

Methodology Corner

Corporate Governance and Tobin's Q as a Measure of Organizational Performance

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This empirical study examines the relationship between corporate governance and organizational performance (OP), measured using Tobin's Q (TQ) in the context of an emerging economy for which, as yet, only a handful of studies have been conducted. We employ a system generalized method of moments approach controlling for endogeneity and test it on a newly created dataset comprising 324 listed firms in Pakistan. We find that board size, number of board committees and ownership concentration are positively linked with high TQ ratio, whilst board independence and CEO duality display a negative relationship. In terms of moderating effects, we find that ownership concentration negatively moderates the relationship between board independence and OP, as well as that of CEO duality and OP. The relationship between the number of board committees and OP is positively moderated by ownership concentration. Our findings contribute towards a better articulation and application of a more concrete measure of OP – that of the TQ ratio – whilst, at the same time, testing the board composition–performance relationship in the context of an upcoming and increasingly important emerging market. Wider applicability of results and policy implications are discussed.

Introduction

Corporate governance (CG) refers to the mechanism by which a company is controlled and run by its CEO, board of directors and senior management. Theoretical literature highlights that the board of directors is an important and highly effective internal mechanism of CG. The board of directors serves two important functions for companies: monitoring executive management on behalf of shareholders, and providing resources, including business advice and counselling (Hillman and Dalziel, 2003; Monks and Minow, 2008). In their monitoring role, boards spend their time and resources monitoring corporate performance and the behaviour of executive directors. The theoretical foundation of the board's monitoring function stems from agency theory, which highlights the potential conflicts of interest that

may arise from the separation of ownership and control in public companies (Berle and Means, 1932; Fama and Jensen, 1983). The monitoring function requires boards to play a 'watchdog' role since their fiduciary responsibility is to align the incentives of the management with the interests of shareholders to ensure that managers are acting in the best interests of shareholders (Bainbridge, 1993; Berle and Means, 1932; Hillman and Dalziel, 2003; Mace, 1971). Agency theory views CG systems – especially the board of directors – as an essential element of the control mechanism in ensuring that problems resulting from the principal–agent relationship are controlled (Mallin, 2007). Boards' resource-provisioning role requires them to provide the CEO with access to critical resources and expert advice (Fama and Jensen, 1983; Pfeffer and Salancik, 1978), a perspective based on resource dependence

theory (Barney, 2007; Pfeffer and Salancik, 1978) and directly suggestive of the board's overall ability to bring resources to the firm (Hillman and Dalziel, 2003), with 'resources' considered to be anything capable of yielding the company a competitive advantage over its rivals (Barney, 2007). According to resource dependence theory, boards help companies improve their performance by reducing their dependence on the external environment and contingencies (Pfeffer and Salancik, 1978), thereby lowering their transaction costs (Williamson, 1984) which may fundamentally assist their survival (Singh, House and Tucker, 1986).

An effective CG system increases public confidence in the firm and accordingly attracts investment and talent, which, in turn, can result in enhanced organizational performance (OP) (Al-Matari, Al-Swidi and Fadzil, 2014). Although this premise makes intuitive sense and is largely accepted in corporate and academic circles, its actual link with OP is a debated issue in the governance literature (Anderson and Reeb, 2003; Huse, 2000; Zahra and Pearce, 1989). The majority of empirical studies conducted (e.g. on the size, level of independence, CEO duality, number of board committees) in an effort to understand the impact of board features on OP are largely normative and prescriptive (Fama and Jensen, 1983), whereby researchers have examined only the obvious and direct links between board features and OP. Importantly, only a mere handful of studies have examined the impact of moderating or mediating variables (such as ownership concentration, firm age, firm size, foreign ownership etc.) on OP (Coles and Hasterly, 2000; Guizani, 2013; Kouki and Guizani, 2015; Rhoades, Rechner and Sundaramurthy, 2001), a lacuna that many scholars have urged academics to investigate (Finkelstein and Mooney, 2003; Pye and Pettigrew, 2005). Carpenter, Geletkanycz and Sanders (2004) argue that the research community no longer appreciates empirical work, which ignores the importance of intervening factors.

This paper responds to the aforementioned call and empirically investigates the impact of board structure and associated moderating variables on OP, measured using Tobin's *Q* (TQ) (Tobin, 1969). The paper is organized as follows: in the following section a review of the literature related to CG and TQ leading to testable hypotheses is presented; this is followed by the methodology adopted in conducting the study, an empirical analysis of its results, and, finally, the discussion and conclusions.

Literature reference and hypotheses

Board size and performance

Companies structure their boards in line with their business environment, monitoring needs and resource requirements. Board size, as in the total number of directors (including the chairperson of the board), can influence the CG practices of firms and, as a result, their performance (Dalton *et al.*, 1999; Yermack, 1996). Therefore, board size is an important dimension of the board's structure, and there is a need to ensure it is a good fit for the responsibilities, needs and objectives of the organization it serves (Noor and Fadzil, 2013). Agency theory suggests that a board comprising a larger number of directors is more likely to act as a better monitor of the firm's executive management, thereby managing the agency problem, since having a greater number of directors involved in management activities will make the board more vigilant. Similarly, proponents of the resource-based view suggest that large and diversified boards are more likely to bring together in-depth intellectual knowledge from the business sector, which subsequently can influence the quality of strategic decision-making; this, ultimately, will positively impact performance (Arosa, Iturralde and Naseda, 2010). Board size is recognized as linked with the performance of firms, yet the existing evidence has produced mixed results, with some studies supporting large boards and others advocating smaller boards.

Kao and Chen (2004) have found that a larger board size has the potential to weaken its functioning, and hence its performance, because large boards may be characterized by difficulties in achieving efficient communication between members. Yermack (1996) studied and analysed the governance and financial data of 452 large US firms between 1984 and 1991 and reported an inverse relationship between board size and firms' TQ value. To confirm the robustness of his preliminary findings, Yermack used fixed, random and ordinary least squares (OLS) approaches, and substituted the TQ value with other financial proxies including return on assets (ROA) and return on sales. His study reported a negative relationship between board size and firm performance, concluding that smaller boards are better boards. Beasley (1996) confirmed the existence of a negative relationship between small board size and financial statement fraud, arguing that, as

board size decreases, the likelihood of fraud also decreases. Arosa, Iturralde and Naseda (2010) similarly reported a negative effect of board size, arguing that this may be due to the disadvantages posed by less effective coordination, inflexibility and poor communication within large boards. Hermalin and Weisbach (1991) reported a negative relationship between board size and firm performance. Lipton and Lorsch (1992) argued that smaller boards are more cohesive, more productive and able to monitor the firm more effectively. Jensen (1993) suggests that smaller boards provide a better controlling function than larger boards. On a different note, however, Singh and Harianto (1989) have found that large boards perform better by reducing the dominance of the CEO. Coles, Daniel and Naveen (2008) used a sample of 8165 firm-year observations to study the relationship between board size and firm performance, reporting that the previously documented negative association between board size and TQ did not hold for firms with extensive advising needs. More specifically, their study reported that TQ was positively associated with board size in the context of complex firms. On balance, this review of prior studies leads to our first hypothesis:

H1: Board size is positively associated with a high TQ ratio.

