al.*, 2016; Patibandla, 2006). For example, foreign investors bring new resources including knowledge and modern technology, enhance CG mechanisms, ensure better supervision and subsequently improve bank performance (Liang *et al.*, 2013). As suggested by Arun and Turner (2004), the increased competition resulting from the entrance of foreign banks improves CG practices of developing economy banks.

From the resource-based theory perspective, managerial skills, abilities and the competencies of executives would be channeled to making and implementing effective decisions (Agyemang and Castellini, 2015). Chief executive officers (CEOs) should have sufficient professional skills, relevant industry background, appropriate business

knowledge and other essential competencies to take the business forward (Yeh *et al.*, 2014). As argued by Barney (1991), CEOs with high levels of qualification, knowledge and skills could be essential sources of sustainable competitive advantage and ultimately improve firm performance. Jackling and Johl (2009) reveal that highly qualified CEOs improve internal control, corporate disclosure practices, strategic planning, risk management and policy execution in different areas of management and consequently lead to better performance.

Earlier research revealed that capitalist economies have learned from financial crises over time and subsequently reformed their CG practices to ensure sustainable economic growth and development (Siepel and Nightingale, 2014). However, most of the earlier research focused on the effects of different individual dimensions of CG practices on firm performance, and relatively less research was conducted using an integrated CGI to assess the impact of CG on organizational performance. Ho (2005) notes that investigating the effect of CG practices based on single or individual dimensions may not fully capture the aggregate effect of CG, and suggests constructing a composite CGI to investigate the effect of CG practices on bank performance. Gompers *et al.* (2003) are among the first to explore the relationship between CG and firm performance using a composite CGI. Using a sample of 1,500 large US listed firms during the period from 1990 to 1998, Gompers *et al.* (2003) report that a CGI is positively associated with firm value and long-term stock returns. Similarly, for the US market, Bebchuk *et al.* (2009) reported that better CG leads to greater share returns and higher firm value. Other US studies by Brown and Caylor (2006), Chhaochharia and Grinstein (2007) and Gillan *et al.* (2003) provide supporting evidence for the results of Gompers *et al.* (2003). Padgett and Shabbir (2005) report that a better CGI is positively associated with firm financial performance in the UK market. However, in contrast to the previously noted studies, Core *et al.* (2006) and Bhagat and Bolton (2008), using a sample of US listed firms found no significant relationship between a composite CGI and market performance. Similarly, Arcot and Bruno (2007), using a composite CGI of non-compliance governance issues for 245 UK listed firms, conclude that effective CG does not necessarily always lead to superior firm performance.

In cases of developing markets and emerging economies, most studies find a positive relationship between CG indices and firm performance. For the Australian market, Henry (2008) examines the CG practices of 116 Australian listed firms and finds a positive link between CGI and firm value. Using data of listed firms in the Gulf Cooperative Council region, Abdallah and Ismail (2017) provide evidence that better CG is positively related to firm performance. Similarly, Garay and González (2008) also confirm that firms with stronger CG outperform those with weaker CG practices in Venezuela. In cases of CG practices in banks, most prior studies report that a higher composite CGI has a positive effect on bank performance. For example, Al-Hussein and Johnson (2009) investigate the effects of CG on the performance of Saudi banks. They found that efficient CG structure is positively related to bank performance. Similarly, Ngerebo and Yellowe (2012), using a sample of Nigerian commercial banks, revealed that CG practices have a positive effect on customers' patronage of banking activities and bank performance. Chitan (2012) finds that the influence of external CG mechanisms on bank performance is different from the influence on bank development and suggests the need for better CG practices to improve the performance of Romanian banks. Wang *et al.* (2012) conclude that effective CG has a positive effect on the operating performance of US bank holding companies. Similarly, Zagorchev and Gao (2015) provide empirical evidence that better CG mechanisms reduce excessive risk-taking and improve the performance of US financial institutions. However, in contrast to these studies, Hassan Al Tamimi (2012) finds an insignificant positive relationship between CG and performance for the UAE national banks. Furthermore, the author concludes that there is a positive relationship between CG practices and financial distress. Based on the resource-based theory and findings of most prior studies, we expect that substantial legal and regulatory reforms implemented to improve CG practices in the

banking industry of Kazakhstan will lead to better bank performance. Therefore, the following hypothesis is formulated:

H1. Better CG practices lead to higher operating performances of banks in Kazakhstan in pre-crisis, during-the-crisis and post-crisis periods.

According to the resource-based theory, business organizations must continuously acquire, update, replace and develop their resources to maintain sustainable development growth and stay competitive in more complex and ever-changing environments (Wernerfelt, 1984). Williams and Nguyen (2005) argue that changes in bank governance during financial deregulation, economic crisis and substantial bank restructuring lead to superior efficiency and better financial stability. Using a sample of large US banks, Peni and Vähämaa (2012) suggest that better CG practices do not create shareholder value during financial crises, but provide higher stock returns after the crises. Similarly, Orazalin *et al.* (2016) reveal that substantial changes and reforms to improve CG models and practices in response to the financial crisis of 2007-2008 did not generate higher shareholder value during the crisis, but led to better bank performance in the Russian context. Saghi-Zedek and Tarazi (2014), using data of commercial banks in 17 western European countries, provide evidence that CG practices in terms of ownership structure affect bank profitability differently during normal times and distress times. Based on the above-mentioned prior studies and the essence of resource-based theory, it is assumed that recent changes in CG practices and further amendments to relevant laws and CG codes, especially during-the-crisis and post-crisis periods, would improve internal CG mechanisms and have a varying effect on the performance of Kazakh banks before, during and after the financial crisis. Thus, the following hypothesis is constructed:

H2. The changes and improvements in CG practices of Kazakh banks over time have a varying effect on operating performances in pre-crisis, during–the-crisis and post-crisis periods.

3. Data and methodology

3.1 Sample selection

The data of the study were collected from all 38 commercial banks operating in Kazakhstan and listed on Kazakhstan Stock Exchange as of December 31, 2012. After eliminating potential outliers by dropping 1 percentile from both tails, a final sample consists of a total of 271 observations for the period from 2004 to 2012. The data concerning CG mechanisms were manually collected from different sources such as annual reports and investment memorandums that are available on bank websites. The data on operating performance were obtained from audited financial statements downloaded from the banks' corporate websites and statistical bulletins available on the website of NBK (www.nationalbank.kz).

