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Probability of financial distress and proposed adoption of corporate governance structures: Evidence from Pakistan

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Abstract: This study examines the role of voluntary adoption of corporate governance mechanisms in mitigating the financial distress status of firms. Using the sample of 52 firms from non-financial sector listed at Karachi Stock Exchange and selecting time period of 10 years from 2006 to 2015, the study finds out the practices that are beneficial for firms and helps them in reducing the financial distress. Results of the study show that there is a negative significant relationship of blockholder ownership, director ownership and audit committee with the probability to financial distress. The causal relationship is also tested, and results show that voluntary adoption of corporate governance structures leads towards lower level of financial distress.

Subjects: Finance; Business; Management and Accounting; Industry & Industrial Studies

Keywords: corporate governance; financial distress; non-financial firms

1. Introduction

The separation between ownership and control in large companies leads to the need for corporate governance (Berle & Gardiner, 1932; Shleifer & Vishny, 1997). Corporate governance structures are

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Research Interests

Dividend payout policy, financial crisis, international finance, corporate governance and financial management. His research publications are as follows: Akhtar, S., Luqman, R., Raza, F., Riaz, H., Tufail, H. S., & Shahid, J. (2017). The Impact of Workplace Incivility on The Psychological Wellbeing of Employees Through Emotional Exhaustion. *European Online Journal of Natural and Social Sciences*, 6(3), pp-492. Riaz, H., Akhtar, N., Moazzam, A., Luqman, R., Naz, H., & Tufail, H. S. (2017). Leadership Effectiveness, Turnover Intention and the Mediating Role of Employee Commitment: A Case of Academic Institutions of Pakistan. *European Online Journal of Natural and Social Sciences*, 6(4), pp-526.

PUBLIC INTEREST STATEMENT

Corporate governance is an internal system encompassing policies; processes; and people who serve the needs of shareholders and other stakeholders by directing and controlling management activities with good business practices, objectivity and integrity. Sound corporate governance is reliant on external marketplace commitment and legislation, as well as a healthy board culture that safeguards policies and processes. Corporate governance is designed to pursue stakeholders' interests (e.g. obtaining a reasonable return on capital and reducing misappropriation of assets). Corporate governance is also a set of mechanisms by which outside investors protect themselves against expropriation by insiders. These mechanisms include the various applicable laws, rules and functions. If companies adopt code of corporate governance, then it will lead towards the lower probability of financial distress.

different across various countries because of differences in their cultures, traditions, ownership patterns, legal and religious origins (Aguilera & Jackson, 2003; Crouch & Streeck, 1997; Gordon & Roe, 2004; Hall, 2001; Weimer & Pape, 1999). Worldwide diffusion of codes of good corporate governance is issued to resolve this issue (Aguilera & Cuervo-Cazurra, 2004). These codes help firms to improve their governance structures and efficiently participate in innovating practices.

So, in order to manage the international business challenges, corporate governance has gained prime importance in Pakistan in twenty-first century. Securities and Exchange Commission of Pakistan (SECP) took power and responsibilities of corporate law authorities in 1999 and started focusing on adoption of corporate governance practices by corporate sector. In 2002, Pakistani government issued a code of corporate governance but that was not made compulsory for firms to implement it. Company's voluntary adopted certain practices of code of corporate governance. However, in 2012, SECP issued new code of corporate governance, and its practices are mandatory for listed companies to follow.

This study aims to check the relationship between probability of financial distress and proposed adoption of corporate governance structures of non-financial firms listed at Karachi Stock Exchange (KSE). There are different attributes that determine the corporate governance structure, that is, CEO duality, board independence, audit committee and director ownership, and these attributes affect the probability of firm's financial distress.