Board composition and performance

The presence of outside non-executive independent directors may increase a board's overall effectiveness and performance. From the agency perspective, independent and non-executive directors reduce agency conflicts. They can act as an effective monitoring mechanism for the board and, compared to internal executive directors, are more likely to protect the interests of shareholders (Volonte, 2015). Resource dependence theory views outside directors as a critical link between the firm and its external resources in terms of the firm achieving its various objectives (Zahra and Pearce, 1989). Independent directors from outside the firm may have a significant positive influence on the firm's value-creating activities through their strategic decision-making (Gabrielson, 2007). Fama and Jensen (1983) argued that the inclusion of outside directors increases the efficiency of boards in their monitoring function. Therefore, boards composed of a majority of

outside directors have a better chance of reducing agency problems because independent boards are more likely to challenge and criticize the actions and policies of the firm's management (Dalton *et al.*, 1998; Fama and Jensen, 1983; Hermalin and Weisbach, 1998; Johnson, Daily and Ellstrand, 1996; Linck, Netter and Yang, 2008; Shleifer and Vishny, 1997). According to the Higgs Report (2003), efficient monitoring by non-executive directors, when they are free from managerial influence and have no personal interest in the company, improves the quality of financial reporting.

The empirical literature reveals mixed results on the relationship between board independence and corporate performance. For instance, studies carried out by Hermalin and Weisbach (1991), Zahra and Stanton (1998), Agrawal and Knoeber (1996), Yermack (1996) and Bhagat and Black (1999) have identified a negative relationship between independent directors and firm performance. Hermalin and Weisbach (1991) used a sample of 142 US-based public limited companies and subsequently concluded that different proportions of outside directors on the board made no obvious difference, but rather had a negative effect on firm profitability, as measured by TQ. Zahra and Stanton (1998) completed a study on 100 randomly selected *Fortune 500* companies, with their analysis showing that the proportion of independent directors to non-independent directors had a significant negative relationship with the financial performance of firms. In contrast to these studies, however, Byrd and Hickman (1992), Weisbach (1998) and Coles, McWilliams and Sen (2001) suggest, through their work, that a greater proportion of non-executive directors improves the control and strategic decision-making processes of boards through better monitoring. Using a sample of 1252 outside director appointments, Rosenstein and Wyatt (1990) studied two different board compositions, with the evidence demonstrating a positive association between an increase in the proportion of independent directors and the market value of the respective firm. Ritchie (2007), Vance (1964) and Pfeffer (1972) also reported on how the presence of independent non-executive directors may help to improve CG. They examined the impact of the presence of outsiders on firm value and accordingly identified a positive association between outside board members and corporate performance measured in terms of TQ, return on equity (ROE) and ROA. A number of other empirical studies

have also reported a positive relationship between independent directors and firm performance (Ezzamel and Watson, 1993; Hillman, 2005; Masulis, Wang and Xie, 2012; Millstein and MacAvoy, 1998; Pearce and Zahra, 1992; Rosenstein and Wyatt, 1990). In Pakistan, Awan (2012) and Javed and Iqbal (2006) reported a positive relationship between the presence of non-executive directors and the performance of firms, as measured by ROA and ROE. Based on a relatively greater amount of evidence in favour of a positive impact of an independent board on performance, we hypothesize that:

H2: Board independence is positively associated with a high TQ ratio.

CEO duality and TQ

A dual leadership structure is said to exist when the CEO and the chairperson of the board is the same person. Using the competing agency and stewardship theory perspectives, researchers have empirically examined the relationship between CEO duality and firm performance. In the first view, supporters of the stewardship theory believe that firms should grant the positions of CEO and chairperson to the same individual since, by allowing a single individual to act as CEO and chairperson, the board can improve decision-making, which could, in turn, lead to enhanced performance (Donaldson and Davis, 1991). Dual leadership structure could also help reduce information asymmetry and may ultimately lead to easy access to financial resources; in turn, this can reduce the firm's cost of capital and increase its financial performance (Ritchie, 2007). Supporting the argument put forward in the stewardship theory, Brickley, Coles and Jarrell (1997) argue that the adoption of dual roles is likely to diminish incomplete communication between the CEO and chairperson, in addition to reducing internal conflicts and inconsistencies in decision-making. Similarly, where the roles of both CEO and chairperson are held by a single individual, that person is permitted to utilize directors' knowledge, expertise and information so as to increase the overall effectiveness of the board (Daily and Dalton, 1992). In the opposing view, supporters of agency theory have suggested that firms should divide the roles of CEO and chairperson to avoid a concentration of power in

the hands of a single person and to provide an effective system of checks and balances over the activities and performance of executive directors (Goyal and Park, 2002; Hashim and Devi, 2009). Fosberg and Nelson (1999) have argued that separating the functions of decision management (initiation and implementation of investment proposals) and control (rectification and monitoring of investment proposals) within a company reduces agency costs and subsequently leads to enhanced performance. Where the CEO also acts as chairperson of the company, the role of the board as an internal monitoring and control mechanism is likely to be compromised, with the interests of shareholders likely to suffer as a result (Coombes and Wong, 2004; Kholeif, 2008). Given that our study is in the context of an emerging economy where concentration of power in governance can lead to partisan decisions not always taken in the interests of the company, we hypothesize that:

H3: CEO duality is negatively associated with a high TQ ratio.

Board committees and performance

Chambers (2014) has argued that boards often find it difficult – and, in some cases, almost impossible – to consider every important matter due to time constraints. Therefore, establishing board subcommittees is one way in which the performance of firms can be enhanced through the effectiveness of the board's structure and its processes. The existence of various board committees can render the board an important mechanism of CG; however, not all boards will require a large number of different committees to help them manage their work. In addition, if not careful, committees may merely become a window-dressing exercise unless they are made truly independent, have access to information and professional advice, and contain members who are financially literate (Keong, 2002). Puni (2015) examined the effect of various board committees on corporate financial performance amongst companies listed on the Ghana Stock Exchange and found that board committees did not have a significant effect on the financial performance of listed firms. Similarly, Sonnenfeld (2002) highlighted that 'Sunbeam, Enron, Cendant, McKesson HBOC and Waste Management all had the requisite number of committees and guidelines; yet

