PAPER ID: 11A02F

IMPACT OF OWNERSHIP STRUCTURE AND BOARD COMPOSITION ON FINANCIAL DISTRESS OF PAKISTAN STOCK EXCHANGE LISTED MANUFACTURING FIRMS

Muhammad Kashif Khurshid [a,c*], **Hazoor Muhammad Sabir** [b],
Safdar Hussain Tahir [c], **Muhammad Abrar** [c]

[a] *Department of Management Sciences, National University of Modern Languages (NUML), PAKISTAN.*
[b] *Faculty of Economics and Management Sciences, Government College University Faisalabad, PAKISTAN.*
[c] *Lyallpur Business School (LBS), Government College University, Faisalabad, PAKISTAN.*

ARTICLE INFO

ABSTRACT

Prediction of financial distress is very important for the long-term survival and growth of the firms. If financial distress is not handled timely without any recovery strategy, it can lead the company to bankruptcy. Since independence, Pakistan has witnessed numerous cases of bankruptcy among non-financial firms. This study sought to investigate the impact of ownership structure and board composition on financial distress of non-financial firms listed in Pakistan Stock Exchange (PSX) for the period 2009-2016. The financial distress is measured using Emerging Markets Z-Score (EMS). In accomplishing the overall objectives, the study sought to establish the effect of board structure, ownership structure on financial distress of non-financial firms. A census of all the 384 non-financial companies listed in PSX as of December 2016 constituted as a target population. Descriptive statistics, correlation analysis, and panel regression techniques were used to analyze the data. The fixed-effects model used based on Hausman test. The results of the study indicate that individual's ownership, CEO's duality, insider's directorship, firms size, and leverage play positive and significant role to enhance the financial distress while; managerial ownership, institutional ownership, board size, and board independence play significant role to reduce the financial distress of PSX listed firms. The study concludes the significance of board and ownership structure to predict financial distress.

Disciplinary: Financial Management, Mathematics (Statistics).

©2019 INT TRANS J ENG MANAG SCI TECH.

1. INTRODUCTION

Predicting financial distress in a dynamic environment is a difficult task and it can lead towards

bankruptcy if not handled timely without any recovery strategy. Its timely assessment can help the organizations to focus on future growth in the competitive environment of the global economy. Financial distress is defined as "a vulnerable situation whereby a firm does not meet creditors' obligations or are met with difficulties". Scholars have different views in explaining financial distress, for instance; Shaukat and Affandi (2015) defined "financially distressed firms have problems in paying off their financial obligations to their creditors in time", whereas Garman et al. (2004) described financial distress as "an extreme physical or mental stress that includes concerns and fears about financial issues". Shumway (2001) defined "financial distress as a situation when a company is unable to meet its financial obligations." So, the investigation and forecast of financial distress are very vital for the long-term growth and survival of the companies from financial perspectives.

Andrade and Kaplan (1998) defined "financial distress as the situation when a company does not have the capacity to fulfill its liabilities to the third parties." Hendel (1996) expressed "financial distress as the likelihood of bankruptcy, which depends on the level of liquid assets as well as on credit availability". Wruck (1990) stated, "financial distress is a situation where a firm's operating cash flows are not sufficient to satisfy current obligations (such as trade credits or interest expenses) and the firm is forced to take corrective actions."

The prevalence of financial distress is a global issue that has shown its poisonous effect on both developed and developing economies. Pakistan, being an underdeveloped country has also witnessed a wave of financial distress among firms from 1963 to 2016 and several firms have been defaulted and delisted from Pakistan Stock Exchange (PSX). However, the hype of delisting was at peak during 2012, resultantly 68 firms were delisted from PSX.

The question arises; what factors really cause financial distress in Pakistan? This study examines these factors i.e. ownership structure and board composition and tends to determine the degree to which they can affect financial distress of non-financial firms listed at PSX during 2009-2016. Much of empirical evidence has relied on the prediction of financial distress by incorporating different factors. These pieces of evidence have proved that firm characteristics cannot be ignored to forecast financial distress. Despite these characteristics, wrong financing decisions, lack of internal control, skilled labor and access to credit are caused in financial distress (Memba & Job, 2013).

Julius (2012) witnessed that financial variables contribute more while predicting financial distress. The influence of other than financial factors i.e. ownership structure and board composition have been ignored to determine the failure and financial distress of firms. This implies that studies done on causes of financial distress incorporating firm characteristics have not given proper attention to the pattern of shareholding and board composition.

Although several studies have been conducted on Altman's Z-Score Model, bet very few of them done in Pakistan. Most of the studies used Z-Score to check its accuracy and applicability in different markets but the present study is conducted by using Emerging Markets Z-Score which is appropriate for emerging markets like Pakistan. Thus, this study attempts to fill this gap of limited literature within the context of Pakistan. Secondly, this study is unique as it considers the ownership and board structure with control variables. This investigation will help as an early warning system to protect the firms from financial distress.

