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Board Structure and Firm Performance: Evidence from An Emerging Economy

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ABSTRACT

We investigate the relationship between corporate board structure and firm performance of Bangladeshi companies. Using a sample of 654 firm-year observations for the period 2005-2009, the results show some support for aspects of agency theory as a greater proportion of independent directors on boards is related to better firm performance. Supporting resource dependence theory our result also suggest that larger boards provide valuable business experience, expertise, skill and social and professional networks which might add substantial business resources to the firms and thus positively impact on performance. We also find that female and foreign directors in Bangladesh provide more monitoring which leads to better firm performance. Our study contributes to extant research on board structure–performance relationship by providing evidence from an emerging economy context which is characterised by ownership concentration, family dominance and poor regulatory oversight.

INTRODUCTION

There has been an increasing interest in corporate governance in recent years due to collapses of major corporations in developed countries, such as Enron, WorldCom, HIH, One Tel. Such collapses of high profile corporate suggest the urgency of better corporate governance (Lavelle, 2002), although there are many debates concerning the efficiency of corporate governance (Clarke et al., 1998). The significance of strong corporate governance is evidenced by various governance reforms that have been undertaken around the world (see for example, the Sarbanes-Oxley Act in the US, CLERP 9 in Australia, Combined Code in the UK, and the Organization for Economic Development (OECD) Code). The collapse of Satyam in India suggests that good governance in the corporate sector is an important issue for the developing countries as well. Accordingly, international financial agencies such as World Bank, International Monetary Fund (IMF) have emphasised upon corporate governance reform as part of development goal for the developing countries.

The objective of our study is to advance the international corporate governance research agenda by describing the corporate governance environment in an emerging economy like Bangladesh and to examine the board structure and firm performance relationship using data from listed non-financial companies in Bangladesh during the period 2005-2009. The socialist ideology adopted by the Bangladesh government after it became a sovereign state in 1971 led to the nationalisation of its limited private sector owned industries. However, subsequent governments facing significant pressures for better economic transparency and accountability from donor agencies such as the World Bank, switched to privatisation policies, which resulted in the transfer of many government controlled entities to family ownership (World Bank, 2009). Consequently, Bangladesh’s capital market has evolved to comprise a high proportion of family owned public-listed companies. Siddiqui (2010) in his recent review of corporate governance within the Bangladesh corporate sector is critical of the high ownership concentration, family dominance, lack of shareholder activism, and poor enforcement and monitoring of regulations.

A prime motivation for investigating corporate governance, particularly corporate board structure in Bangladesh is that there has been a recent drive recently to attract more foreign direct investment in its fast growing private sector as a means of promoting economic development. As such the focus on foreign investment in Bangladesh has necessitated more transparent corporate operations. Additionally, in the context of Bangladesh, it is so warrant that the World Bank has imposed conditions requiring the improvement of corporate governance practices in order to get financial assistance (Solaiman, 2006). Accordingly in more recent times there have been some efforts to improve corporate governance practices in Bangladesh. As a part of World Bank reform programme the Securities and Exchange Commission (SEC) in Bangladesh had issued a ‘Corporate Governance Notification’ in 2006 which consists of some guidelines in regards to corporate governance practices including board structure of the listed companies on ‘Comply or Explain basis’. This notification requires that board size of a company should be limited between 5 to 20 members. It also requires that one tenth of the board members should be independent members. Furthermore it requires the companies that the office of the Chairperson of the Board and the Chief Executive Officer (CEO) should preferably be filled by two different individuals. In general board is not required to have any committee other than audit committee. It is argued that effective corporate governance leads to high level financial performance as well as market valuation (Klapper and Love, 2004; Rajagopalan and Zhang, 2008). An examination of different aspects of board structure which is an important governance mechanism provides us insight to the improvements in
corporate governance in an emerging economy like Bangladesh. We therefore examine different aspects of Bangladeshi corporate board structure and firm performance.

Corporate board structure as a critical internal governance mechanism has received significant attention in the previous studies (Baysinger and Butler, 1985; Yermack, 1996; Bhagat and Black, 2002; Jackling and Johl, 2009). The findings of these studies suggest that the board of directors through its monitoring activities minimises agency costs associated with the principal-agent relationship between owners and managers (Fama and Jensen, 1983). Lower agency costs in turn have implications for better firm performance. For instance, prior studies (Yermack, 1996; Kiel and Nicholson, 2003; Haniffa and Hudaib, 2006) suggest that board characteristics such as independence, size and CEO duality are directly related to firm performance. A limited number of studies have also been done in developing economy settings since emerging markets differ substantially (Powse, 1999) from developed economies in their institutional, regulatory and legal environments. However, the evidence relating to the impacts of Bangladeshi board independence, size and CEO duality on performance is scant.