We aim to investigate the effect of CG practices on the performance of Kazakh banks and more specifically how this effect differs in the crisis, during-the-crisis and the post-crisis periods. Therefore, we separate the data into three groups, the pre-crisis (2004-2006), during-the-crisis (2007-2009) and the post-crisis (2010-2012) periods, to examine the impacts of CG on bank performance in three different periods for comparative purposes. In Kazakhstan, the first signs of the financial crisis appeared in 2007 (Prodengi, 2010). The average loan to deposit ratio of commercial banks increased up to 198 per cent by the end of 2007, and the inflation rate unexpectedly jumped from 7.6 per cent in May 2007 to 18.8 per cent in December of the same year (Prodengi, 2010). According to Kazakhstan's GDP statistics for the period 2004-2012 (World Bank, 2017), 2009 was the worst year in the entire period in terms of real growth rates (1.2 per cent in 2009 compared to 3.3 per cent in 2008, and 7.3 per cent and 7.4 per cent in 2010 and 2012, respectively). As mentioned earlier, as a result of reforms, anti-crisis measures and rescue packages from the government to stabilize the national financial system and support a quick recovery from the crisis, the first

signs of stabilization in the banking sector of Kazakhstan appeared in the first half of 2010 (Prodengi, 2010). We hence define the 2007-2009 period as the financial crisis years and the 2010-2012 period as the post-crisis years.

3.2 Operating performance variables constructs

The operating performance is measured based on financial indicators used by Wang *et al.* (2012), which includes variables such as capture capital adequacy, asset quality, management, earnings and liquidity characteristics. Capital adequacy (CAPAD) is measured using the ratio of total equity to total assets. A higher ratio indicates that a bank has a greater ability to absorb unexpected capital losses. Asset quality (GROWTH) is measured as the annual asset growth ratio, which captures the ability of a bank to expand its business activities. Management quality is used to determine the managerial efficiency of banks, adhering with regulatory compliance and maintaining effective internal control systems and prudential practices. The net interest income ratio (NIM) is used to measure management quality. This ratio is measured as the total net annual interest income to the average bank earning assets. A higher ratio reflects better management quality and, therefore, better operating performance. To measure earnings, we apply the ROA and ROE ratios. Higher ratios indicate the effective and efficient use of a firm's assets in maximizing shareholders' value, and therefore, a positive relation between earnings and CG is expected. ROA is calculated as net profit over total assets and shows how efficiently a bank is using its assets in generating profits. ROE is calculated by using net profit to net equity and provides a good measure of operational performance in terms of earnings. To measure liquidity, we use the loan-to-assets ratio (LOAN1) and loans-to-deposits ratio (LOAN2). High liquidity ratios indicate that a bank is loaned up, which increases the likelihood of defaults.

3.3 Composite corporate governance index constructs

To calculate a composite CGI, we follow Brown *et al.* (2011), Brown and Caylor (2006), Garay and González (2008) and Gompers *et al.* (2003) to construct the composite CGI with a focus on internal CG mechanisms. Bozec and Bozec (2011) mentioned that self-constructed indexes based on binary coding are less subjective and useful in providing a better measure of CG than existing commercial CG scores. Based on provisions applied by Brown and Caylor (2006) and Garay and González (2008), we identify ten specific provisions that are applicable to the Kazakh setting. Each of these provisions is then addressed based on publicly available information and assigned a value of 1 or 0, depending on the presence or absence of the particular practice. Then, we scale each sub-index to run from 0 to 100 and compute the CGI as an average of the individual sub-index scores. Therefore, a composite CGI for each bank ranges from 0 to 100. High CGI scores indicate strong CG practices, whereas low scores indicate weak CG practices.

3.4 Core corporate governance provisions

We construct a composite CGI for each bank based on equally weighted internal CG dimensions (corporate disclosure, board characteristics, ownership structures and executive education) that include ten provisions. Corporate disclosure practices of sampling banks include:

- the use of international accounting standards (e.g. International Financial Reporting Standards, IFRS);
- the use of recognized external auditors; and
- the disclosure of information on CSR.

The early adoption of IFRS in Kazakhstan was implemented first by financial institutions starting from 2003. However, there were delays with the actual date of transition to IFRS due to the lack of qualified accounting specialists, the absence of training centers and the resistance of banks to switch to new standards. Given that the adoption of IFRS improves transparency, comparability and credibility of corporate disclosures, a value of 1 is assigned if the bank reports public information under IFRS. The use of large audit firms such as the Big 4 also leads to transparent and reliable corporate disclosure practices through high quality of assurance services. Therefore, a value of 1 is assigned if the bank's financial statements are audited by firms such as Big 4. It is apparent that CSR reporting plays a significant role in mitigating information asymmetry, reducing agency problems and lowering the cost of capital through effective CG structures. Hence, a value of 1 is assigned depending on the presence of CRS reporting.

Board characteristics include three provisions, namely:

1. the number of directors on the board;
2. the number of independent directors; and
3. the presence of board committees.

Though European countries have significant variations in banks' board size (De Haan and Vlahu, 2016), Institutional Shareholder Services (ISS) recommends that optimal board size should contain at least 5, but not more than 15 members. As the CG Code of Kazakhstan was developed based on the Organisation for Economic Co-operation and Development and other international organizations' guidelines, this study considers the ISS recommendation as providing a basis for the optimal board size for Kazakh banks. Hence, a value of 1 is assigned if the board size is between 5 and 15 directors. According to recent CG models adopted in Kazakhstan, at least 30 per cent of the board should comprise independent directors. Therefore, a value of 1 is assigned if independent directors of each bank represent at least one third of the board. Minimally accepted CG standards based on the ISS guidelines also require public companies to establish monitoring committees such as appointment, compensation, development or auditing committees.

The ownership structure consists of three ownership characteristics, namely:

1. management ownership;
2. foreign ownership; and
3. government ownership.

Management ownership provision is assigned a value of 1 if directors and officers hold shares. It is assumed that managers with higher ownership stakes are motivated and, therefore, have more incentives to improve bank performance. Foreign ownership measures whether foreign investors hold bank ownership, and a value of 1 is assigned if foreign ownership is present. It is assumed that foreign investors bring effective CG practices to improve bank performance. Government ownership is another feature of the Kazakh business environment. According to IAS 28 ("Investments in Associated and Joint Ventures"), if an investor holds at least 20 per cent of ownership, then it is presumed that the investor has significant influence over activities of an investee. In other words, significant influence, control and substantial state support from the government side lead to better bank performance. Ang and Ding (2006) reported that state-owned firms in Singapore had higher market valuations and better performance than non-state firms. Similarly, Hossain *et al.* (2013) concluded that state ownership of banks in the Asia-Pacific region helped avoid sharp losses and supported quick recovery during financial crises. Therefore, the provision takes a value of 1 if the government holds at least 20 per cent of ownership in the bank.