This study focuses on time period during which companies adopted different corporate governance structures, and it aims to precede the introduction of new code of corporate governance in 2012. As, during this time period, no proper guidelines for structure of corporate governance were available, it gives this study a prospect to assess whether (1) firms have different corporate governance structures according to their probability towards the financial distress, and (2) there is a bi-causal relationship between corporate governance structures and probability of financial distress. This study is different from the previous studies because it examines the association of non-mandatory adoption of corporate governance structures and probability of financial distress of firms listed at KSE.

Numerous studies have worked at corporate governance attributes, financial distress and determinants of corporate governance (Lee & Yeh, 2004; Dhamija, Yadav, & Jain, 2014; Hambrick & D'Aveni, 1992; Daily & Dalton, 1994; Donohue, 2004; Lajili & Zéghal, 2010; Hassan Al-Tamimi, 2012; Platt & Platt, 2012; Shahwan, 2015; Manzaneque, Priego, & Merino, 2016). These studies concluded that there is a negative association between the ownership of outside directors with probability of financial distress. However, CEO duality has no significant relationship with probability of financial distress. This study includes the governance attributes that are not already studied in the previous literature. Audit committee has gained importance because it is closely related with the investors' and shareholders' interest and firms going on concern. According to Xie, Davidson, and DaDalt (2003), audit committee and board are important factors in limiting the tendency of managers to involve in earnings management. It also focuses on applying simultaneous equation model to check the causal relationship between corporate governance practices and probability of financial distress (Kiel & Nicholson, 2003; Choi, Park, & Yoo, 2007; Bhagat & Bolton, 2008; Balsam & Upadhyay, 2009).

Up to our best knowledge, this is the first study that is evaluating the voluntary adoption of corporate governance practices as in this study, time period is taken prior to the new code of corporate governance of 2012 that is made mandatory for listed firms.

Moreover, this study examines the impact of corporate governance practices on both continuous and binary variable representations for the dependent variable, that is, financial distress. In previous studies, they defined the financial distress as dichotomous variable such as 0 or 1 on the basis of healthy and distressed firms. But in this research, financial distress is defined on the basis of earning generation perspective which will be helpful to assess the firm's operating performance, whereas

previous studies focused on the stock valuation perspective. Moreover, this study helps to identify the best corporate governance practices that lead towards high firm performance (see Bocean & Barbu, 2007; Brown & Caylor, 2004; Fooladi & Nikzad Chaleshtori, 2011).

Agency problem is the main stream phenomenon for this study; as managers are assumed to be working only for their interests, shareholder's wealth will be adversely affected. To maintain firm's accountability, firms should adopt certain practices that will eventually reduce the agency problem. Previous studies (Ang, Cole, & Lin Wuh, 2000; Fleming, Heaney, & McCosker, 2005; Singh & Davidson, 2003) suggest that codes of corporate governance such as board independence and director ownership decrease the firm level agency cost. According to Wang and Deng (2006), managerial agency costs are badly detrimental to a company's financial status. So, if agency costs are low, there will be low probability of financial distress. This study uses the continuous and binary representation of financial distress; continuous dependent variable will be calculated using the model proposed by Zmijewski in 1984. Results show that a negative relationship exists between probability of financial distress and director ownership. Results also show that these attributes of corporate governance provide the mechanism that helps to reduce the agency cost of a firm.

This study is structured as follows: section 2 provides the literature and hypothesis development; section 3 describes the research design including data, sample selection and sample criteria; section 4 develops operationalization of variables; section 5 provides the analysis and simultaneous equation model results; and section 6 concludes the findings of this study.