Recently a study by Carter et al. (2003) using a sample of Fortune 1000 firms find that gender diversity improves board monitoring resulting in better performance. Oxelheim and Randoy (2003) find that foreign board members signal a higher commitment to corporate monitoring and transparency which leads to an increase in firm performance. Whilst female directors and foreign directors have been found to be related to board effectiveness (Carter et al., 2003; Oxelheim and Randoy, 2003), their impact on firm performance in a developing country like Bangladesh is unclear. The participation of Bangladeshi females on boards has been a more recent phenomenon. Female workers are still heavily concentrated in rural areas (employed in low productivity daily work for poor wages and often concentrated in public food for work programs) and in unpaid family businesses (Ahmed and Maitra, 2010). The literacy rates are approximately 48 per cent for female, compared to 59 per cent for men in 2009 (UNESCO, 2009). Further, foreign directors are also another aspect that may improve board effectiveness. Foreign directors are becoming increasingly common in Bangladesh because of the growth in multinational ventures. Haque et al. (2006), report that almost 14 per cent of the listed non-financial Bangladeshi firms have foreign directors. As such, whether females and foreign directors on Bangladeshi boards have a significant impact on performance remains an empirical issue. Our study addresses this issue by investigating the impact of female and foreign directors along with other board characteristics such as board size, independence and CEO duality on firm performance.

We find, based on recent data from Bangladeshi public-listed firms, that board independence has a positive and significant impact on firm performance. This implies that board monitoring by independent directors improves firm performance which is supported by agency argument. Consistent with the resource dependence theory our result also suggest that larger boards provide valuable business experience, expertise, skill and social and professional network which might add substantial business resources to the firms and thus positively impact on performance. Furthermore, we document that female and foreign directors are positively related to performance.

The findings of this study contribute to the literature in a number of ways. We examine the impact of board structure on firm performance in an emerging market setting such as Bangladesh, where there is a limited research on corporate governance practices. Corporate board as a critical governance mechanism is important for Bangladeshi publicly listed companies due to recent recommendations by the SEC that outlines some requirements for board structure. We take into account of some important board structure variables in Bangladeshi market which is characterised by ownership concentration, family dominance, lack of shareholder activism, poor regulatory oversight. While examining the impact of board structure on performance we consider two topical aspects of corporate board, namely female and foreign director which have received, significantly little attention in the emerging economy context. Overall, the outcome of the study may have some implications for the policy makers and regulators in understanding the impact of board structure on the quality of corporate governance practices in Bangladeshi firms. It can help the regulators to adopt an appropriate balance of legislation, regulatory reform and their enforcement to make improvements in the corporate governance practices in Bangladeshi firms.

The rest of the paper is structured as follows: the next section provides reviews related literature and develops hypotheses. This is followed by a section that describes research methodology. The empirical results are then presented which is followed by further analysis. The last section then summaries and concludes the paper.

LITERATURE REVIEW AND DEVELOPMENT OF HYPOTHESES

Board Independence and Performance

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Agency theory suggests that a higher proportion of independent directors should lead to better firm performance since it reduces the conflict of interests between the shareholders and managers and makes management more effective through better monitoring (Fama and Jensen, 1983; Shleifer and Vishny, 1997). Empirical evidence based on previous studies indicates mixed findings with respect to the relationship between board independence and firm performance. For example, Weisbach (1988) notes that board independence is positively related to performance. He argues that the independent directors perform monitoring role in the firms which in turn improves firm performance. Similarly, Rosenstein and Wyatt (1990) find that the appointment of a further outside director would lead to an increase in shareholder wealth. Moreover boards with more independent directors are more likely to force resignation of poorly performing CEOs. The findings of the study by Baysinger and Butler (1985) also support this contention.

Although it is argued that board independence improves firm performance through monitoring, prior research document a negative impact of board independence on firm performance. For example, Agrawal and Knoeber (1996) document a negative relationship between board independence and firm performance. They argue that independent directors are sometimes added to boards for political reasons and these directors have lack of monitoring expertise which in turn affects firm performance negatively. Erickson et al. (2005) find that that poorly performing firms increase the fraction of outside directors in subsequent periods to please unhappy investors. However, this addition of directors also has a negative impact on performance.

There is also a group of studies which find that board independence does not have any effect on firm performance. For example, Hermelin and Weisbach (1991) find no relationship between the proportion of non-executive directors on the board and performance. In the same vein, Bhagat and Black (2002) find no evidence that greater board independence improves firm performance.

Although prior research on the issue of whether independent directors add value to a firm’s performance is mixed, the agency theory approach is adopted for the examination of board independence in this study. The SEC notification on corporate governance in Bangladesh requires the listed firms to have independent directors (at least one tenth of the total number of the company’s board of directors). Such a guideline has emphasised upon the need for independent directors capable of acting independently. Family dominance and poor regulatory oversight in Bangladesh implies the need of independent directors to protect the interest of minority shareholders. The agency theory suggests that higher portion of independent directors will increase the monitoring and reduce any self-interested actions by managers and therefore, will be related to better firm performance. The first hypothesis is based on agency theory and is proposed accordingly.