The executive education consists of a specific provision pertaining to qualifications of executives. It is assumed that highly educated executives holding prestigious business degrees or professional certificates implement effective CG practices, which, in turn, have a positive impact on performance. In other words, business and leadership skills play important roles in the development of good CG practices. Hence, a value of 1 is assigned if executives hold prestigious business degrees or professional certificates. Definitions of individual CG attributes are shown in Table I.

3.5 Control variables

Based on prior studies (Dietrich and Wanzenried, 2011; Orazalin *et al.*, 2016; Pasiouras and Kosmidou, 2007), we incorporate bank size and bank age in our analyses as control variables to examine the potentially confounding effects of bank-specific characteristics. First, to control for the effects of bank size, the natural logarithm of total assets (SIZE) is included in the model. Prior studies provide evidence that bank size is positively related to bank performance (Pasiouras and Kosmidou, 2007; Saeed, 2014). This positive association can be explained by the fact that larger banks have a higher degree of loan and product diversification than smaller banks due to economies of scale and scope that affect bank performance (Molyneux and Thornton, 1992; Goddard *et al.*, 2004). Bank age (AGE) is also controlled and measured as the number of years since the foundation of the banks. Older and more established banks might enjoy advantages, such as learning effect and a

Table I Core CG structures

N	*Questions*	*Based on*
	Corporate disclosure	
1	Does the bank use international accounting standards? Required by Generally Accepted Auditing Standards	Garay and González (2008), Brown and Caylor (2006)
2	Does the bank use any recognized auditing firm? Required by the Generally Accepted Auditing Standards	Garay and González (2008), Brown and Caylor (2006)
3	Does the bank disclose, in any form whatsoever, information on Corporate Social Responsibility?	Garay and González (2008), Brown and Caylor (2006)
	Board of Directors	
4	Is the board of directors comprised of at least five but not more than 15 members, as per recommendation of good international CG practices?	Garay and González (2008), Brown and Caylor (2006), ISS Governance Standards
5	Is the board controlled by at least 30% independent directors?	Unique to Kazakhstan
6	Does the bank have monitoring committees, such as appointment or compensation or auditing committees, or all of these?	Garay and González (2008), Brown and Caylor (2006)
	Ownership structure	
7	Do directors and officers with more than one year of service own stock?	Garay and González (2008), Brown and Caylor (2006)
8	Does the Government hold at least 20 per cent of ownership in the bank? According to IAS 28 ("Investments in Associated and Joint Ventures"), if an investor holds at least 20% of ownership, then it is presumed that an investor has significant influence over activities of an investee. In other words, significant influence, control, and substantial state support from the government side lead to better performance	Unique to Kazakhstan
9	Do any foreign investors hold ownership in the bank?	Garay and González (2008), Brown and Caylor (2006)
	Executive education	
10	Does the CEO hold MBA diploma or equivalent degrees from accredited University or any other professional qualifications?	Garay and González (2008), Brown and Caylor (2006)

Notes: These provisions are answered for each of the sampling banks of Kazakhstan for the period of 2004-2012 to determine for each bank its key CG dimensions, including corporate disclosure, board characteristics, ownership structures and executive education. Then, these provisions are used to calculate the CGI for each sampling bank. Each of these provisions is answered based on publicly available information and assigned a value of 1 or 0 (binary scale), depending on the presence or absence of a particular practice

broader client base, over relative newcomers (Dietrich and Wanzenried, 2011). Table II summarizes the definitions and measurements of all the variables.

3.6 The model of the study

Because we use panel data, it was possible to control omitted variables by observing changes in the dependent variables over time, thereby reducing heterogeneity. Therefore, the following panel regression model is used:

$$BANK\ PERFORMANCE_{it} = \alpha_0 + \beta_1(CGI_{it}) + \beta_2(AGE_{it}) + \beta_3(SIZE_{it}) + \varepsilon_{it}$$

where:

$BANK\ PERFORMANCE_{it}$: the operating performance measures of bank i at time t including capital adequacy *(CAPAD)*, growth *(GROWTH)*, net interest margin *(NIM)*, return on assets *(ROA)*, return on equity *(ROE)*, loan to assets *(LOAN1)* and loan to deposits *(LOAN2)*.

CGI_{it} = the CGI constructed based on internal CG dimensions.

AGE_{it} = the bank's age.

$SIZE_{it}$ = the bank's size.

α_0 = unobserved heterogeneity term.

ε_{it} = specific error term.

We perform the Hausman specification test to examine the equivalence of the fixed-effects (FE) and random-effects (RE) coefficients. The results of the Hausman test show that the difference between FE and RE coefficients is significant for most analyses, thus indicating that estimated FE coefficients are relevant for our longitudinal data set. We present both FE and RE regression results for comparative purposes.

Table II Research variables definition/measurement

Variables	*Acronym*	*Operationalization*
Dependent variables		
Capital reserve ratio (%)	CAPAD	Total capital divided by total assets
Annual asset growth ratio (%)	GROWTH	(Total assets in Year 2 – total assets in 1)/total asset in Year 1
Net interest income ratio (%)	NIM	Net interest income divided by average interest earning assets
Return on Assets (%)	ROA	Earnings after tax divided by total assets of the bank
Return on Equity (%)	ROE	Earnings after tax divided by total equity of the bank
Total loans ratio (%)	LOAN1	Total loans divided by total assets
Loan to deposit ratio (%)	LOAN 2	Total loans divided by total deposits
Independent Variables		
Corporate Governance Index	CGI	The average of CGI from scaled internal CG dimensions. A composite CGI for each bank ranges from 0 to 100
Control variables		
Bank size	SIZE	Natural log of total assets of the bank
Bank Age	AGE	Number of years since foundation of the bank

Notes: The dependent variables of this study are based on the operating performance used by Wang *et al.* (2012) to measure the operating performance of the sampling banks before, during, and after financial crisis periods. The model evaluates seven output performance variables using the five criteria: capital adequacy, asset quality, management quality, earnings and liquidity. The independent variable is the CGI for each sampling bank. The control variables used in this study include bank size and bank age

4. Findings and analysis

Table III presents the descriptive statistics for the operating performance variables in each period. As shown in Panel A, the mean value of capital adequacy is 31.14 per cent and ranges from −14.90 to 93.26 per cent. The Wilcoxon rank sum test shows that mean value of CAPAD is not significantly different from the mean value of 31.52 per cent during the crisis period. The minimum negative values of −14.90 per cent and −46.59 per cent post-crisis and during the crisis, respectively, indicate that the financial crisis had a negative effect on the capital structure of major commercial banks.