2. Hypotheses development

2.1. Board independence

Outside directors monitor the organization in a better way and reduce the agency cost of firm, thus leading towards high performance of a firm (Fama & Jensen, 1983). To increase the information quality of board, there should be increased proportion of outside directors that will help in information asymmetry problem (Rutherford & Buchholtz, 2007). To manage the changing environment and needs of the firm, there should be outside directors in board (Pearce & Zahra, 1992). Outside directors also help in adopting the corporate governance practices that will support in decision-making and strategy development (Bathala & Rao, 1995; Rediker & Seth, 1995). If they focus on owner's interests rather than concentrating on other stakeholder's interests, there is opportunity for outside directors to manage firm's affairs more effectively. If insider directors do not have much independence to make decisions, then outside directors have an incentive to make decisions aligning with the interests of shareholders (Miglani, Ahmed, & Henry, 2015). According to code of corporate governance of Pakistan 2002 and 2012, each listed company must have at least one independent director on board. On the basis of the literature, following hypothesis is proposed:

H1. There is a negative relationship between board independence and financial distress.

2.2. Blockholder ownership

Blockholders have motivation to control the firms' affairs in efficient manner because they have larger investment in the firm and are able to take decisions that flourishes firms' financial performance (Jensen & Meckling, 1976). It is different from outside directors, who are not the employee and stakeholder of the company. If firm's performance is below their expectations, blockholders have authority to dismiss directors on the basis of their share in company. This pressurizes managers to work in firms' best interests rather than their own interests (Ely & Song, 2000). Moreover, Abdullah (2006) and Elloumi and Gueyle (2001) concluded that there is a negative relationship between the firm's probability of financial distress and blockholder ownership. Based on the literature, the proposed hypothesis is as follows:

H2. There is a negative relationship between ownership of blockholders and financial distress.

2.3. CEO-chair duality

According to agency theory, there should be separate persons as CEO and board chair. If CEO and board chair are the same person, it will reduce the independence level of board and negatively affects the firm's performance (Fama & Jensen, 1983). If CEO and board chair are the separate persons, this will increase the accountability of management (Dalton & Kesner, 1987; Mallette & Fowler, 1992). If there is CEO-chair duality, it will lead towards the increased level of earnings management (Liyu, Wright, & Evans, 2007). Chen et al. (2005) concluded that CEO-chair duality gives CEO more power due to which it becomes tough for board of director to challenge or replace him/her. Based on the literature, this study also proposed that if the CEO and board chair are the same person, it will increase the probability of financial distress:

H3. There is a positive relationship between CEO-chair duality and financial distress.

2.4. Director ownership

According to agency theory (Jensen & Meckling, 1976), director ownership plays significantly a positive role in firm's financial performance. If directors at the time are also the firm's shareholders, they will act in best interest of the firm (Jensen & Ruback, 1983). Directors will take greater care in firms' operations and lead towards the management efficiency (Lenne, Mitchell, & Ramsay, 2005). Investors give more importance to firms that have directors bearing ownership of that firm. If directors have shares, then their decisions and actions will reduce the probability of firm's financial distress (Abdullah, 2006; Elloumi & Gueyle, 2001). Based on the literature, the following hypothesis is formulated:

H4. There is a negative relationship between directors' ownership and financial distress.

2.5. Audit committee

An internal audit committee monitors and evaluates the firm's management performance and work independently to reduce the agency problem of firm (Forker, 1992). Directors have different responsibilities towards the firms, and audit committee helps to fulfil all types of duties such as examining the quality of financial information reported in financial statements issued by the firm (Hicks & Goo, 2008). Furthermore, Calleja (1999) concluded that firms perform better if they have independent internal audit committee that is ensuring and monitoring its performance and resultantly leads towards the lower probability of financial distress.

H5. There is a negative relationship between existence of an audit committee and financial distress.

3. Data

Population for study is all listed non-financial firms at KSE during 2006–2015. Financial firms are excluded because they have different regulatory system as compared to non-financial sector. Sample is selected using the stratified systematic sampling. Total firms selected for analysis are 52. Firms are classified as healthy and distressed firms on the basis of their operating performance. If firms consistently generate negative income in previous 5 years, then it is classified as a distressed firm, and if firm has consistent positive income in last 5 years, it is classified as a healthy firm. Firms are selected from various industrial sectors to evaluate the impact of corporate governance practices on financial distress (Table 1).