**H1:** The proportion of independent directors on the board of directors of Bangladeshi firms is positively related to firm performance.

### Board Size and Performance

Board size is a significant determinant of effective corporate governance mechanism (Pearce II and Zahra, 1992; Dalton et al. 1999). While inclusion of more directors increases the board monitoring capacity, the incremental cost of poor communication and decision making associated with larger groups may outweigh the benefits. Accordingly, Lipton and Lorsch (1992) argue that larger board may face poor coordination due to the large number of potential interactions among group members and free riding problem. They recommend limiting the board members maximum to ten people, with a preferred size of eight to nine.

Previous empirical evidence suggests that board size may potentially affect the quality of corporate governance and firm performance. For example, Yermack (1996) finds evidence that firms with smaller boards usually have higher market valuations than firms with larger boards. He also finds that firms have positive abnormal stock returns around the announcement dates of reduction in their board size. Similarly, Eisenberg et al. (1998) document an inverse relationship between board size and performance in Finnish firms. In contrast, there is a group of studies that suggests a positive relationship between board size and performance which is supported by resource dependence theory (Dalton et al., 1998; Yameesri and Herath, 2010; Kiel and Nicholson, 2003; Jackling and Johl, 2009). Consistent with the resource dependence theory, these studies argue that larger boards offer more experience and knowledge, which in turn increase managerial ability to make better business decisions and improve firm performance.

The corporate governance notification in Bangladesh has emphasised upon board size. It is however, unclear to what extent the research findings from Western world with respect to board size and performance will be applicable for Bangladeshi companies. There is clearly inadequate number of qualified independent directors which suggests that firms may have to rely upon larger boards for getting access to external environment to reduce uncertainty and improve performance. Furthermore,
most of the family dominated firms may appoint family members on boards, which is likely to restrict the recruitment of qualified independent directors on Bangladeshi corporate boards. Given these characteristics, larger Bangladeshi boards may provide substantial business resources to the firms. Consistent with the resource dependence theory, we hypothesise that larger boards will lead to better firm performance. Accordingly, the second hypothesis is presented as follows.

**H2: There is a positive relationship between the size of the board and performance of Bangladeshi firms.**

### CEO Duality and Performance

According to agency theory same person should not hold two positions concurrently, as this will lessen the effectiveness of board monitoring and create a conflict between management and board which may lead to poor performance (Finkelstien and D’Avent, 1994). Kang and Zardkoohi (2005) argue that CEO duality reduces firm performance due to CEO entrenchment and a decline in board independence. In addition, CEO duality provides a CEO the power to negotiate with the board which may help the CEO to pursue self-serving interest. Previous studies find a negative relationship between CEO duality and firm performance (Brickley et al., 1997; Goyal and Park, 2002; Yermack, 1996) which is consistent with the agency argument.

In contrast to agency theory resource dependency theory argues that CEO duality can increase CEO discretion by providing a broader power base and control authority, and can weaken the relative power of other interest groups (Hambrick and Finkelstein, 1987). Pfeffer and Salancik (1978) note that CEO duality responses faster to external events, and facilitate accountability of decision making which in turns improve firm performance. Moreover, Boyd (1995) argues that CEO duality is more advantageous under certain external environmental condition, such as resource scarcity and complex and dynamic environment. Previous empirical research documents a positive impact of CEO duality on firm performance which is consistent with the resource dependence argument (Pearce and Zahra, 1991, Daily and Delton, 1992; Boyd, 1995).

The SEC notification on corporate governance recommends the role of chairman and CEO should be separated, to limit the power of board leaders particularly given the importance of family dominated companies in Bangladesh. This is consistent with the non-duality argument implying that the separation of CEO and chairman positions ensures better corporate monitoring which in turn improves performance. Braun and Sharma (2007) find that risk of family entrenchment reduces when different persons occupy the CEO and board chair position. Therefore, in the light of corporate governance notification in Bangladesh, we take into account of agency perspective of CEO duality which suggests an adverse effect on performance. Accordingly, we propose the following hypothesis.

**H3: There is a negative relationship between CEO duality and performance of Bangladeshi firms.**

### Female Directors and Firm Performance

It is argued that diversity of corporate board enhances better monitoring and it increases board independence (Mace, 1971). Adams and Ferreira (2009) document that female board members improve board inputs – have higher board attendance, improve board attendance of male directors, and are more likely to take up monitoring positions on audit. Moreover, they are more likely to hold CEOs accountable for poor performance. Letender (2004) argues that female directors sometimes incite lively boardroom discussions, which leads to better decision making. Kramer et al. (2006) find that female directors are more prepared than male directors to push “tough issues” at the board that other were reluctant to tackle.

There have been several empirical studies that document a significantly positive relationship between gender diversity and firm performance (Erhardt et al., 2003; Carter et al., 2003; Francoeur et al., 2008). The findings of these studies suggest that the presence of female directors on the board is rewarded with a market value premium since they play a vital role in effective monitoring and maintaining the efficiency of a board of directors.