accounting scandals still penetrated this governance shield'. However, there are also studies that suggest that the presence and proper functioning of independent, expert and diligent board committees can allow a board to focus on strategic and broader issues, which, in turn, can help boards to perform better and in the interests of shareholders. Aside from directly helping and supporting the board in its functions, subcommittees, e.g. those related to human resources, finance, strategic review, remuneration, promotion/sales, events organization, research and public relations, can also serve as a means of bolstering the credibility of the company's CG framework. As an example, the audit committee is significantly important in relation to the protection of stakeholders' interests; it is also critical for the accomplishment of the company's strategic objectives (Beasley, 1996; Fama and Jensen, 1983; Jensen and Meckling, 1976). Adams, Hermalin and Weisbach (2010) identified a positive relationship between audit committee independence and the quality of financial reporting, which may lead to a reduction in the cost of capital by attracting a large pool of investors and improving financial performance. Be'dard, Chtourou and Courteau (2004) argued that a more objective financial reporting is possible with independent audit committees. An independent audit committee is a positive sign and demonstrates a company's commitment to good CG (Sommer, 1991). A board supported by an independent and expert audit committee is an indicator of strong governance, financial statement accuracy, control effectiveness and audit quality (Gendron, Bedard and Gosselin, 2004). Kallamu (2016) examined the impact of a nomination committee on the performance of companies in Malaysia and reported a positive influence on accounting return. The nomination committee is particularly important in terms of reducing the agency problem by enhancing board independence and the quality of appointed directors, who are likely to act as supporters of shareholders (Byrd and Hickman, 1992). In this research, we have counted the total number of committees formed and existing within the company, including audit committee(s), to analyse the impact on performance and based on larger evidence on the positive impact of board committees on performance. We hypothesize that:

H4: The number of board committees is positively associated with a high TQ ratio.

Ownership concentration and performance

Ownership structure can be an important component of CG (Desender, 2009; Shleifer and Vishny, 1986). The effectiveness of board structure as a governance mechanism can depend on the overall diversity of the shares of the company (Cho and Kim, 2007). Following principal-agent reasoning, it has been argued that a diffused ownership structure gives executive managers a strong incentive to become powerful actors within organizations. The situation can give managers the opportunity to become involved in self-serving activities at the expense of shareholders (Fama and Jensen, 1983; Shleifer and Vishny, 1997). This scenario may be particularly prevalent in the context of developing countries who have unique firm-ownership characteristics compared to western countries. In Pakistan, for example, a large majority of companies are closely held businesses (e.g. family companies, business groups and state-controlled firms). The main governance issue in Pakistan arises from the risk of expropriation by firms' dominant or controlling shareholders at the expense of minority shareholders (Javed and Iqbal, 2008). The concentrated ownership structure in Pakistan creates a type II agency problem, also referred to as the principal-principal agency problem. In such instances, the controlling shareholder has both the incentive and power to exploit minority shareholders. Controlling shareholders can deceive minority shareholders through pyramidal ownership structures, complex interlocking directorships, cross-shareholdings, voting pacts and the funnelling of resources from the focal firm to other controlled companies (Almeida and Wolfenzon, 2006; Javed and Iqbal, 2008). It is also very likely that controlling shareholders will take actions that may not be in the best interests of other stakeholders, including minority shareholders (Bertrand, Mehta and Mullainathan, 2002).

Limited empirical evidence on the benefits of concentrated ownership suggests that large shareholders with significant economic stakes in the company have a strong incentive to monitor executive managers in an effort to protect their own interests (Shleifer and Vishny, 1986). Ownership concentration can also help large shareholders to engage directly with management when forming the corporate policies of their companies (Bhagat, Black and Blair, 2004). Anderson and Reeb (2003), in this vein, examine the governance of family

firms, which are often characterized by a concentrated ownership structure. They found family firms to have significantly greater valuations than non-family firms (1.593 versus 1.322 for family and non-family firms respectively). Rajput and Bharti (2015) used panel regression to determine the relationship between shareholder types and the financial performance of Indian firms, as well as to show a significant positive influence of foreign institutional investors and family ownership on firms' ROE. McConnell and Servaes (1990) found a significant curvilinear relationship between TQ and the proportion of common stock owned by corporate insiders, whereby the curve sloped upwards to the point where insider ownership reached approximately 40%–50% before sloping slightly downwards. They also found a significant positive relationship between TQ and the proportion of shares owned by institutional investors. Morck, Shleifer and Vishney (1988) studied the relationship between management ownership and the market valuation of firms, as measured by TQ. Their study of 371 *Fortune 500* firms found evidence of a significant quadratic relationship: TQ first increased, then declined, before finally increasing slightly in line with the increase of ownership by the board of directors. These findings lead us to our fifth hypothesis:

H5: Ownership concentration is positively associated with a high TQ ratio.

Moderating effect of ownership concentration

We have thus far examined the implications of the impact of CG on firm performance from the perspectives of board structure and ownership concentration. We have taken into account board size, its independence, CEO duality and the number of committees assisting the board in arriving at governance decisions, which, in turn, has an impact on the operating performance of firms. It is possible, however, that ownership concentration, i.e. how tightly concentrated ownership of the company is within relatively few hands, has an intervening impact on board size, its independence, CEO duality and the number of committees that may exist within the company. There is also the possibility that ownership concentration and board composition may be related to each other, and that large shareholders may use their influence to select directors who are less likely to monitor as

a way of entrenching themselves (Guizani, 2013). Therefore, it is instructive to understand if and how ownership concentration moderates board structural variables before they have an impact on TQ.

Cho and Kim (2007) assessed the effect of large shareholders on the relationship between the presence of independent directors on the board and firm performance. Their results indicate that, initially, the proportion of independent directors is positively related to firm performance but that performance is reduced once independent directors begin interacting with large shareholders. Using data from 273 listed companies, Chau and Gray (2010) examined the relationship between the extent of voluntary disclosure and levels of family ownership and board independence. They found a positive relationship between board independence and voluntary disclosure. However, this relationship was weaker in companies that were controlled and owned by family members. Chobpichien, Haron and Ibrahim (2008) reported that family ownership negatively moderates the relationship between board of director quality and voluntary disclosure in Thai listed companies. Amrah, Hashim and Ariff (2015) tested the moderating effects of family ownership control on the relationship between board of director effectiveness and firm performance. Their results indicate that family control positively moderates the relationship between board of director effectiveness and cost of debt to enhance the performance of firms in Oman. Chen and Jaggi (2000) examined whether family ownership concentration had an effect on the positive association between board independence and the comprehensiveness of financial disclosure, and ultimately concluded that family ownership may reduce the effectiveness of independent boards in convincing management to provide comprehensive information.