Note: Data for research variables are taken from published financial statements of listed firms and balance sheet analysis published by State Bank of Pakistan which contain statements of the companies along with their analysis.

4. Variable description

To gauge the impact of corporate governance practices on financial distress, following dependent and independent variables are used.

Table 1. Sample firms

Sectors	Total firms in the sector	Firms selected
Cotton textile	56	12
Chemical sector	29	08
Engineering sector	19	06
Sugar sector	22	01
Cement sector	21	02
Fuel and energy sector	18	06
Miscellaneous sector	23	17
Total firms	188	52

4.1. Dependent variable

Financial distress is the dependent variable and is used as both continuous and dichotomous representations, and it is coded as 1 or 0 on the basis of its operating performance. In case of a healthy firm, it is coded as 0; otherwise 1. It is calculated as a continuous variable using Zmijewski (1984) model.

4.2. Independent variables

Outside directors on board are measured as the proportion of outside directors to board members as a whole (Elloumi & Gueyle, 2001). Non-director shareholders holding more than 5% of share of the company are measured as blockholder ownership. CEO-chair duality is coded as 0 or 1; 1 if there is the same person as CEO and board chair, otherwise 0. Director ownership is measured as shares of directors to total firms' shares (Henry, 2008). Audit committee is measured as a dummy variable. If there is internal audit committee in respective year, then it is coded as 1; otherwise zero. Control variables are also included in this study. First is the audit opinion. If auditors give unsatisfactory opinion, then it is coded as 1, otherwise 0. Second, control variable is leverage. It shows the company's debt proportion towards its total assets. If this is going to be high, then it will increase the chances of financial distress (Elloumi & Gueyle, 2001). Third is the size of a firm as it plays an important role in financial distress and is measured as the log natural of total assets of a firm. Fourth is the management efficiency. If firm will perform efficiently, then it leads towards lower probability of financial distress. It is measured as sales to the total assets ratio.

5. Empirical model, findings and discussion

To check the relationship between corporate governance practices and probability of financial distress, logistic regression is used.

$$\begin{aligned}
 \text{FINANCIAL DISTRESS} = & \beta + \beta_1 \text{ Outsider directors} + \beta_2 \text{ BLOCKOWN} + \beta_3 \text{ DUALITY} + \beta_4 \text{ DIROWN} \\
 & + \beta_5 \text{ AUDITCOM} + \beta_6 \text{ AUDITOPN} + \beta_7 \text{ LEVERAGE} + \beta_8 \text{ SIZE} + \beta_9 \text{ MGTEFF} + \varepsilon
 \end{aligned}
 \tag{1}$$

In this model, financial distress is measured as dummy: 1 is for distressed firms and 0 for healthy firms. Outside directors on board are measured as the proportion of outside directors to board members as a whole. Non-director shareholders holding more than 5% of share of the company as measured as blockholder ownership. CEO-chair duality is coded as 0 or 1; 1 if there is the same person as CEO and board chair or otherwise 0. Director ownership is measured as share of directors to the total company shares. Audit committee is measured as a dummy variable; if there is internal audit committee in the respective year, then it is coded as 1, otherwise 0. Audit opinion as 0 or 1; if auditors give the unsatisfactory opinion then coded as 1 otherwise 0. Leverage shows the company's debt proportion towards its total assets. Size is measured as the log natural of total assets of a firm. Management efficiency is measured as sales to the total assets ratio.

5.1. Descriptive statistics and correlation analysis

In Table 2, the descriptive analysis shows statistics that firms facing financial distress have low number of independent board of directors, low ratio of ownership of blockholders, high CEO-chair duality ratio and lower probability of ownership by directors. As far as control variables are concerned, firms with high probability of financial distress have a high leverage ratio. The management efficiency ratio is low in financially distressed firms. Audit opinion is unsatisfactory in firms that have high probability of financial distress.