The mean value of the growth is 41.52 per cent and varies between −32.11 and 319.55 per cent in the post-crisis period. The Wilcoxon test shows that it is significantly different from the mean value of 36.05 per cent in the during-the-crisis period, indicating that asset quality of Kazakh banks improved in the post-crisis period. The mean value of 60.41 per cent in the pre-crisis period is higher than the mean value of growth of the during-the-crisis period, thereby indicating lower asset quality in the banking sector of Kazakhstan during the financial turmoil. The NIM ratio ranges from −8.92 to 23.85 per cent, with a mean value of 5.89 per cent and a standard deviation of 4.57 per cent from 2010 through 2012. The Wilcoxon test shows that the mean value of NIM in the post-crisis period is significantly higher than the mean value during the crisis, which indicates that the managerial efficiency of Kazakh banks' performances improved after the crisis.

The mean ROA of 0.76 per cent and the mean ROE of 3.71 per cent during the crisis are significantly lower than the mean values of ROA and ROE in both the pre-crisis and the post-crisis periods. This means that the profitability of Kazakh banks declined during the crisis and improved after the crisis. The loan-to-deposit ratio has a mean of 121.92 per cent and ranges from 15.13 to 616.13 per cent during the crisis. This is significantly higher than the mean value of 113.19 per cent in the post-crisis period. The mean value of the loan-to-asset ratio is 51.63 per cent and varies between 10.05 and 90.98 per cent during the crisis. This is slightly higher the mean value in the post-crisis period. These results demonstrate weaker liquidity in the banking sector of Kazakhstan during the crisis. In general, summary statistics show that the economic turmoil of 2007-2008 had a negative effect on the operating performance of commercial banks in Kazakhstan. This is consistent with the results of Peni and Vähämaa (2012) and Wang *et al.* (2012), who concluded that the accounting performances of US banks was severely affected during the crisis.

Table IV, Panels A-C present the descriptive statistics for CGI and control variables in each period. The mean values for CGI are 67.11, 62.80 and 67.45 after, during and before the crisis periods, respectively. The Wilcoxon test shows significant differences in mean values of post- and during-crisis periods, and during- and pre-crisis periods. These results demonstrate that CG practices of the sampled banks weakened during the crisis and again improved in the post-crisis period. There are hardly any differences between the mean values and the median values in all periods. However, the standard deviations of 17.71 in the post-crisis, 19.28 during-the-crisis and 12.19 in the pre-crisis periods demonstrate that CGI varies greatly across Kazakh banks at the individual level. Overall, the descriptive statistics for CGI support our initial hypothesis that CG practices of banks in the post-crisis period are different from those of the pre-crisis and during-the-crisis periods. The SIZE variable has a mean value of $2.123bn and ranges from $0.018 to $17.02bn in the post-crisis period. In general, the reported statistics for the SIZE variable demonstrate that the economic resources of Kazakh banks increased significantly from the pre-crisis period to the period during the crisis, but again decreased in the post-crisis period. This sharp decrease in asset values after the crisis can be explained by two factors. First, the financial crisis had a negative effect on the financial position of Kazakh banks, substantially shrinking their economic resources. Second, the tenge devaluation by more than 20 per cent that took place in 2009 increased the already-high refinancing risks of the financial system and

Table III Descriptive statistics on operating performance of Kazakh banks

	Capital adequacy	*Asset quality*	*Management*	*Earnings*		*Liquidity*	
	CAPAD (%)	*GROWTH (%)*	*NIM (%)*	*ROA (%)*	*ROE (%)*	*LOAN1 (%)*	*LOAN2 (%)*
Panel A: operating performance of Kazakh banks during the period from 2010 through 2012 (post-crisis)							
N = 111							
Mean	31.140	41.526	5.891	1.102	7.925	49.872	113.199
SD	26.219	61.556	4.579	2.917	16.281	20.928	92.087
Median	20.130	18.960	4.450	1.090	2.965	52.74	92.315
Minimum	−14.90	−32.11	−8.92	−9.16	−38.16	8.34	13.73
Maximum	93.26	319.55	23.85	13.73	93.95	86.99	492.64
Differences in means of post- and during-crisis periods	0.168	0.004**	0.005***	0.021**	0.000***	0.088*	0.000***
p-value							
Panel B: operating performance of Kazakh banks during the period from 2007 through 2009 (during crisis)							
N = 89							
Mean	31.527	36.054	4.679	0.764	3.718	51.638	121.929
SD	26.765	54.619	3.504	3.358	13.065	21.439	90.956
Median	23.090	21.230	3.960	1.010	3.250	54.840	106.940
Minimum	−46.59	−37.84	−0.58	−22.82	−53.17	10.05	15.13
Maximum	99.96	394.15	21.71	5.53	36.08	90.98	616.13
Differences in means of post- and during-crisis periods	0.098*	0.000***	0.003***	0.000***	0.000***	0.089*	0.121
p-value							
Panel C: operating performance of Kazakh banks during the period from 2004 through 2006 (pre-crisis)							
N = 71							
Mean	29.019	60.413	4.875	2.255	11.609	54.224	143.605
SD	26.361	46.307	4.619	3.105	8.493	18.024	111.132
Median	13.850	50.485	3.600	1.640	11.230	59.400	114.285
Minimum	6.15	−0.3700	0.1000	−5.41	−6.72	2.700	16.72
Maximum	91.49	196.28	21.000	22.28	40.73	85.04	713.68

Notes: ***, ** and * indicate significance levels 1%, 5% and 10%, respectively. CAPAD = total equity/total assets*100, GROWTH = (total assets$_t$ – total assets$_{t-1}$)/total assets$_{t-1}$*100, NIM = annual interest income/average banking earning assets*100, ROA = net income/total assets*100, ROE = net income/total equity*100, LOAN1 = total loans/total assets*100, total loans/total deposits*100. This table presents the descriptive statistics on operating performance of Kazakh banks. Panels A, B and C show results on operating performance variables of Kazakh banks for pre-crisis, during-crisis and post-crisis periods, respectively. The reported *p*-values are for the Wilcoxon rank-sum tests of the null hypothesis that there is no significant difference in mean values of given subsamples

adversely affected the capital of banks, making their asset values much lower in terms of the US dollars after devaluation.