Ownership concentration as a moderating variable can alter the direction and strength of the causal relationship between board structure and firm performance. We argue that, if power, in terms of ownership concentration, rests in the hands of a few, then those few may also have the power to dictate and determine board size, independence, CEO duality and the number of board committees as a way of influencing board monitoring and resource dependency roles. In Pakistani firms, large shareholders with concentrated ownership exercise their influence to control the activities of businesses. It is

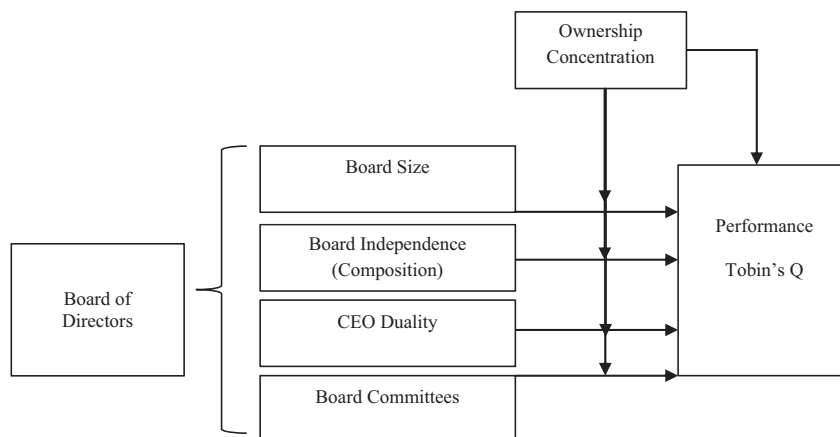


Figure 1. Analytical framework

noted that, in firms with a concentrated ownership structure, large shareholders normally act as the chairperson of the board, thus raising questions as to the effectiveness of the board in seriously evaluating and challenging the CEO (Guizani, 2013). A more diverse, open and larger board of directors actually contradicts the notion of high ownership concentration; in general terms, a high ownership concentration, especially in more autocratic and patriarchal contexts, is not aligned with freedom of speech, independence and diversity in terms of representation. Such a conflicting relationship (i.e. between the board structure and ownership concentration) could potentially have detrimental effects on the control and organizational effectiveness of the firm, thus leading to weak or sub-par OP. Overall, based on the aforementioned literature review, arguments and the geographical context of this study, we propose the following four hypotheses.

H6a: Ownership concentration negatively moderates the relationship between board size and TQ ratio.

H6b: Ownership concentration negatively moderates the relationship between board independence and TQ ratio.

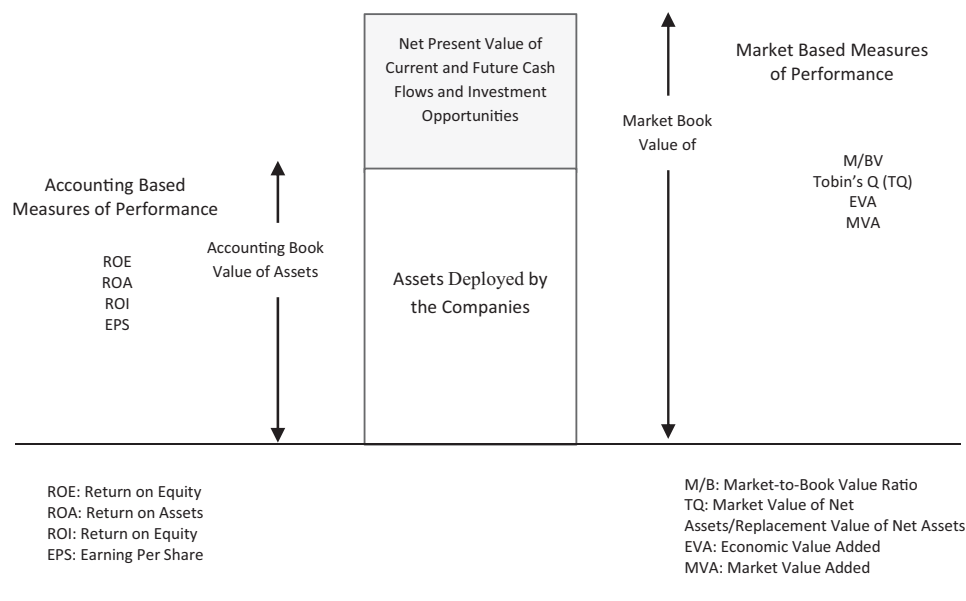
H6c: Ownership concentration negatively moderates the relationship between CEO duality and TQ ratio.

H6d: Ownership concentration negatively moderates the relationship between board committees and TQ ratio.

Figure 1 describes the analytical framework of this research.

Measuring firm performance using Tobin's Q

Figure 2 provides a schematic display of the commonly used performance measures. Existing literature on CG and firm performance indicates a considerable criticism of the use of accounting-based measures of firm performance (Benston, 1985). Accounting measures of performance are distorted by the fact that they fail to consider differences in systematic risk, temporary disequilibrium effects, tax laws and accounting conventions regarding R&D, inventory valuation and advertising, and are likely to vary more across industries as opposed to across firms, with the use of accounting-based measures of performance creating estimation bias in favour of industry effects (Wernerfelt and Montgomery, 1988). In an effort to address these concerns, a number of previous studies have used TQ and found it to be a much more appealing measure of firm performance in comparison to accounting-based measures of performance (Wolfe and Sauaia, 2003). According to Chung and Pruitt (1994), a number of previous studies have employed TQ to understand some diverse corporate phenomena, including the relationship between cross-sectional differences in investment and diversification decisions (Jose, Nichols and Stevens, 1986), managerial shareholdings and firm value (McConnell and Servaes, 1990), managerial performance and tender offer gains, investment opportunities and



Source: Authors' elaboration of the components of firms' value and their measurement methods based on Bacidore *et al.* (1997)

Figure 2. Components of firms' value and their measurement methods

tender offer responses (Lang, Stulz and Walking, 1989), and financing, dividend pay-outs and compensating policies (Bhattacharyya, Mawani and Morrill, 2008). Wernerfelt and Montgomery (1988) argued that, by incorporating a capital market measure of firm rents, TQ implicitly uses the correct risk-adjusted discount rate, imputes equilibrium returns and minimizes distortions due to tax laws and accounting conventions. Barney (2007) has suggested that TQ has advantages over accounting-based measures of performance since the calculation of the TQ ratio does not rely on accounting profits that are subject to creative accounting techniques, and managers are easily able to influence profit figures and investment decisions. TQ, as a measure of OP, is based on the fact that, being a market-based measure of performance, it is also future-oriented, and therefore reflects the present value of future cash flows based on current and future information (Ganguli and Agrawal, 2009; Wahla, Shah and Hussain, 2012).

Data and methodology

Data sources and variables

In an effort to examine the relationship between board structure and the performance of firms, we required two sets of data: one set of financial

variables and another set of CG variables for the board structure and ownership concentration. Data used in the empirical analyses were gathered manually from the annual reports of the sample companies since this information is audited and used by companies to communicate with financial markets. The sample population for this research is all companies listed on the Karachi Stock Exchange (KSE) between 2009 and 2015. The following firms were excluded from the empirical analysis: banking corporations, insurance companies, mutual funds and 'modaraba' companies; oil, gas and utility companies; companies in default and which have been issued a notice to regularize their financial position with the KSE; and companies that have been delisted, suspended or otherwise have data missing during the period of this research. The study period of the research covers the years spanning 2009–2015, excluding 2012. Data for 2012 were excluded from the analysis because, in March 2012, a revised Code of Corporate Governance was issued in Pakistan, with the changes made in the Code becoming effective on 1 July 2012. This means that, during the financial year of 2012, all listed companies in the country were not required to comply with the provisions of the revised Code. Clearly, this was likely to impact the degree and timing of compliance with the

provisions of the Code during the study period. The aforementioned process resulted in the creation of an unbalanced panel dataset consisting of 324 firms listed on the KSE and covering the years 2009–2015. Table 1 explains the variables and their corresponding sources and literature references.