In Table 3, the correlation analysis is used to test the relationship among all the variables included in the analysis. Pearson correlation coefficients show that these variables can be employed to examine their relationship through regression analysis.

5.2. Logistic regression

Due to the nature of dependent variable, logistic regression is applied to test the association between corporate governance practices and probability of financial distress.

Board independence is not significantly correlated with probability of financial distress, and its p value is 11.9%. Blockholder ownership is statistically related to probability of financial distress at 5% significance level. Its coefficient value is -1.23 and shows that there is a negative relationship between the BLOCKOWN and probability of FINANCIAL DISTRESS. Logistic regression shows that there is no significant relationship between duality and probability of financial distress. These results are consistent with previous studies that examined the relationship between these two variables (Abdullah, 2006; Elloumi & Gueyle, 2001). DIROWN shows the negative statistically significant relationship with probability of financial distress. These results have shown consistency with previous results (Abdullah, 2006; Elloumi & Gueyle, 2001). Results show consistency with agency theory that states that if there is high director ownership, it will lead towards lower probability of financial distress. AUDCOM has a significant negative relationship with probability of financial distress. This shows consistency with results proposed by Forker (1992) that if companies have independent audit committee, then it will lower probability of financial distress.

Audit opinion has a significant positive relationship with probability of financial distress; if firms have unsatisfactory audit opinion, then it will lead towards high probability of financial distress. Leverage is significantly positively related with probability of financial distress (Chen & Church, 1992; Flagg, Giroux, & Wiggins, 1993). Size of firm has a statistically negative relationship with dependent variable, that is, financial distress. Management efficiency has a negative relationship with probability of financial distress such as if management will be efficient, then there will be lesser chances of financial distress.

5.3. Zmijewski financial score

Due to dichotomous nature of dependent variable, first logit regression is used and then it is calculated using the Zmijewski financial score (Zmijewski, 1984). This model is used to test the tendency of firms towards financial distress and has been used in various studies to determine the level of financial distress (Carcello & Neal, 2003; Hay, Baskerville, & Qiu, 2007; Miglani et al., 2015). This model comprises different financial ratios relating to the firm's liquidity, profitability and leverage.

$$ZFS = -4.336 - 4.513X_1 + 5.679X_2 - .004X_3$$

In this model, X_1 is the profitability measure that is calculated as ratio of net income towards total assets, X_2 is the leverage measure that is calculated as ratio of total debt to total assets, X_3 is the liquidity measure that is calculated as ratio of current assets to current liabilities.

Table 2. Descriptive statistics

	BI	BO	Audit committee	CEO duality	Director ownership	Audit opinion	Size	Leverage	ME
Mean	1.819	1.91538	0.45	0.5	0.3	0.4	6.6317	0.87882	170.89
Standard error	0.059	0.039	0.0218	0.02195	0.02012	0.0465	0.0544	0.01873	10.573
Median	1	2	0	0.5	0	0	6.3996	0.78802	87.445
Mode	1	1	0	0	0	3	6.3995	0.91823	0
Standard deviation	1.347	0.898	0.498	0.50048	0.4587	0.456	1.242	0.42704	241.10
Sample variance	1.813	0.806	0.248	0.25048	0.2104	0.356	1.541	0.18236	0.58
Kurtosis	0.223	0.916	-1.967	2.00774	1.2385	1.4	0.968	13.0866	15.786
Skewness	0.974	0.905	0.201	1.29E-18	0.8754	0.78	0.0231	2.70142	3.049
Range	5	4	1	1	1	2	7.956	3.88464	2367
Minimum	0	1	0	0	0	1	2.603	0.10925	0
Maximum	5	5	1	1	1	3	10.558	3.99389	2366.6

BI: board independence; BO: blockholder ownership; ME: management efficiency.