Table V presents the Pearson correlation results for operating performance variables, CGI and controls in the post-crisis period (correlation results for during-crisis and pre-crisis periods not reported, but available upon request). As shown in Table V, CGI is positively correlated with earnings (ROA and ROE), liquidity (LOAN1 and LOAN2) and the net interest margin ratio but is not correlated with growth and capital adequacy. This finding indicates that banks with better CG practices had higher liquidity risks, higher earnings and stronger management quality in the post-crisis period. It is worth noting that the results from all the Pearson correlations suggest that multi-collinearity among explanatory variables is not a problem as the Pearson coefficient does not exceed 0.70 (Pallant, 2007).

In Table VI, Panels A-C illustrate the results of FE and RE regressions for the performance variables on the CGI and the control variables for post-crisis, during-crisis and pre-crisis periods, respectively. As shown in Panel A, CGI is positively and significantly related to ROA and ROE in both FE and RE. These findings are statistically strong and support those reported by Peni and Vähämaa (2012) for US commercial banks, where banks with better CG had better performances in the aftermath of the financial crisis. CGI is also positively associated with NIM at the 1 per cent significance level in both FE and RE. This finding indicates that banks with a better CGI tend to have a higher net interest income from their interest earning assets, thereby demonstrating higher management quality in terms of their net interest margin ratio in the post-crisis period. The estimated coefficient on CGI is positive and marginally significant with RE for LOAN2. Consistent with our hypotheses, all of these results indicate that banks of Kazakhstan with better CG practices took more risks after the crisis, which resulted in better operating performance in terms of profitability and

Table IV Descriptive statistics on the CGI and the control variables

	CGI (%)	*AGE*	*SIZE (ln)*	*SIZE (thousands of US dollars)*
Panel A: CGI and the control variables during the period 2010 through 2012 (post-crisis)				
N = 111				
Mean	67.11	18.28	18.19	2,123,045
SD	17.71	14.52	1.78	3,817,919
Median	75.00	18.00	18.20	552,601
Minimum	25.00	1.00	14.81	18,352
Maximum	91.67	89.00	21.66	17,021,015
Differences in means of post- and during-crisis periods (*p*-value)	0.044*	0.021**	0.000***	0.000***
Panel B: CGI and the control variables during the period 2007 through 2009 (during crisis)				
N = 89				
Mean	62.80	17.82	17.71	2,635,742
SD	19.28	15.95	2.19	5,249,814
Median	66.67	15.00	17.91	449,017
Minimum	16.67	0.00	14.14	11,545
Maximum	91.67	86.00	21.79	23,894,350
Differences in means of during and pre-crisis periods (*P*–value)	0.001***	0.017**	0.000***	0.001***
Panel C: CGI and the control variables during the period 2004 through 2006 (pre-crisis)				
N = 71				
Mean	67.45	17.79	17.43	1,684,308
SD	12.19	19.05	2.11	3,283,287
Median	66.67	12.00	17.37	265,463
Minimum	25.00	5.00	13.98	9,103
Maximum	83.33	83.00	21.54	17,867,668

Notes: ***, ** and * indicate significance levels 1%, 5% and 10%, respectively. CGI = the sum of points received from individual CG dimensions, AGE = a number of years since foundation of the bank, SIZE (ln) = natural log of total assets of the bank, SIZE = total assets in thousands of US dollars. This table presents the descriptive statistics on the CGI and the control variables of Kazakh banks for the periods of 2004-2006, 2007-2009 and 2010-2012. Panels A, B and C show results on the CGI and the control variables of the sampling banks for pre-crisis, during-crisis and post-crisis periods, respectively

Table V Pearson correlations among variables in the post-crisis period of 2010-2012 ($N = 111$)

	ROA	*ROE*	*GROWTH*	*CAPAD*	*LOAN1*	*LOAN2*	*NIM*	*CGI*	*AGE*	*SIZE*
ROA	1									
ROE	0.723**	1								
GROWTH	−0.078	−0.154	1							
CAPAD	−0.157	−0.320**	0.126	1						
LOAN1	0.278**	0.223*	0.000	−0.190*	1					
LOAN2	0.298**	0.091	0.010	0.443**	0.419**	1				
NIM	0.709**	0.364**	0.103	0.042	0.315**	0.442**	1			
CGI	0.585**	0.566**	−0.065	−0.160	0.193*	0.176	0.308**	1		
AGE	0.081	0.063	−0.220*	−0.268**	−0.020	−0.109	0.001	0.081	1	
SIZE	0.104	0.316**	−0.261**	−0.811**	0.244**	−0.349**	−0.124	0.181	0.434**	1

Notes: **Correlation is significant at the 0.01 level (2-tailed); *correlation is significant at the 0.05 level (2-tailed)

management quality in the post-crisis period. These results are in line with those of previous studies in both developed and developing markets (Brown and Caylor, 2006; Garay and González, 2008; Abdallah and Ismail, 2017) and suggest that effective CG mechanisms lead to better performance, thus supporting the resource-based theory. Overall, these findings are consistent with the empirical results of Peni and Vähämaa (2012) and Wang *et al.* (2012) that better CG practices lead to better bank performance after the crisis.

Panel B presents the regression results of the effect of CGI variables on bank performance during the crisis. The estimated RE coefficients for CGI show that overall CG quality is positively related to ROA and ROE at the 1 per cent significance level. The estimated FE coefficient confirms the positive relationship between CGI and ROA at the 10 per cent significance level. However, the FE coefficient predicting the impact of CGI on ROE is statistically insignificant. The estimated RE coefficients show that CGI is positively associated with LOAN1 and LOAN2 at the 10 per cent significance level. This indicates that banks with improved CG practices had higher liquidity risks by increasing their proportions of loans to total assets and deposits during the crisis. The empirical findings suggest that a composite measure of CGI had a positive impact only on bank profitability during the crisis, thus partially supporting the resource-based theory. Overall, these findings are consistent with those of Williams and Nguyen (2005) that changes in bank governance during economic crisis, financial deregulation and substantial bank restructuring lead to better efficiency and financial stability.