Methodology for measuring Tobin's *Q*

TQ (Tobin, 1969) is the ratio between a physical asset's market value and its replacement value. The market value of a company's assets is measured by the market value of its outstanding stock and debt, whilst the replacement cost of assets is measured using their book value. A ratio of 1 or more indicates that the firm's market value exceeds that of its recorded assets. Thus,

$$\text{TQ ratio} = \frac{\text{total market value of company} + \text{liabilities}}{\text{total asset value} + \text{liabilities}}$$

Estimation method

The formation of the dataset (i.e. balanced panel) places restrictions on the employment of an OLS model, which could be inefficient and ultimately could lead to biased estimates arising due to unobserved heterogeneity (Wooldridge, 2010). The adoption of a generalized least squares estimator is critical in alleviating traditionally important econometric issues, such as potential heteroscedasticity between panels and the autocorrelation within them. However, our model, much like other studies in CG, is spurious to endogeneity (Abdallah, Goergen and O'Sullivan, 2015). Our study is also highly likely to be suffering from endogeneity and, more specifically, from omitted variable bias, since both OP and board composition are jointly determined by unobservable firm-specific variables. In order to effectively deal with endogeneity, we employ the system generalized method of moments (GMM) approach (Blundell and Bond, 1998). System GMM consists of a system of two sets of equations where each set contains its own internal instruments. More specifically, it uses lagged differences and lagged levels of dependent and independent variables as instruments, whilst also providing robustness towards panel-specific autocorrelation and heteroscedasticity. In order to ensure that the model is effectively dealing with endogeneity, we also need to test the validity of the instruments. For this reason, we employ a Sargan test

Table 1. Description of variables, sources and literature

Variables	Definition and measurement	Source	Literature
Tobin's <i>Q</i> (TQ)	Ratio of market value of firm to book value of assets, (market value of equity + book value of debts)/book value of total assets	Annual Reports/KSE website	Chung and Pruitt, 1994; Lindenberg and Ross, 1981; Tobin, 1969
Board size	Total number of directors on the board (natural logarithm)	Annual Reports	Anderson, Mansi and Reeb, 2004; Coles, Daniel and Naveen, 2008; Hermalin and Weisbach, 1998; Lipton and Lorsch, 1992; Pfeffer, 1972; Yermack, 1996
Board independence	Percentage share of non-executive directors to total directors on the board	Annual Reports	Baysinger and Butler, 1985; Daily and Dalton, 1992; Ghosh, 2006; Khan and Awan, 2012; Kyereboah-Coleman, 2007
CEO duality	Binary variable value 1 if the CEO and chairperson are the same; 0 otherwise	Annual Reports	Coombes and Wong, 2004; Donaldson and Davis, 1991; Fosberg and Nelson, 1999; Hashim and Devi, 2009; Ritchie, 2007
Board committees	Total number of board committees in the company	Annual Reports	Adams, Hermalin and Weisbach, 2010; McColgan, 2001; Puni, 2015
Ownership concentration	Total per cent of equity shares held by the first 5 largest shareholders	Annual Reports	Desender, 2009; Fama and Jensen, 1983; La Porta <i>et al.</i> , 2000; Shleifer and Vishny, 1986; Wahla, Shah and Hussain, 2012
Age	Number of years firm is listed on stock exchange	KSE website	Fama and French, 2004; Shumway, 2000
Size	Measured in total sales of the firm (natural logarithm)	Annual Reports	Amato and Burson, 2007; Lee, 2009
Leverage	Ratio of firm's debt to its total assets	Annual Reports	Schoenmaker and Wierds, 2015

KSE, Karachi Stock Exchange.

(Sargan, 1958), checking for over-identifying restrictions. Failure to reject the null hypothesis provides support to the model. Further, a second test checks for the potential presence of serial correlation. More specifically, it tests whether the error term is first-order and second-order serially correlated. In order to ensure that serial correlation is not a problem for our model, the second-order serial correlation (AR2) needs to be insignificant. In terms of formatting the model, we follow the extant research and treat year, industry and control variables as exogenous variables, and independent, moderating and interaction effects variables (i.e. board composition variables) as endogenous. Finally, following the suggestion by Aiken and West (1991), and in an effort to ensure any issue related to multicollinearity is eliminated, we mean-centred the respective independent and moderating variables before generating the interaction terms.

Results

Table 2 provides information on the pairwise correlations and descriptive statistics of the sample's variables. In order to further eliminate any remaining concern with regard to the potential presence of multicollinearity amongst our variables, OLS regression was used, with the variance inflation factors calculated. As can be seen in the last row of Table 2, the highest variance inflation factor score is 4.06, which is well below the commonly used threshold value of 5. As such, we conclude that there is no indication of multicollinearity.

Table 3 presents the system GMM regression estimates on OP (TQ). In terms of the interaction terms, we proceed to a stepwise regression analysis through the inclusion of each interaction term in each respective model, and finally all interaction terms in the final model (model 6). In order to determine whether or not the respective hypotheses are supported, we rely on the final model only. Hypothesis 1 predicted a positive relationship between board size and TQ. Our estimates support this conjecture since a positive and significant coefficient ($\beta = 0.942$, $p < 0.01$, model 6) is reported. Hypothesis 1 is thus supported. The results with regard to Hypothesis 2, predicting a positive relationship between board independence and OP, are rather mixed: whilst the stepwise estimates are positive and weakly significant

($\beta = 0.344$, $p < 0.10$, model 1), the estimates from the full model show a negative and highly significant relationship ($\beta = -0.484$, $p < 0.01$, model 6) between board independence and TQ. Hypothesis 2 is thus rejected since the estimates stemming from the full model provide a negative and significant coefficient. Hypothesis 3 suggested a negative relationship between CEO duality and OP. The respective coefficient is negative and significant ($\beta = -0.262$, $p < 0.01$, model 6). We thus conclude that Hypothesis 3 is supported. As regards Hypothesis 4, i.e. the relationship between board committees and OP, the results are also clear, since the coefficient turned out to be positive and highly significant ($\beta = 0.349$, $p < 0.01$, model 6). We therefore conclude that Hypothesis 4 is also supported. Finally, as regards Hypothesis 5, i.e. the relationship between ownership concentration and OP, the results may be viewed as strongly in favour of our initial conjecture, since the respective coefficient is also positive and highly significant ($\beta = 0.840$, $p < 0.01$, model 6). We are therefore in a position to support Hypothesis 5.