Table 3. Correlation analysis

Variables	BI	BO	CEO duality	Director ownership	Audit committee	Audit opinion	Leverage	Size	ME
BI	1	—	—	—	—	—	—	—	—
BO	0.056 0.132	1	—	—	—	—	—	—	—
CEO duality		0.065 0.149	1	—	—	—	—	—	—
Director ownership		0.047 0.292	0.655** 0	1	—	—	—	—	—
Audit committee		0.02 0.655	-0.113* 0.012	-0.072 0.108	1	—	—	—	—
Audit opinion		0.051 0.255	0.018 0.683	0.016 0.721	0.052 0.245	1	—	—	—
Leverage		0.153** 0.001	-0.076 0.092	-0.057 0.203	0.032 0.476	0.04 0.369	1	—	—
Size		-0.210** 0	0.033 0.458	0.027 0.554	0.046 0.302	-0.191** 0	-0.426** 0	1	—
ME		-0.145** 0.001	-0.006 0.885	-0.012 0.782	0.055 0.224	-0.113* 0.012	-0.164** 0	0.517** 0	1

BI: board independence; BO: blockholder ownership; ME: management efficiency.
 Note: **Correlation is significant at 0.01 levels (two tailed); *correlation is significant at 0.05 levels (two tailed).

Higher score shows greater tendency towards the financial distress. ZFS is calculated for each observation of firm and ordinary least squares (OLS) regression is used to compute the relationship between dependent and independent variables.

Results in Table 5 show that higher ownership of both blockholders and directors are negatively significantly related with higher tendency of financial distress. Chairman and CEO duality has shown a negative relationship with financial distress. Consistent with logistic regression results, audit committee has a significant negative relationship with financial distress. All control variables have also shown the significant impact on dependent variable, financial distress. Thus, results are highly intact.

5.4. Causality and endogeneity assessment

There may be a causal relationship between financial distress and corporate governance attributes. Corporate governance attributes are creating impact on financial distress; financial distress may also generate impact on corporate governance practices. To evaluate the causal relationship, simultaneous equations are developed. Different studies have shown that there is a direct linkage between tendency towards financial distress and tangible asset ratio. If firm is in good financial position, this ratio will be higher, and if firm is moving towards distress, there are high chances that firm will sell its tangible assets, and this ratio will become lower (Platt & Platt, 1990; Theodossiou, Kahya, Saidi, & Philippatos, 1996).

The following simultaneous equations are used:

$$\begin{aligned} \text{FINANCIAL DISTRESS} = & \beta + \beta_1 \text{ Outsider directors} + \beta_2 \text{ BLOCKOWN} + \beta_3 \text{ DUALITY} \\ & + \beta_4 \text{ DIROWN} + \beta_5 \text{ AUDITCOM} + \beta_6 \text{ AUDITOPN} + \beta_7 \text{ LEVERAGE} + \beta_8 \text{ SIZE} + \beta_9 \text{ MGTEFF} + \epsilon \end{aligned} \quad (2)$$

$$\begin{aligned} \text{Outsider directors} = & \beta + \beta_1 \text{ FINANCIAL DISTRESS} + \beta_2 \text{ BLOCKOWN} + \beta_3 \text{ DUALITY} \\ & + \beta_4 \text{ DIROWN} + \beta_5 \text{ AUDITCOM} + \beta_6 \text{ AUDITOPN} + \beta_7 \text{ LEVERAGE} + \beta_8 \text{ SIZE} + \beta_9 \text{ MGTEFF} + \epsilon \end{aligned} \quad (3)$$

$$\begin{aligned} \text{BLOCKOWN} = & \beta + \beta_1 \text{ FINANCIAL DISTRESS} + \beta_2 \text{ Outsider directors} + \beta_3 \text{ DUALITY} \\ & + \beta_4 \text{ DIROWN} + \beta_5 \text{ AUDITCOM} + \beta_6 \text{ AUDITOPN} + \beta_7 \text{ LEVERAGE} + \beta_8 \text{ SIZE} + \beta_9 \text{ MGTEFF} + \epsilon \end{aligned} \quad (4)$$