Previous studies, on the other hand, document a negative relationship between the proportion of female directors and performance (Bohren and Stron, 2010; Adams and Ferreira, 2009). The findings of these studies suggest that female board members may be appointed on the board as a sign of tokenism, and as such their contributions may be marginalized. Furthermore, Rose (2007) argues that female board members with a non-traditional background who are in the socialization process instinctively adopt the ideas of the majority of conventional board members. This results in non-materialization of potential performance.

The corporate governance notification in Bangladesh did not provide any guideline with respect to gender diversity of corporate boards. In some Bangladeshi family dominated firms female board members are usually appointed based on family ties. In most cases, the founder owners or directors appoint their wives and daughters on the boards, often with the motive of increasing family voting power or dominance (Uddin and Choudhury, 2008). As family members, they do not need to bring in-depth business perspective, skill or educational qualifications (Uddin and Choudhury, 2008). The cultural perspective is also very important to understand the impact of female board members on firm performance. The participation of females on the labour force has increased from 23.9 percent in 1999
to 31.5 percent in 2009 (BBS, 2009). The literacy rate for woman is also increasing. Furthermore the national women development policy emphasises upon women empowerment. This is evidenced by increasing number of female participation in the national parliament and in Bangladesh civil service. Although gender inequality still prevails in Bangladesh, it is expected that female board members will prove their competencies by efficient monitoring and improving firm performance.

Based on the above discussion we propose following hypothesis.

**H4:** There is a significant positive impact of proportion of female directors on performance of Bangladeshi firms.

### Foreign Directors and Firm Performance

It is argued that foreign directors bring valuable knowledge related to contextual issues in foreign markets and are able to increase the quality of strategic decision making (Zahra and Filatotchev, 2004). Moreover, foreign directors are less likely to be affiliated with the firms and its management and hence they are more likely to be independent (Van der Walt and Ingley, 2003). Therefore, from an agency theory perspective foreign directors may improve monitoring resulting in better firm performance. The limited empirical evidence on the relationship between foreign directorship and firm performance also supports this contention. For example, Oxelheim and Randoy (2003) find that foreign board members have significantly positive impact on firm performance. They argue that having a foreign member on the board signals a higher commitment to corporate monitoring and transparency and enhance reputation in the financial market which leads to an increase in firm value.

The corporate governance notification in Bangladesh did not provide any guideline with respect to foreign directors on corporate boards. The inclusion of foreign board members in Bangladeshi firms is a step forward to the globalization process. The inclusion of foreign board members will promote exchange of information to their international network. They can bring valuable knowledge and expertise in Bangladeshi firms. Their presence will also signal a commitment to shareholder rights, something which appeals to investors. In brief consistent with the agency argument we conjecture that foreign directors in Bangladesh can improve the accountability process in the light of their foreign experience and knowledge. Thus it can be argued that foreign directors can make the board more effective and efficient resulting in a better performance. Accordingly, we propose the following hypothesis.

**H5:** There is positive relationship between proportion of foreign directors on the board and performance of Bangladeshi firms.

### DATA AND MODEL DEVELOPMENT

#### Data and Sample Selection

The sample consists of all 155 non-financial companies listed with Dhaka Stock Exchange (DSE) in Bangladesh from 2005 to 2009, producing a total sample of 775 sample year observation. Due to missing information, we then had to exclude 121 firm year observations, yielding a final sample of 654 firm-years observations. The data for our analysis comes from multiple sources of secondary data. We collect the financial data from the annual reports of the sample companies listed on the stock exchange. Stock price data is obtained from the DataStream database. Corporate governance data was hand collected from the corporate governance disclosures and directors’ report contained in annual reports.

#### Model Specification

The following model is used to test Hypotheses H1, H2, H3, H4 and H5.

\[
\text{PERFORMANCE} = \alpha + \beta_1 \text{BIND} + \beta_2 \text{FSIZE} + \beta_3 \text{CEODU} + \beta_4 \text{FEMDIR} + \beta_5 \text{FORDIR} + \beta_6 \text{BOWN} + \beta_7 \text{FSIZE} + \beta_8 \text{FAGE} + \beta_9 \text{LEV} + \beta_{10} \text{RISK} + \beta_{11} \text{GROWTH} + \beta_{12} \text{INDDUM} + \beta_{13} \text{YEARDUM} + \varepsilon
\]

One concern in the above model, if an OLS regression analysis is used, is the potential endogeneity problem as pointed out by Hermelin and Weisbach (1988). This is consistent, for example, that better-performing firms having superior board structure platform or poor performance by firms resulting in initiatives aimed at improving board structure and the accountability of managers and directors. To address endogeneity problems we use a two-stage least squared regression analysis and instrumental variables. To test for endogeneity in the model, the method of generalised instrumental variable estimation is used. Firstly, each of the potentially endogenous variables is individually regressed on a set of available instruments and the truly exogenous variables in the model. These represent a series of single reduced form or artificial equations, where the instruments are second lagged values of the potentially endogenous variables.