Panel C reports the FE and RE regression results on the influence of CGI on bank performance in the period before the crisis. In terms of the relationship between CGI and earnings, the regression results provide similar results to those obtained for the post-crisis and during-the-crisis periods. In particular, the CGI is positively related to ROA and ROE. This finding demonstrates that CG had a positive impact on bank profitability in all three periods starting from 2004 until 2012. Interestingly, CGI is negatively associated with GROWTH at the 10 per cent significance level with RE. With FE, the coefficient of CGI is also negative, but insignificant. One reason for the negative relationship between CGI and GROWTH, which is opposite to our hypothesis, is the possible outflows of economic resources used by Kazakh banks for the implementation of relatively new CG models, mainly in 2003-2004. Given that CG was a relatively new concept in Kazakhstan at that time, the first-time implementation of CG models by banks led to a significant reduction of assets, thus having a negative impact on growth in the pre-crisis period. Hence, the results for the pre-crisis period show that effective CG practices had a moderate impact on bank performance. Overall, the findings support the resource-based theory in the context of Kazakhstan and therefore are consistent with the notion that improved CG mechanisms lead to better bank performance.

Table VI Panel regression analysis: CGI and bank performance

	CAPAD		*GROWTH*		*NIM*		*ROA*	
	FE	*RE*	*FE*	*RE*	*FE*	*RE*	*FE*	*RE*
Panel A: Regression of Operating Performance on CGI for the period of 2010-2012 (post-crisis)								
CGI	−0.011 (−0.20)	0.0408 (0.65)	0.515 (1.49)	−0.008 (−0.03)	0.046 (2.40)**	0.057 (2.96)***	0.067 (3.24)***	0.082 (4.87)***
AGE	4.226 (4.19)***	0.3782 (3.03)***	−19.429 (−2.83)***	−0.6109 (−1.42)	0.025 (0.09)	0.059 (1.60)	0.205 (0.65)	0.008 (0.53)
SIZE	−18.091 (−6.32)***	−12.957 (−8.48)***	60.698 (2.34)**	−5.7313 (−1.79)*	−1.637 (−1.12)	−1.070 (−1.44)	0.179 (0.37)	0.048 (0.34)
Constant	286.25 (6.57)***	257.48 (9.38)***	−751.77 (−1.86)*	157.52 (2.72)***	32.12 (1.30)	20.52 (1.55)	−10.28 (−1.29)	−5.44 (−2.05)**
Observations	111	111	111	111	111	111	111	111
Adj. R^2	0.4935	0.6817	0.1468	0.2118	0.1070	0.0927	0.2738	0.383
Hausman test ($\chi 2$)	0.0009		0.0009		0.1875		0.2973	
Panel B: Regression of Operating Performance on CGI for the period of 2007-2009 (during crisis)								
CGI	0.023 (0.61)	−0.002 (−0.04)	−0.003 (−0.01)	0.326 (1.19)	0.025 (1.02)	−0.003 (−0.17)	0.025 (1.77)*	0.053 (3.37)***
AGE	1.892 (1.83)*	0.309 (2.08)**	−26.575 (−4.61)	−0.258 (−1.17)	1.715 (4.47)	0.035 (1.34)	−0.789 (−3.29)***	−0.012 (−1.33)
SIZE	−20.625 (−6.99)***	−13.045 (−9.56)***	116.138 (9.35)	0.012 (0.01)	−1.336 (−1.79)	−0.438 (−1.84)	−0.169 (−0.25)	−0.137 (−1.21)
Constant	361.84 (7.95)***	259.23 (10.8)***	−1531.4 (−6.50)***	21.40 (0.46)	−4.84 (−0.46)	11.96 (2.71)**	17.24 (2.00)**	0.50 (0.19)
Observations	89	89	89	89	89	89	89	89
Adj. R^2	0.619	0.697	0.339	0.021	0.384	0.175	0.382	0.358
Hausman test ($\chi 2$)	0.0064		0.0000		0.0000		0.0004	
Panel C: Regression of Operating Performance on CGI for the period of 2004-2006 (pre-crisis)								
CGI	0.140 (0.52)	0.141 (0.62)	−0.285 (−0.30)	−0.575 (−1.81)*	0.066 (0.72)	0.031 (0.73)	0.105 (1.60)*	0.057 (2.10)**
AGE	0.139 (0.08)	0.179 (1.69)*	−29.466 (−2.69)***	−0.674 (−2.84)***	−0.742 (−0.48)	0.045 (1.55)	0.466 (0.96)	0.004 (0.45)
SIZE	−5.035 (−1.40)	−8.521 (−5.10)***	82.698 (4.04)***	17.459 (5.40)***	−0.197 (−0.08)	−0.870 (−2.68)***	−2.094 (−1.86)*	−0.401 (−1.76)*
Constant	103.50 (2.79)***	165.66 (6.01)***	−834.78 (−4.02)***	−193.52 (−3.34)***	17.41 (0.95)	17.09 (3.30)***	23.49 (1.86)*	5.37 (1.76)*
Observations	71	71	71	71	71	71	71	71
Adj. R^2	0.675	0.700	0.483	0.518	0.047	0.148	0.118	0.114
Hausman test ($\chi 2$)	0.0001		0.0000		0.08785		0.3472	

Notes: ***, ** and * indicate significance levels 1%, 5% and 10%, respectively. This table presents FE and RE regressions of operating performance variables on CGI and controls. Panels A, B and C present regression results for post-crisis, during-crisis and pre-crisis periods, respectively. Robust t-statistics and z-statistics are shown in parentheses

(*continued*)