$$\begin{aligned} \text{DUALITY} = & \beta + \beta_1 \text{ FINANCIAL DISTRE} + \beta_2 \text{ Outsider directors} + \beta_3 \text{ BLOCKOWN} \\ & + \beta_4 \text{ DIROWN} + \beta_5 \text{ AUDITCOM} + \beta_6 \text{ AUDITOPN} + \beta_7 \text{ LEVERAGE} + \beta_8 \text{ SIZE} + \beta_9 \text{ MGTEFF} + \epsilon \end{aligned} \quad (4)$$

$$\begin{aligned} \text{DIROWN} = & \beta + \beta_1 \text{ FINANCIAL DISTRESS} + \beta_2 \text{ Outsider directors} + \beta_3 \text{ BLOCKOWN} \\ & + \beta_4 \text{ DUALITY} + \beta_5 \text{ AUDITCOM} + \beta_6 \text{ AUDITOPN} + \beta_7 \text{ LEVERAGE} + \beta_8 \text{ SIZE} + \beta_9 \text{ MGTEFF} + \epsilon \end{aligned} \quad (6)$$

$$\begin{aligned} \text{AUDITCOM} = & \beta + \beta_1 \text{ FINANCIAL DISTRESS} + \beta_2 \text{ Outsider directors} + \beta_3 \text{ BLOCKOWN} \\ & + \beta_4 \text{ DUALITY} + \beta_5 \text{ DIROWN} + \beta_6 \text{ AUDITOPN} + \beta_7 \text{ LEVERAGE} + \beta_8 \text{ SIZE} + \beta_9 \text{ MGTEFF} + \epsilon \end{aligned} \quad (7)$$

These equations are used to analyse the results and have shown consistency with previous studies. In the first stage equation, all variables are highly significant and show the relationship with financial distress.

Board independence and ownership by blockholders and directors have shown a significant negative relationship with financial distress. As ownership will be higher, it leads towards less likelihood of financial distress. Audit committee also shows a significant relationship that if there is audit committee, probability of financial distress will be lower. CEO duality will directly relate to financial distress. Large size companies have shown a negative relationship with financial distress. Other equations have shown that financial distress does not create any impact on attributes of corporate governance.

Table 4. Logistic regression results

Variables	B	SE	Wald	df	Significance
BI	0.118	0.076	2.429	1	0.119
BLOCKOWN	-1.23	0.114	-10.789	1	0.02
Duality	-0.136	0.271	0.25	1	0.617
DIROWN	-7.98	0.231	-34.54	1	0.01
AUDCOM	-1.19	0.205	-5.8	1	0.044
AUDOPN	1.396	0.225	38.357	1	0
Size	-0.178	0.112	2.519	1	0.101
MGTEFF	-0.09	0.042	2.14	1	0.1
Leverage	1.307	0.314	17.382	1	0
Constant	11.37	0.931	12.21	1	0.026

BI: board independence; SE: standard error.

Note: Variable(s) entered on step 1: BI, BLOCKOWN, duality, DIROWN, AUDCOM, AUDOPN, size, MGTEFF and leverage.

Table 5. Regression results

Model	B	Standard error	T	Significance
Constant	42.743	12.167	3.513	0.000
BI	1.234	0.234	5.273	0.012
BLOCKOWN	-1.434	0.0343	41.8075	0.000
Duality	-0.765	0.298	2.5671	0.0501
DIROWN	-4.012	0.112	35.821	0.000
AUDCOM	-0.784	0.176	4.454	0.017
AUDOPN	3.876	0.245	15.820	0.000
Leverage	6.789	0.272	24.95	0.000
Size	-1.453	0.143	10.16	0.000
MGTEFF	-0.789	0.321	-2.45	0.076
R^2	0.4576			
F statistics	0.000			

BI: board independence.