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1. It is 48.6 percent in 2009 (BBS, 2009).
2. In 2005, there were 282 listed companies in the DSE. Out of this, 127 companies belong to the financial sector. These have been excluded since they are controlled by different regulations and likely to have different disclosure requirements and governance structure.
3. Consistent with Hermelin and Weisbach (1991) we use lagged values of board structure variables.
### Table 1: Summary of the operationalisation

<table>
<thead>
<tr>
<th>Variables</th>
<th>Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dependent variable</strong></td>
<td></td>
</tr>
<tr>
<td>Tobin’s Q</td>
<td>The market value of equity plus the book value of total debt divided by book value of total assets</td>
</tr>
<tr>
<td>Return on Assets (ROA)</td>
<td>The ratio of earnings before interest and taxes and book value of total assets.</td>
</tr>
<tr>
<td><strong>Explanatory variables</strong></td>
<td></td>
</tr>
<tr>
<td>Board independence (BIND)</td>
<td>The proportion of independent directors on the board, who do not have any material interest into the firm</td>
</tr>
<tr>
<td>Board size (BSIZE)</td>
<td>The number of directors on the board</td>
</tr>
<tr>
<td>CEO duality (CEODU)</td>
<td>Where the same person serves the role of the CEO of the firm as well as the Chairman of the board</td>
</tr>
<tr>
<td>Female directors (FEMDIR)</td>
<td>The proportion of female directors on the board</td>
</tr>
<tr>
<td>Foreign directors (FORDIR)</td>
<td>The proportion of foreign directors on the board</td>
</tr>
<tr>
<td><strong>Control variables</strong></td>
<td></td>
</tr>
<tr>
<td>Board ownership (BOWN)</td>
<td>The percentage of directors’ total shareholdings</td>
</tr>
<tr>
<td>Firm size (FSIZE)</td>
<td>Natural logarithm of total assets</td>
</tr>
<tr>
<td>Firm age (FAGE)</td>
<td>Natural log of the number of year since the firm’s inception</td>
</tr>
<tr>
<td>Risk (RISK)</td>
<td>The standard deviation of the firm’s daily stock return over the prior 12-month period</td>
</tr>
<tr>
<td>Leverage (LEV)</td>
<td>The ratio of book value of total debt to book value of total assets</td>
</tr>
<tr>
<td>Growth (GROWTH)</td>
<td>Firm’s assets growth ratio</td>
</tr>
</tbody>
</table>

Finally we use year dummies (YEARDUM) and industry dummies (INDDUM) for manufacturing and processing, services, information technology (IT) and other sectors.

### REGRESSION RESULTS AND DISCUSSION

#### Descriptive Statistics

Table 2 presents three panels of descriptive statistics for the full sample. It provides means, medians and standard deviations for the main variables in the full sample. The average number of director is around 7, 6.30 per cent are independent directors (BIND), 16.90 per cent are female directors (FEMDIR) and 5.50 per cent are foreign directors (FORDIR). Moreover, on average 25 per cent firms have CEO duality (CEODU). The average Tobin’s Q and ROA of our sample firms are 1.508 and 0.073 respectively. The average firm age (FAGE) is nearly 23 years and the average firm size (FSIZE) is 8.70 (natural logarithm of total assets).

Table 2 provide summary statistics for the data of our analysis. The data is consisting of 654 firm’s year observations from 2005 to 2009 listed at Dhaka Stock Exchange. Tobin’s Q is the market value of equity plus the book value of total debt divided by book value of total assets. ROA is the ratio of profit after tax and book value of total assets, Board size (BSIZE) is defined as the number of directors on the board. Board independence (BIND) calculated as the number of independent directors scaled by the size of the board. CEO duality (CEODU) is a dummy variable equal to one when the chairperson is the CEO and zero otherwise. Female (FEMDIR) and foreign directors (FORDIR) are measured by the proportion of female and foreign directors on the board respectively. Board ownership (BOWN) is the percentage of directors’ total shareholdings on the board. Firm age (FAGE) is the natural log of number of years since firm inception. Leverage (LEV) is calculated as the ratio of book value of total debt to book value of total assets. Risk (RISK) is the standard deviation of the firm’s daily stock return over the prior 12-month period. Firm size (FSIZE) is the natural log of book value of assets. Growth (GROWTH) of a firm is measured by taking the firm’s assets growth ratio.