Table VI

	ROE		*LOAN1*		*LOAN2*	
	FE	*RE*	*FE*	*RE*	*FE*	*RE*
Panel A: Regression of Operating Performance on CGI for the period of 2010-2012 (post-crisis)						
CGI	0.262 (3.84)***	0.385 (5.03)***	0.070 (0.54)	0.170 (1.43)	0.117 (0.37)	0.737 (1.88)*
AGE	−0.277 (−0.11)	−0.088 −1.03	5.444 (3.62)***	−0.099 (−0.48)	21.868 (2.54)**	0.533 (0.76)
SIZE	3.058 (0.84)	2.545 (2.04)**	−1.738 (−0.35)	3.776 (1.73)*	−40.372 (−2.58)**	−19.070 (−2.04)**
Constant	−60.26 (−1.90)*	−62.52 (−3.13)***	−19.25 (−0.24)	−28.17 (−0.72)	452.68 (2.50)**	401.07 (2.54)**
Observations	111	111	111	111	111	111
Adj. R^2	0.377	0.4926	0.1916	0.0975	0.1170	0.2128
Hausman test ($\chi 2$)	0.0873		0.0198		0.0251	
Panel B: Regression of Operating Performance on CGI for the period of 2007-2009 (during crisis)						
CGI	0.102 (1.40)	0.220 (4.29)***	0.066 (0.85)	0.139 (1.73)*	1.485 (1.24)	1.258 (1.70)*
AGE	−5.453 (−4.66)***	−0.116 (−1.99)*	−3.008 (−1.63)	0.019 (0.16)	−16.247 (−1.09)	0.023 (0.05)
SIZE	7.838 (3.25)***	1.319 (2.71)***	−0.624 (−0.15)	2.771 (1.75)*	−5.788 (−0.14)	−8.386 (−1.19)
Constant	−38.93 (−1.29)	−29.30 (−3.02)***	113.50 (1.88)*	−7.37 (−0.27)	426.51 (0.88)	190.03 (2.03)**
Observations	89	89	89	89	89	89
Adj. R^2	0.449	0.406	0.108	0.211	0.168	0.133
Hausman test ($\chi 2$)	0.0000		0.0303		0.1979	
Panel C: Regression of Operating Performance on CGI for the period of 2004-2006 (pre-crisis)						
CGI	0.356 (1.90)*	0.130 (1.85)*	−0.011 (−0.03)	0.257 (1.02)	1.555 (1.08)	1.555 (1.08)
AGE	0.831 (0.49)	−0.026 (−0.38)	−1.216 (−0.34)	0.048 (0.50)	−46.218 (−1.69)	−46.218 (−1.69)*
SIZE	−4.370 (−1.29)	1.586 (2.94)***	6.617 (0.98)	2.595 (1.52)	82.957 (1.96)	82.957 (1.96)*
Constant	49.39 (1.33)	−24.26 (−2.67)***	−37.24 (−0.62)	−9.76 (−0.38)	−574.79 (−1.68)*	−574.79 (−1.68)*
Observations	71	71	71	71	71	71
Adj. R^2	0.096	0.426	0.093	0.179	0.183	0.183
Hausman test ($\chi 2$)	0.0282		0.7719		0.0431	

The empirical results for all three periods show that recent changes in CG practices and further amendments to relevant laws and CG codes, especially during the crisis and post-crisis periods, improved internal CG mechanisms and had a varying effect on the operating performance of Kazakh banks before, during and after the financial crisis. These findings are consistent with the results of Orazalin *et al.* (2016), Peni and Vähämaa (2012) and Saghi-Zedek and Tarazi (2014) that substantial changes and reforms to improve CG practices in response to financial crises affect bank profitability differently during distress times and normal times. Overall, the findings support the resource-based theory and suggest that changes and improvements in CG codes, board characteristics, ownership structures, disclosure requirements and board members' competencies over time had a significant influence on CG practices and subsequently affected the performance of Kazakh banks in different time periods differently (Agyemang and Castellini, 2015; Siepel and Nightingale, 2014; Yeh *et al.*, 2014).

4.1 Additional analysis and endogeneity

Most prior studies use ordinary least squares (OLS) regressions to examine the link between CG and performance. To assess the validity of OLS specifications, we also use OLS models based on robust, bank-clustered standard errors and controlling for year fixed effects. The results summarized in Table VII, Panels A–C, show the effect of the CGI on bank performance for the post-crisis, during-crisis and post-crisis periods, respectively. Overall, the OLS regressions provide qualitatively similar results that support coefficient estimates from panel regressions for all three periods. Therefore, the conclusion on the relationships between CG and bank performance is not sensitive in the OLS context.

More recently, a large body of empirical literature has raised endogeneity issues that make interpreting the governance–performance relationship difficult. To address this endogeneity issue, we use the Arellano–Bover/Blundell-Bond Generalized method of moments (Arellano and Bover, 1995; Blundell and Bond, 1998) estimator to mitigate the issue of endogeneity in a dynamic panel data context. The estimated coefficients are statistically significant and remain qualitatively similar to those reported in Table IV. Thus, endogeneity does not alter the positive relationships of coefficients with bank profitability (the results are not reported but available upon request).

5. Conclusion

The objective of this study is to investigate the effect of different sets of CG practices on the operating performance of commercial banks in Kazakhstan in different time periods. The empirical results show that Kazakh banks with better CG achieved higher profitability, better management quality and higher liquidity risks after the crisis. These results are consistent with the findings of previous studies in both developed and developing markets (Brown and Caylor, 2006; Garay and González, 2008; Abdallah and Ismail, 2017) and suggest that effective CG mechanisms lead to better performance, thus supporting the resource-based theory. Overall, our findings support the empirical results of Orazalin *et al.* (2016), Peni and Vähämaa (2012) and Wang *et al.* (2012) and confirm that banks with better CG mechanisms exhibited higher operating performance in the post-crisis period in the context of Kazakhstan. The empirical findings for the period during the crisis suggest that a composite measure of CG had a positive impact on the profitability of Kazakh banks. In terms of the pre-crisis period, the results suggest that Kazakh banks with better CG practices improved their earnings by taking more risks through their lending and borrowing activities. Overall, our findings support the resource-based theory and suggest that changes in CG codes, board characteristics, ownership structures, disclosure requirements and board members' competencies over time had a significant influence on CG practices and subsequently improved the performance of Kazakh banks in different time periods differently.