Table 6 represents the results of simultaneous equations using proxy of financial distress as ZFS. These results are also consistent with results presented in Table 4. Board independence and ownership by blockholders and directors have shown a significant negative relationship with financial distress. As ownership will be higher, it leads towards less likelihood of financial distress. Audit committee also shows a significant relationship that if there is audit committee, probability of financial distress will be lower. CEO duality is directly related to financial distress. Large size firms have shown a negative relationship with financial distress. Other equations have shown that financial distress does not create any impact on attributes of corporate governance. Causality does not exist between financial distress and corporate governance attributes. Different corporate governance attributes are generating impact on financial distress, but financial distress is not predicting the adoption of corporate governance codes.

6. Findings and implications

This study tests the relationship between corporate governance practices and financial distress of non-financial firms listed at KSE for the time period of 2006–2015. This particular time is selected because there were no mandatory corporate governance practices at that time. This study aims to precede the code of corporate governance of 2012. Results of this study have shown that higher ownership leads towards less likelihood of financial distress. Audit committee also shows a

Table 6. Second-stage regression results

	Distress	BI	BO	CEO duality	Director ownership	Audit committee
Panel A: first-stage regression results						
Distress	-0.189*** (-4.700)					
Lagged BI		0.835*** (45.380)				
Lagged BO			0.850*** (48.290)			
Lagged CEO duality				0.701*** (33.050)		
Lagged director ownership					0.812*** (51.510)	
Lagged audit committee						0.846*** (56.040)
Model <i>F</i> statistics	210.850***	263.570***	267.310***	123.960***	280.540***	471.720***
Adjusted <i>R</i> ²	0.676	0.723	0.726	0.550	0.735	0.824
Panel B: 3SLS regression results						
Constant	3.114***	24.169	0.210	0.346	0.068	0.036
BI	-0.001** (0.037)			-0.001** (0.050)	0.000 (0.859)	0.000 (0.835)
BO	-0.230*** (0.000)	-3.117 (0.240)		0.077 (0.215)	0.019 (0.188)	
CEO-chair duality	-0.065** (0.028)	-0.698 (0.597)			0.013* (0.062)	-0.004 (0.864)
Director ownership	-0.604*** (0.000)	-11.799* (0.053)	-0.017 (0.739)	-0.033 (0.807)		
Audit committee	-0.120*** (0.000)	-0.260 (0.852)		-0.007 (0.827)		
Audit opinion	0.084** (0.018)					-0.003 (0.917)
Leverage	-0.001**	-0.028*	0.001		-0.001	
Firm size	-0.288***	-1.063	-0.016	-0.034	-0.007	0.016
ME	-0.033***	-0.693**	0.002	0.009	0.001	
Distress	-0.189***	-7.998	-0.066	0.003	-0.018	-0.064
Lagged BI		0.828*** (0.000)				
Lagged BO			0.844*** (0.000)			
Lagged CEO duality				0.699*** (0.000)		
Lagged director ownership					0.805*** (0.000)	
Lagged audit committee						0.844*** (0.000)

BI: board independence; BO: blockholder ownership; ME: management efficiency; 3SLS: three-stage least squares.

significant relationship with financial distress. If there is audit committee in a firm, probability of financial distress will be lower. CEO-chair duality directly relates to financial distress. On the basis of regression results using ZFS as dependent variable, this study found a significant relationship among CEO-chair duality and financial distress. Large size firms have shown a negative relationship with financial distress. The causal relationships are also tested using simultaneous equations and results suggest that corporate governance practices possess the ability to predict financial

distress; however, financial distress does not predict the corporate governance attributes. First, implication of this study is that investors will be able to evaluate the financially distressed firms on the basis of firms' operating performance. Second, investors can investigate firms' corporate governance practices that whether they are in accordance with law or not. This study will also benefit regulatory authorities in formulating new policies regarding the corporate governance.

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