### Table 2: Descriptive Statistics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Median</th>
<th>Std. Dev.</th>
<th>Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIZE</td>
<td>8.696</td>
<td>8.684</td>
<td>0.659</td>
<td>654</td>
</tr>
<tr>
<td>Tobin’s Q</td>
<td>1.508</td>
<td>1.118</td>
<td>1.200</td>
<td>654</td>
</tr>
<tr>
<td>LEV</td>
<td>0.749</td>
<td>0.604</td>
<td>0.789</td>
<td>654</td>
</tr>
<tr>
<td>FAGE</td>
<td>22.989</td>
<td>23.000</td>
<td>10.940</td>
<td>654</td>
</tr>
<tr>
<td>ROA</td>
<td>0.073</td>
<td>0.070</td>
<td>0.095</td>
<td>654</td>
</tr>
<tr>
<td>BSIZE</td>
<td>6.742</td>
<td>6.500</td>
<td>2.073</td>
<td>654</td>
</tr>
<tr>
<td>BOWN</td>
<td>0.293</td>
<td>0.304</td>
<td>0.201</td>
<td>654</td>
</tr>
<tr>
<td>GROWTH</td>
<td>0.116</td>
<td>0.048</td>
<td>0.341</td>
<td>654</td>
</tr>
<tr>
<td>RISK</td>
<td>0.028</td>
<td>0.027</td>
<td>0.024</td>
<td>654</td>
</tr>
<tr>
<td>CEODU</td>
<td>0.246</td>
<td>0.000</td>
<td>0.431</td>
<td>654</td>
</tr>
<tr>
<td>BIND</td>
<td>0.063</td>
<td>0.000</td>
<td>0.082</td>
<td>654</td>
</tr>
<tr>
<td>FEMDIR</td>
<td>0.169</td>
<td>0.143</td>
<td>0.183</td>
<td>654</td>
</tr>
<tr>
<td>FORDIR</td>
<td>0.055</td>
<td>0.000</td>
<td>0.157</td>
<td>654</td>
</tr>
</tbody>
</table>
Table 3 provides a simple correlation matrix for the key variables in the analysis. Board independence (BIND) is positively correlated with board size (FSIZE) and ROA. However, board independence (BIND) is negatively correlated with CEO duality (CEODU). Board size (FSIZE) and foreign directors (FORDIR) are positively and significantly correlated with ROA and Tobin’s Q. Further, companies with a higher level of female directors (FEMDIR) have a higher ROA.

The following table provides correlation matrix. Tobin’s Q is the market value of equity plus the book value of total debt divided by book value of total assets. ROA is the ratio of profit after tax and book value of total assets. Board size (FSIZE) is defined as the number of directors on the board. Board independence (BIND) calculated as the number of independent directors scaled by the size of the board. CEO duality (CEODU) is a dummy variable equal to one when the chairperson is the CEO and zero otherwise. Female (FEMDIR) and foreign directors (FORDIR) are measured by the proportion of female and foreign directors on the board respectively. Board ownership (BOWN) is the number of years since firm inception. Leverage (LEV) is calculated as the ratio of book value of total debt to book value of total assets. Risk (RISK) is the standard deviation of the firm’s daily stock return over the prior 12-month period. Firm size (FSIZE) is the natural log of book value of assets. Growth (GROWTH) of a firm is measured by taking the firm’s assets growth ratio. Bold text indicates significant coefficient.

<table>
<thead>
<tr>
<th>TABLE 3: Correlation matrix</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIND, FEMDIR, FORDIR, GROWTH</td>
</tr>
<tr>
<td>BIND</td>
</tr>
<tr>
<td>BZISE</td>
</tr>
<tr>
<td>CEODU</td>
</tr>
<tr>
<td>FEMDIR</td>
</tr>
<tr>
<td>FORDIR</td>
</tr>
<tr>
<td>FAGE</td>
</tr>
<tr>
<td>FSIZE</td>
</tr>
<tr>
<td>GROWTH</td>
</tr>
<tr>
<td>LEV</td>
</tr>
<tr>
<td>RISK</td>
</tr>
<tr>
<td>Tobin’s Q</td>
</tr>
<tr>
<td>ROA</td>
</tr>
<tr>
<td>BOWN</td>
</tr>
</tbody>
</table>

Regression results
The main focus of our analysis is to examine the impact board structure on performance in Bangladeshi listed firms. The results are reported in Table 4. First we run an OLS regression. As previously discussed, we also use an instrumental variable (IV) regression to address the issue of endogeneity. It can also be argued that board structure variables may be endogenously determined by the unobserved firm heterogeneity. Therefore, we test our model using a fixed effect (FE) regression as well.

● Board Independence
The first hypothesis of interest is board independence (BIND). The findings are shown in Panels A and B of Table 4. We find that board independence (BIND) variable is positive and significant in both OLS ($\beta = 0.392, p < 0.10$) and fixed effect regressions ($\beta = 1.421, p < 0.01$) when Tobin’s Q is used as the measure of performance in Panel A. When we use ROA as the measure of performance in Panel B we find positive and significant coefficients of board independence (BIND) in all regressions (OLS: $\beta = 0.106, p<0.01; IV: \beta = 0.207, p<0.01; FE: \beta = 0.027, p<0.10$). Thus H1 is supported. Consistent with the agency argument we document that board independence in Bangladesh improves firm performance by ensuring better monitoring. This is also consistent with the findings of previous studies from the developed countries (Weisbach, 1988; Baysinger and Butler 1985; and O’Connell and Cramer, 2010).