Hypotheses 6a–6d focused on how the interaction between board structure and ownership concentration may affect OP. Hypothesis 6a suggested that ownership concentration negatively moderates the relationship between board size and OP. Whilst the coefficient of the interaction term is positive and highly significant in the stepwise model ($\beta = 4.033$, $p < 0.01$, model 2), the interaction term coefficient in the final model is insignificant. We thus fail to support Hypothesis 6a. The econometric estimates suggest that the moderating effect of ownership concentration on the relationship between board independence and OP is negative and statistically significant ($\beta = -1.519$, $p < 0.01$, model 6), thus confirming our conjecture for a negative relationship. We therefore support Hypothesis 6b. In order to capture the significant moderating effect better, we proceed to a graphic illustration of the aforementioned relationship. More specifically, following the suggestion of Aiken and West (1991), we divide the sample into subgroups based on the moderating variables' means and standard deviations (i.e. mean ± 1 standard deviation) and examine the respective interaction effects by plotting the relationship between board independence and OP for each of the subgroups. Figure 3 graphically illustrates the moderating effect of ownership concentration and shows that for high (low)

Table 2. Pairwise correlations and descriptive statistics

	1	2	3	4	5	6	7	8	9	10	11	12	13
1 Tobin's Q	1.00												
2 Ln(Board size)	0.16	1.00											
3 Board independence	0.05	0.10	1.00										
4 CEO duality	-0.03	-0.26	-0.24	1.00									
5 Board committees	0.20	0.42	0.19	-0.31	1.00								
6 Ownership concentration (top 5)	0.15	-0.09	-0.04	-0.02	0.02	1.00							
7 Ln(board size) \times Ownership concentration	-0.08	-0.79	-0.06	0.20	-0.31	0.19	1.00						
8 Board independence \times Ownership concentration	-0.05	-0.06	-0.81	0.21	-0.13	0.02	0.07	1.00					
9 CEO duality \times Ownership concentration	-0.06	0.21	0.21	-0.83	0.26	0.03	-0.24	-0.25	1.00				
10 Board committees \times Ownership concentration	-0.04	-0.33	-0.13	0.26	-0.80	0.07	0.41	0.14	-0.31	1.00			
11 Age	0.13	0.18	0.08	-0.11	0.16	0.00	-0.11	-0.06	0.08	-0.07	1.00		
12 Ln(Firm size)	0.04	0.51	0.04	-0.25	0.44	0.03	-0.32	-0.02	0.23	-0.29	0.17	1.00	
13 Leverage	0.26	-0.07	-0.02	0.27	-0.06	-0.06	0.02	0.00	-0.27	0.04	-0.05	-0.23	1.00
VIFs	-	3.91	3.17	3.63	4.06	1.07	3.57	3.13	3.72	3.79	1.06	1.60	1.15
Mean	1.21	2.04	0.66	0.25	2.03	0.65	1.32	0.43	0.16	1.32	29.45	7.96	0.75
Standard deviation	0.65	0.15	0.13	0.43	0.61	0.18	0.38	0.14	0.29	0.56	13.58	1.72	0.51
Min	0.15	1.79	0.33	0.00	1.00	0.03	0.08	0.02	0.00	0.09	10.00	0.46	-0.30
Max	7.64	2.64	0.93	1.00	5.00	0.98	2.50	0.83	0.93	4.23	153.00	13.99	9.81

VIF, variance inflation factor.

Correlation coefficients with values greater than $|0.05|$ are significant at the 5% level of significance; two-tailed tests

Table 3. System GMM estimations on the relationship between board structure and organization performance (Tobin's Q)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Tobin's Q (lagged)	0.482*** (0.0296)	0.492*** (0.0258)	0.491*** (0.0255)	0.467*** (0.0262)	0.480*** (0.0217)	0.441*** (0.0164)
Ln(Board size)	2.370*** (0.408)	3.250*** (0.420)	1.533*** (0.340)	1.795*** (0.301)	1.236*** (0.241)	0.942*** (0.188)
Board independence	0.344* (0.183)	0.0132 (0.177)	0.220 (0.204)	0.138 (0.175)	0.159 (0.138)	-0.484*** (0.146)
CEO duality	-0.124* (0.0707)	-0.0313 (0.0635)	-0.142** (0.0685)	-0.407*** (0.0948)	0.000638 (0.0477)	-0.262*** (0.0576)
Board committees	0.0425 (0.0486)	0.137*** (0.0419)	0.0449 (0.0417)	0.0516 (0.0397)	0.352*** (0.0568)	0.349*** (0.0478)
Ownership concentration (top 5)	0.854*** (0.287)	1.204*** (0.234)	0.816*** (0.247)	0.726*** (0.229)	0.886*** (0.180)	0.840*** (0.134)
Ln(Board size) \times Ownership concentration		4.033*** (0.889)				-0.250 (0.465)
Board independence \times Ownership concentration			0.0585 (0.809)			-1.519*** (0.491)
CEO duality \times Ownership concentration				-0.617* (0.362)		-0.338* (0.189)
Board committees \times Ownership concentration					0.948*** (0.142)	0.939*** (0.120)
Age	-0.0149*** (0.00284)	-0.0212*** (0.00257)	-0.0116*** (0.00243)	-0.0112*** (0.00225)	-0.0110*** (0.00220)	-0.00941*** (0.00152)
Ln(Firm size)	-0.124*** (0.0307)	-0.112*** (0.0288)	-0.0905*** (0.0263)	-0.119*** (0.0251)	-0.0790*** (0.0206)	-0.0865*** (0.0152)
Leverage	0.267*** (0.0640)	0.262*** (0.0576)	0.259*** (0.0570)	0.292*** (0.0551)	0.257*** (0.0451)	0.301*** (0.0294)
Constant	-3.799*** (0.697)	-5.813*** (0.762)	-2.292*** (0.561)	-2.543*** (0.477)	-2.547*** (0.458)	-1.417*** (0.333)
Wald χ^2	1060.05***	1627.63***	1266.99***	1493.74***	2010.63***	4606.65***
Specification and validity tests						
Serial correlation (p value)						
AR(1)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
AR(2)	0.2246	0.2762	0.2188	0.2130	0.1297	0.1136
Sargan test (p value)	0.5398	0.7496	0.5645	0.6590	0.5617	0.5053
Observations	1574	1574	1574	1574	1574	1574
Number of firms	324	324	324	324	324	324

Notes: Dependent variable is Tobin's Q . Standard errors in parentheses. Independent and moderating variables are mean-centred. All models include year and industry dummies. Correlation 1 (AR1) and correlation 2 (AR2) are the first- and second-order autocorrelation of residuals respectively. The Sargan test is the test of over-identifying restrictions.

*** $p < 0.01$; ** $p < 0.05$; * $p < 0.10$; two-tailed tests.

levels of ownership concentration the relationship between board independence and OP is negative (positive). Hypothesis 6c proposed that ownership concentration negatively moderates the relationship between CEO duality and OP. Our results provide support in favour of this hypothesis, since a negative and significant coefficient is observed ($\beta = -0.338$, $p < 0.10$, model 6). The graphic illustration (Figure 4) clearly depicts that the relationship between CEO duality and OP is positive (negative) for low (high) levels of ownership concentration. Finally, as regards Hypothesis 6d and the moderating effect of ownership concentration

on the relationship between board committees and OP, the estimates do not provide support for this conjecture since the relative coefficient is positive and significant ($\beta = 0.939$, $p < 0.01$, model 6). Following the aforementioned method, we graphically depict this moderating effect. Figure 5 illustrates the moderating effect of ownership concentration and shows that for high levels of ownership concentration the positive relationship between board committees and OP is more pronounced compared to the slope attributed to low levels of ownership concentration, which, although positive, is emphatically less pronounced.