Table VII OLS Regression analysis: CGI index and operating performance

	CAPAD	*GROWTH*	*NIM*	*ROA*	*ROE*	*LOAN1*	*LOAN2*
Panel A: Regression of Operating Performance on CGI for the period of 2010-2012 (post-crisis)							
CGI	−0.078 (−0.67)	−0.119 (−0.39)	0.125 (2.10)**	0.095 (4.28)***	0.489 (4.59)***	0.126 (0.86)	1.227 (1.67)*
AGE	0.278 (2.08)**	−0.525 (−1.19)	0.038 (1.19)	0.008 (0.54)	−0.099 (−1.21)	−0.160 (−1.04)	0.242 (0.39)
SIZE_LN	−12.667 (−7.83)***	−7.314 (−2.21)**	−0.738 (−1.78)*	−0.040 (−0.31)	2.433 (1.81)*	3.126 (1.58)	−22.024 (−1.90)*
Year fixed effects	Included	Included	Included	Included	Included	Included	Included
Constant	259.175 (9.03)***	180.546 (3.07)***	10.884 (1.97)*	−4.880 (−2.43)**	−66.475 (−3.04)***	−16.101 (0.47)	414.986 (2.45)**
N of obs.	111	111	111	111	111	111	111
Adj.R^2	0.671	0.1021	0.138	0.340	0.369	0.117	0.189
F-stat	13.73	3.71	1.54	10.29	19.12	2.84	3.41
Panel B: Regression of Operating Performance on CGI for the period of 2007-2009 (during crisis)							
CGI	−0.043 (−0.37)	0.349 (1.09)	0.026 (1.54)	0.043 (2.60)**	0.173 (2.83)***	0.007 (0.06)	0.570 (1.01)
AGE	0.279 (2.60)**	−0.243 (−1.03)	0.020 (1.28)	−0.011 (−1.25)	−0.096 (−1.48)	0.034 (0.30)	0.224 (0.51)
SIZE_LN	−10.656 (−7.91)***	−0.298 (−0.12)	−0.550 (−2.59)**	−0.124 (−1.14)	1.287 (2.51)**	3.423 (1.95)*	−8.654 (−1.23)
Year fixed effects	Included	Included	Included	Included	Included	Included	Included
Constant	220.281 (8.46)***	23.980 (0.47)	11.183 (2.75)***	1.664 (0.62)	−22.452 (−1.97)*	−6.930 (−0.23)	245.743 (2.15)**
N of obs.	89	89	89	89	89	89	89
Adj.R^2	0.699	0.018	0.381	0.344	0.364	0.176	0.087
F-stat	18.17	1.42	5.59	8.79	8.17	7.51	1.78
Panel C: Regression of Operating Performance on CGI for the period of 2004-2006 (pre-crisis)							
CGI	0.032 (0.13)	−0.816 (−2.39)**	0.047 (0.091)	0.064 (1.59)*	0.124 (1.60)*	0.213 (0.73)	2.253 (1.95)*
AGE	0.275 (3.10)***	−0.588 (−2.37)**	0.041 (1.38)	0.001 (0.17)	−0.033 (−0.48)	0.038 (0.45)	0.020 (0.03)
SIZE_LN	−10.976 (−6.95)***	15.023 (4.49)***	−0.935 (−2.92)***	−0.369 (−1.74)*	1.86 (3.47)***	1.777 (1.01)	−12.620 (−0.80)
Year fixed effects	Included	Included	Included	Included	Included	Included	Included
Constant	209.427 (6.679)***	−134.072 (−2.11)**	19.199 (3.73)***	5.000 (1.56)	−27.605 (−2.68)**	13.516 (0.46)	245.425 (0.87)
N of obs.	71	71	71	71	71	71	71
Adj.R^2	0.703	0.410	0.181	0.121	0.267	0.111	0.106
F-stat	13.97	10.120	2.17	3.16	4.71	1.18	1.18

Notes: ***, ** and * indicate significance levels 1%, 5% and 10%, respectively. This table presents regressions of operating performance variables on the CGI and controls for each period. The *t*-statistics, which are reported in parentheses, are based on robust, bank-clustered standard errors

This study extends the CG literature to the setting of a transition economy to highlight the importance of the existing CG practices in Kazakhstan and investigates whether CG implications are reflected in the performance of banks in the pre-crisis, during-the-crisis and post-crisis periods. The implications of the findings are that effective CG practices may improve banking performance. In other words, policies and reforms that encourage effective CG practices should not be neglected in cases of transition economies. Our results also suggest that banks with stronger CG practices could mitigate the adverse effects of the financial crisis, as they showed better performance in the post-crisis period. Therefore, policymakers and regulators in a transition economy similar to Kazakhstan's should consider the importance of board characteristics, board-level committees, the role of multiple shareholders, extensive disclosure practices and executives' qualifications when aiming to improve CG practices in the banking sector. Our findings also suggest that banks should equip themselves with effective CG practices well in advance to prevent the detrimental effects of future financial crises and economic meltdowns. Specifically, the introduction of best governance models, the adoption of international accounting and reporting standards and the implementation of necessary laws and regulations to guard the financial sector from detrimental effects of economic crises are likely to improve bank performance in transition economies, such as Kazakhstan. Thus, investors, policymakers and practitioners should consider individual CG dimensions including corporate disclosure, board characteristics, ownership structures and qualifications of executives to improve the CG practices in a banking industry of transition economies, such as Kazakhstan, which adopted the Model of CG Codes based on Western governance principles.

There are several limitations of this study. First, the study focuses only on the banking sector of Kazakhstan. Although banks are important key players in the financial systems of Kazakhstan, there are other financial institutions, such as insurance companies, pension funds, mutual funds, and other financial organizations, all of which are worthy of being studied. Second, the study focuses only on internal governance practices. However, the effects of external governance mechanisms, such as the legal and regulatory frameworks, capital market, media, and the relationship with unions and other external factors were not examined. Third, the scope of this study was limited to 238 observations from all 38 commercial banks of Kazakhstan due to the lack of complete data on governance data and accounting variables. Although the sub-samples used in this study were sufficient enough to conduct the study, the generalizability of the findings could be improved if larger samples were included in conducting the research. Despite these limitations, the findings of this study make an important contribution to governance literature in the context of Kazakhstan and other transitional economies.

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About the authors

Nurlan Orazalin is an Assistant Professor of Accounting and Finance at Bang College of Business, KIMEP University, Kazakhstan. He is a certified Management Accountant and a

member of the Institute of Management Accountants of USA. Dr Orazalin earned DBA in accounting from KIMEP University, Kazakhstan, and MS in Accounting from Texas A and M University, USA. His research and professional interests are primarily focused on corporate finance, banking and finance, financial reporting, disclosure, corporate governance and fair value accounting. Nurlan Orazalin is the corresponding author and can be contacted at: orazalin@kimep.kz

Monowar Mahmood is a Professor of Management, Bang College of Business, KIMEP University, Almaty, Kazakhstan. He obtained MBA from Saint Mary's University, Canada; MA from University of Leeds, UK; and PhD from University of Manchester, UK. Monowar published on corporate governance, corporate social responsibility, human resource management and gender and equal employment policie.