● Board Size
The variable tested in hypothesis two is board size (FSIZE). The coefficient of board size (FSIZE) is positive and significant in all three regressions (OLS: $\beta = 0.047, p < 0.05; IV: \beta = 0.057, p < 0.10; FE: \beta = 0.049, p < 0.10$) when Tobin’s Q is used as the measure of performance in Panel A. When we use ROA to measure performance in Panel B we document results consistent with that of Panel A. Overall our results support H2. Consistent with the resource dependency argument our results suggest that board size has a positive impact on the performance of Bangladeshi firms. The findings of our analysis support previous studies such as Dalton et al. (1998) and Jackling and Johl (2009) which reveals that larger boards provide valuable business.
knowledge, expertise, skill and social and professional network to the firms. Therefore, decision making process as well firm performance is improved.

**CEO duality**

Our third hypothesis tests the impact of CEO Duality (CEODU) on firm performance. The coefficients of CEO duality are insignificant in all three regressions. It implies that CEO duality does not affect firm performance of our sample companies. Thus H3 is not supported. Our results are consistent with prior studies which suggest that the impact of CEO duality on firm performance varies with industry type and it will benefit some firms while separation will be more worthy for others (Baliga et al., 1996; Elsayed, 2007).

**Female directors**

Our next hypothesis tests the relationship between the female directors and firm performance. The coefficient of female directors (FEMDIR) is positive and significant (OLS: $\beta = 0.075$, $p<0.10$; IV: $\beta = 0.202$, $p<0.05$) in OLS and IV regressions when performance is measured by Tobin’s Q in Panel A. When we use ROA as the measure of performance in Panel B we find positive and significant coefficient of female directors (FEMDIR) in all regressions (OLS: $\beta = 0.060$, $p<0.05$; IV: $\beta = 0.063$, $p<0.05$; FE: $\beta = 0.029$, $p<0.05$). Thus H4 is supported. In other words we document a positive impact of female directors on Bangladeshi firm performance which is consistent with the agency argument. Our overall findings may imply that in spite of some cultural impediments female board members perform monitoring effectively to improve firm performance.

**Foreign directors**

Our last hypothesis examines the relationship between the foreign directors and performance. We find that the coefficient of foreign directors (FORDIR) is positive and significant in all three regressions when performance is measured by both Tobin’s Q (OLS: $\beta = 1.607$, $p<0.01$; IV: $\beta = 1.927$, $p<0.01$; FE: $\beta = 0.701$, $p<0.01$) and ROA (OLS: $\beta = 0.065$, $p<0.01$; IV: $\beta = 0.054$, $p<0.05$; FE: $\beta = 0.042$, $p<0.05$). Consistent with Oxelheim and Randoy (2003) we also document that foreign directors improve performance of Bangladeshi firms. Thus H5 is supported. Our results imply that with their international exposure and commitment to minority shareholders as effective monitors foreign directors contribute to better firm performance.

**Control Variables**

With respect to the control variables, we find that firm age (FAGE) is positive significantly and related to firm performance measured by both Tobin’s Q and ROA. The coefficient of risk (RISK) is negative and significant in both measure of performance. However, the coefficient for leverage6 (LEV) is positive and significant for Tobin’s Q and negative and significant for ROA.

| Variable | Panel A (Tobin’s Q) | Panel B (ROA) |
|----------|-----------------|----------------|----------------|----------------|
|          | OLS | IV | FE | OLS | IV | FE |
| C        | 2.207 | 0.000 | 2.105 | 0.000 | 2.601 | 0.072 | -0.031 | 0.472 | -0.041 | 0.308 | 0.037 | 0.387 | 0.037 | 0.815 |
| BIND     | 0.392 | 0.073 | 0.401 | 0.522 | 1.421 | 0.014 | 0.106 | 0.007 | 0.207 | 0.000 | 0.000 | 0.027 | 0.051 |
| BSIZE    | 0.047 | 0.018 | 0.057 | 0.069 | 0.049 | 0.057 | 0.009 | 0.047 | 0.001 | 0.306 | 0.062 |
| CEODU    | -0.059 | 0.568 | -0.189 | 0.216 | 0.139 | 0.169 | 0.003 | 0.702 | -0.001 | 0.879 | 0.010 | 0.304 |
| FEMDIR   | 0.075 | 0.049 | 0.202 | 0.036 | 0.401 | 0.103 | 0.060 | 0.029 | 0.063 | 0.052 | 0.029 | 0.041 |
| FORDIR   | 1.607 | 0.000 | 1.927 | 0.000 | 0.701 | 0.000 | 0.065 | 0.000 | 0.054 | 0.036 | 0.042 | 0.037 |
| BOWN     | -0.207 | 0.173 | -0.281 | 0.215 | -0.179 | 0.276 | -0.108 | 0.032 | -0.198 | 0.201 | -0.142 | 0.173 |
| GROWTH   | -0.059 | 0.443 | -0.091 | 0.471 | -0.207 | 0.029 | 0.017 | 0.382 | 0.027 | 0.159 | 0.006 | 0.043 |
| LEV      | 0.827 | 0.000 | 0.901 | 0.000 | 0.717 | 0.000 | -0.041 | 0.000 | -0.039 | 0.000 | -0.039 | 0.000 |
| RISK     | -2.473 | 0.061 | -2.142 | 0.141 | -0.105 | 0.087 | -0.502 | 0.000 | -0.307 | 0.019 | -0.108 | 0.127 |
| FAGE     | 0.000 | 0.069 | 0.007 | 0.075 | 0.005 | 0.497 | 0.001 | 0.000 | 0.001 | 0.000 | 0.000 | 0.001 |
| FSIZE    | -0.112 | 0.053 | -0.128 | 0.074 | -0.107 | 0.147 | 0.006 | 0.148 | 0.008 | 0.208 | 0.004 | 0.407 |
| YEARDUM  | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| INDDUM   | Yes | Yes | No | Yes | Yes | No |
| Adjusted R-squared | 0.542 | 0.531 | 0.691 | 0.317 | 0.282 | 0.684 |
| F-statistic | 37.891 | 33.817 | 41.373 | 17.637 | 12.072 | 11.009 |