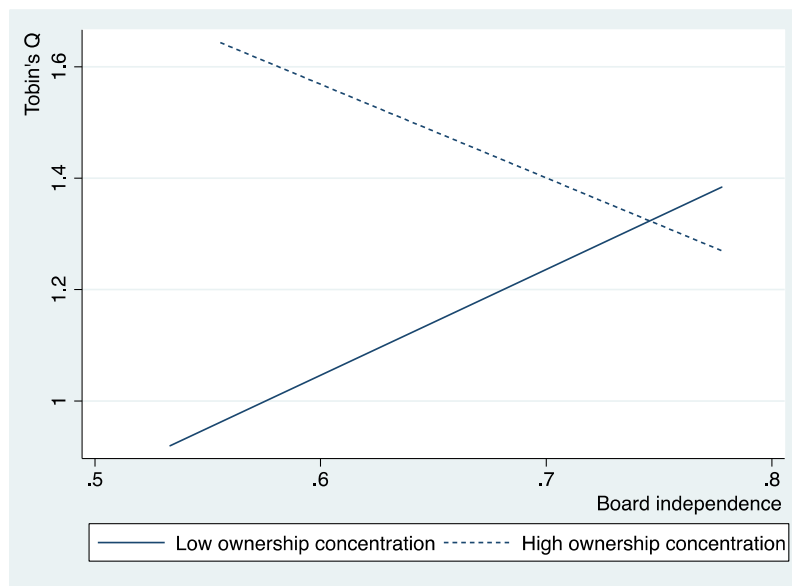


Figure 3. The moderating effect of ownership concentration on the relationship between board independence and performance (Tobin's Q) [Colour figure can be viewed at wileyonlinelibrary.com]

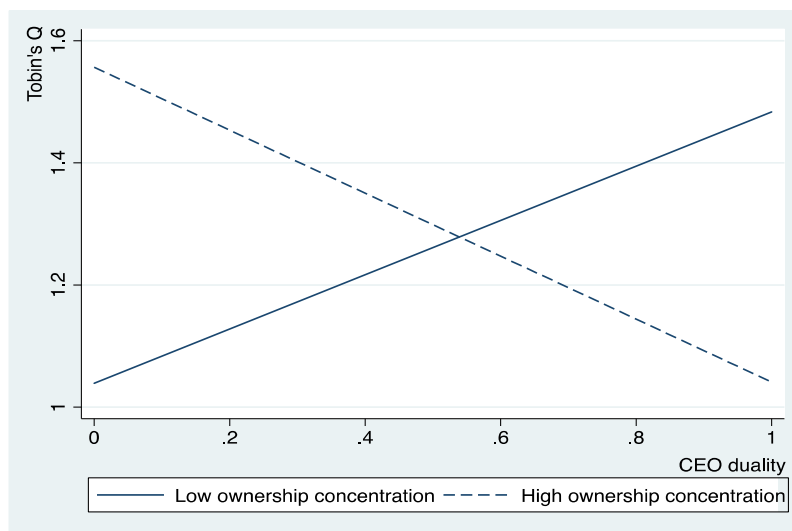


Figure 4. The moderating effect of ownership concentration on the relationship between CEO duality and performance (Tobin's Q) [Colour figure can be viewed at wileyonlinelibrary.com]

Discussion

In this study, we set out to empirically investigate the predictions of agency and resource dependence theories with regard to the relationship between board structure and OP measured in TQ, which is an objective measure of a firm's performance based on market perceptions of how a firm has performed thus far and how it is likely to perform in

the future. Responding to the call of researchers that not sufficient research of this nature has, as yet, been completed in the context of emerging economies, we collected detailed data on 324 non-financial listed companies in the country context of Pakistan and subjected them to in-depth econometric analysis in order to put to test existing and new conjectures relating to contributory factors of board structure on performance. Pakistan has

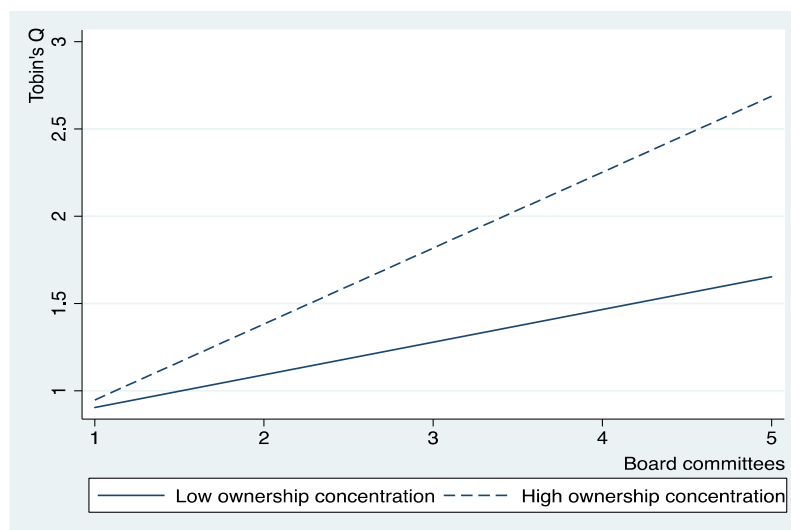


Figure 5. The moderating effect of ownership concentration on the relationship between board committees and performance (Tobin's Q) [Colour figure can be viewed at wileyonlinelibrary.com]

adopted an Anglo-American model of CG and displays several similar socio-economic characteristics of fellow emerging economies, e.g. with regard to concentrated ownership structure, family control, interlocking shareholdings and CEO duality. We arrive at various results, some of which confirm existing empirical work done by fellow researchers, in addition to some new results that shed new light on the complex CG relationship with performance.

We have found that board size is positively linked with a high TQ ratio, which aligns with previous findings (Dalton *et al.*, 1999; Kao and Chen, 2004; Lipton and Lorsch, 1992; Rahman and Ali, 2006). The size of the board was measured by the number of directors in it. Thus, the results tell us that a larger board size helps to improve firms' overall value. This can be explained by the fact that a large board size would mean more – and arguably better – views and decision-making following debates on the strategic decisions faced by a company in times of difficulty or at times of expansion. As with previous studies (Javed and Iqbal, 2006; Awan, 2012; Byrd and Hickman, 1992; Hillman, 2005; Rosenstein and Wyatt, 1990; Weisbach, 1998; Zahra and Pearce, 1989), we did not find support for the hypothesis that board independence is positively associated with a high TQ ratio. This result is counter-intuitive to the principles of agency theory, whereby a higher proportion of outside directors is believed to reduce agency costs and increase firm performance.

One explanation for this could be that, even if the board is composed of directors from outside the company, owing to their close association with company directors only a low level of dissent (which otherwise could lead to acrimonious relations) is voiced in relation to critical matters. As a result, both in-house and external directors operate on the principle of give and take – a cultural trait seen perhaps not only in Pakistan's social fabric but also in that of most developing countries. We proposed a negative relationship between CEO duality and OP. Consistent with Chen and Al-Najjar (2012), we found strong support for this conjecture, with our results showing that firms in which the CEO is also the chairperson of the board perform more poorly than those in which the CEO is not also the chairperson of the board. This is perhaps explained by the fact that, when the same individual holds both executive positions, power and decision-making are concentrated, meaning that decisions cannot be, or would not always be, made in the best interests of the company and all its stakeholders. One example of this is the interference with the recruitment of candidates qualified to perform a job in favour of lesser qualified candidates whose appointment may come via the CEO's social contacts (another trait of emerging economies where family and friends' connections 'matter'). Similar scenarios may also be seen to function with regard to internal promotions. In situations such as these, where a lesser qualified

candidate has been appointed/promoted to the job, his/her performance would not only be sub-par but he/she is also not likely to question decisions, beneficial or otherwise, made by the CEO and passed over to subordinates to be executed, thus adding little value to the company's operations. Following the literature (Adams, Hermalin and Weisbach, 2010; Beasley, 1996; Ezzamel and Watson, 1993; McColgan, 2001), we proposed that a larger number of board committees would have a positive influence on TQ. This reasoning was partly based on the logic that markets would view the existence of committees favourably, as a larger number of committees would mean more (constructive) discussions with better independent views, leading to better overall performance. As predicted, we did find support for this hypothesis and it is consistent with the results of Puni (2015). We had proposed that concentrated ownership has a positive impact on performance and found strong support for this conjecture. This is not difficult to explain when considering that stakeholders with large shares will have embedded interests in the performance of the company. It should also be noted in passing that highly leveraged firms have a positive impact on OP.

Power of concentrated ownership

Theoretically it can be argued that concentration of ownership can distort simple one-way causal relations between variables, e.g. board structure — how large or small the board would be and how independent it would be, and its impact on performance (Bohdanowicz, 2015; Lefort and Urzua, 2008; Manzaneque, Merino and Priego, 2016). For example, institutional owners may insist on directorships when the firm is important to them or otherwise when they perceive they are capable of preventing a firm from failing, particularly in the context of concentrated ownership (Manzaneque, Merino and Priego, 2016).

With regard to the first moderating effect, we failed to find support for a negative moderating effect of ownership concentration on the relationship between board size and OP. A possible explanation is that board size is not influenced as critically as other elements of the board structure when it comes to the power of ownership concentration. Although a large board size can, on several occasions, guarantee better and more systematic control of the decision-making process,

it can equally represent owners' interests, especially when the majority of the board members act on their behalf. As such, it is likely that even a large board size could be aligned with the owners' interests.

In consideration of the second moderating effect, and in line with our initial conjecture, we found that, for high levels of ownership concentration, the relationship between board independence and OP is negative. In other words, this shows that the negative relationship between board independence and OP is further amplified with a high level of ownership concentration. As discussed in the hypothesis development section, a high level of ownership concentration contradicts the notion of independence and the potentially high level of diversity and freedom of speech that may be related to a more independent board. This could eventually create mental and organizational misalignments, mainly attributed to the fact that both parties (owners and directors), on several occasions, represent disperse interests. This contradiction can be even more intense when the board represents a more independent voice and the owners exert a higher level of power and authority, expressed through a high level of ownership concentration. This finding may also be related to the idiosyncratic context of Pakistani firms which, compared to those originating in the western world, are more conservative and less diverse in terms of dissemination of power and authority.

The next moderating effect examined whether or not the power that comes with concentrated ownership negatively influences the relationship between CEO duality and OP. We found strong evidence for this conjecture. More specifically, we found that, when ownership concentration levels are high, this negatively influences the relationship between CEO duality and OP (and equally, when it is low, it positively influences this relationship). This finding is in line with our initial conjecture, and further indicates that a high level of ownership concentration intensifies the negative effect of CEO duality on OP. This confirms the view that excessive authority can lead to more detrimental effects in that direction. The combination of CEO duality and high ownership concentration could potentially reduce the level of control exerted by the board of directors, as well as the diversity of knowledge and resources that may be utilized by the firm.

Finally, with regard to the fourth moderating effect, we found a positive rather than a negative relationship between board committees and OP; more specifically, we found that this relationship was more rather than less pronounced for high levels of ownership concentration. It may be argued that, in Pakistani firms, large shareholders with concentrated ownership exercise their influence to control the activities of businesses; large shareholders normally act as the chairperson of the board, thus raising questions as to the effectiveness of the board in terms of its capability to seriously evaluate and challenge the CEO (Guizani, 2013).

Wider applicability of results

Emerging economies share a host of characteristics in common with regard to their political, economic and social set-ups. Although most emerging economies are now declared republics, a certain degree of autocratic, patriarchal or even dictatorial elements still exist in these countries' governance, which, in turn, has spillover effects on CG as well. As an instance, many large industrial houses in emerging countries get protection from the government in their business dealings, with both private and public sectors. Bushman, Piotroski and Smith (2004) suggest that the governance transparency factor is primarily related to a country's legal/judicial regime, whereas the financial transparency factor is primarily related to political economy. Dyck and Zingales (2004) investigated private benefits and reported that higher private benefits of control are associated with less developed capital markets, more concentrated ownership and more privately negotiated privatizations. Although this is a country-specific study, given its proximity with regard to political, economic and social set-up, we believe that the results would be applicable to countries with similar traits.

Implications for policymakers and managers

The primary aim of policymakers and managers is to ensure that CG is executed in the best interests of the stakeholders. A lesson the study imparts for them is that this aim can be achieved by keeping the board sufficiently large and also by having separate CEO and chairperson, as well as ensuring a sufficiently large number of committees

in place to analyse various aspects of policy matters. A moot result of our study is that, when ownership is concentrated, it has a positive impact on performance. However, both policymakers and managers also need to notice, when reviewing the results, that concentrated ownership does interfere with board independent operation which, in turn, impacts negatively on performance. It also interferes with CEO duality and performance. However, the concentration of ownership also helps with the formation of a sufficient number of committees, which, in turn, positively impacts performance. Therefore, it seems that concentrated ownership works as a two-edged sword and, although diversified ownership structure may be a much sought after policy aim, in practice the concentration of ownership may be operating as a blessing in disguise.

Limitations and avenues for future research

We acknowledge some limitations of this work. First, only firms listed on the stock exchange are included in the study and, although the study covers a significant number of firms listed on the exchange, future researchers could aim at increasing the sample size. Second, qualitative information in the form of surveys probing the question of CG (and its relation to performance measures) at a deeper level could be attempted. Finally, researchers would also benefit from probing more deeply as to who are the controlling shareholders as this could potentially influence the strength and sign of the moderating effect. Unfortunately, the nature of the data and information we gathered, as well as the restricted access to more detailed information in that direction, did not allow us to go beyond the already suggested hypotheses and assumptions.¹

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¹ We are grateful to an anonymous referee for pointing this out to us.

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