The following Panel A and B reports the regression results relating board structure and firm performance. *Family firms* are those where the family members hold’s at least twenty percent

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6 Since leverage and Tobin’s Q are highly correlated, we rerun our model after excluding leverage. We find results consistent with the results reported in Table 4.
equity ownership and at least one member of controlling family hold a managerial position otherwise firms are considered as non-family firms. Tobin’s $Q$ is the market value of equity plus the book value of total debt divided by book value of total assets. ROA is the ratio of profit after tax and book value of total assets. Board independence (BIND) is calculated as the number of independent directors scaled by the size of the board. CEO duality (CEODU) is a dummy variable equal to one when the chairperson is the CEO and zero otherwise. Female (FEMDIR) and foreign directors (FORDIR) are measured by the proportion of female and foreign directors on the board respectively. Board ownership (BOWN) is the percentage of directors’ total shareholdings on the board. Firm age (FAGE) is the natural log of number of years since firm inception. Leverage (LEV) is calculated as the ratio of book value of total debt to book value of total assets. Risk (RISK) is the standard deviation of the firm’s daily stock return over the prior 12-month period. Firm size (FSIZE) is the natural log of book value of assets. Growth (GROWTH) of a firm is measured by taking the firm’s assets growth ratio. Number of observation is 654. The reported results are heteroskedasticity and autocorrelation consistent.

SUMMARY AND CONCLUSIONS

Corporate governance in Bangladesh plays an important role in attracting and holding the foreign investments, and in restoring confidence among both domestic and foreign investors. Corporate board as a critical internal governance mechanism can play a significant role in ensuring better corporate governance practices. Accordingly, we investigate the relationship between board structure and performance using a sample of the listed non-financial Bangladeshi companies. We find that board independence has a positive impact on performance of Bangladeshi firms. This is consistent with the monitoring perspective of agency argument documented in developed countries. This result also implies the need for independent directors in an emerging market like Bangladesh. We also document that board size is positively related to firm performance. This is consistent with the resource dependence argument indicating that larger boards may provide valuable business knowledge, expertise, skill and social and professional network to the firms (Dalton et al., 1998 and Jackling and Johl, 2009). Overall, larger boards in Bangladeshi companies may provide substantial business resources to the firms which in turn improve firm performance.

In regards to CEO duality we document insignificant results. One possible reason for this finding is the combination of different industries in the analysis. For example, it may be that positive impacts in some industries offset negative effect in others. Indeed, some previous work (see for example, Boyd, 1995; Brickley et al., 1997) has argued that the impact of CEO duality on corporate performance is dependent on both the industry and the study’s context. Our results also suggest a positive relationship between female directors and performance. In spite of cultural impediments female directors in Bangladesh play an effective monitoring role to prove their competencies which lead to better firm performance. Finally, we document that foreign directors have a positive impact on performance implying that in developing market like Bangladesh foreign board members signal a higher commitment to corporate monitoring and transparency which leads to an increase in firm performance.

Our findings can help the regulators to adopt an appropriate balance of legislation, regulatory reform and their enforcement to make improvements in the corporate governance practices. Therefore, it should be of interest to regulators and policy makers in countries whose corporate ownership and regulatory structures are similar. While our results are probably dependent on Bangladesh’s institutional environment, learning the extent to which the results do generalise will help us better understand how institutional features matter for internal governance mechanism, especially corporate board structure and firm performance. Thus, further studies in different jurisdictions on the issues we raise in this study are warranted.

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