1.1 MEASURES OF FINANCIAL DISTRESS

Asquith et al. (1994) declared a firm in financial distress "if its interest coverage ratio is less than 0.8 for that year or less than one for the previous two consecutive years." DeAngelo and DeAngelo, (1990) defined as "if a firm accounts losses for three consecutive years in the absence of high debt ratio". Beaver (1966) effectively predicted financial health by using a single variable i.e. interest coverage ratio. Later, several researchers declared that a single variable to measure the financial distress and financial health of the company is not a suitable approach. So, different measures and approaches have been used on the canvas of the literature on financial distress.

Altman (1968) developed the Z-Score model to capture the financial distress of the firms based on five multiple variables. This model is vastly used in literature to capture the financial distress of firms in various countries. He is the pioneer who presented a multivariate approach in prediction of financial distress and put a methodological change in business failure prediction from a single ratio to multiple measures (Balcaen & Ooghe, 2006). To predict the financial distress of non-listed firms, Altman (1993) revised the original Z-Score model as "a numerator of the fourth variable (X4) to book value of equity from the market value of equity". The change in X4 resulted in a slight modification in discrimination zones and coefficients.

Ohlson (1980) also formulated a multifactor formula to predict bankruptcy and it is considered as a good alternate of Z-Score. He presented a 9 factors model based on easily available financial ratios, which can be collected from the normal financial statements. Firms having O-Score equal to 50% or greater are considered as in financial distress otherwise they are assumed as financially healthy firms.

Altman and Hotchkiss (2010) presented the latest modifications in the Z-Score which is called Emerging Market Score (Demsetz & Lehn, 1985) model. This model is specifically modified for the firms working in developing counties. The Emerging Market Score model was formulated to attain more accuracy for the prediction of the financial distress of manufacturing firms in emerging markets. This model is based on four variables with a constant value.

1.2 OWNERSHIP STRUCTURE

The following variables are used to capture the ownership structure of the firms.

1.2.1 MANAGERIAL OWNERSHIP

In financial distress, the conflict of interests between management and other share-holders is more severe as compared to normal business. Management took decisions to obtain personal benefits rather than to overcome the firm form financial distress, due to the uncertainty of their jobs (Donker et al., 2009). Managerial ownership is a powerful tool to achieve the alignment of their interests with those of other shareholders (Sheifer & Vishny, 2007).

1.2.2 INDIVIDUAL'S OWNERSHIP

Shares held by the general public is taken as an individual's ownership. It shows the dis-concentration of ownership. Less concentrated ownership is considered one of the contradictory factor which may contribute to enhance or control the financial distress.

1.2.3 INSTITUTIONAL OWNERSHIP

Very few studies have analyzed the role of institutional ownership like banks, pension funds, and insurance firms on the firm's survival. They pointed out the effectiveness of ownership

concentration as a good corporate governance tool to monitor management. (Mangena & Chamisa, 2008) reported an inverse relationship of institutional ownership with financial distress. While (Donker et al., 2009) were in the opinion of a positive role of institutional ownership and financial distress.

1.3 BOARD COMPOSITION

Board composition is depicted by the board size, independence, duality, insider and outsider directorship. In this study, board composition is captured using the following variables.

1.3.1 BOARD SIZE

Yermack (1996) reported that larger size boards have their own problems related to conflict of interests and discretion to decision making. Larger boards also face the problem of slower decision making and lack of coordination. So, larger boards have to do many compromises as opposed to smaller boards.

1.3.2 BOARD INDEPENDENCE

Independence of the BODs for decision making is known as board independence. Board independence enhances the decision making of the boards and reduces the conflict of interests related to their self-interest and benefits. Agency theory also advocates that there must be control of the board over the management. So the presence of outside directors can reduce the conflict of interest between BOD's and the shareholders by monitoring and controlling over the decision making (Fama & Jensen, 1995).

1.3.3 CEO DUALITY

Usually, board independence is also measured through the separation of two positions on the board i.e. CEO and the Chairman. There are also conflicting results on the relationship of duality with financial failure, which are also diverse. As Daily and Dalton (1994) reported a positive role of duality on financial distress while Khurshid et al. (2018) statistically proved a negative impact of duality on the probability of financial distress by applying the binary logit regression.

2. LITERATURE REVIEW

2.1 THEORETICAL BACKGROUND

Jensen and Meckling (1976) proposed the separation of a firm's ownership and its control would cause a conflict of interest between the management of the firm and its shareholders, whereby the former does not act in the best interest of the latter. They also argued that managerial ownership may help to reduce the conflict of interests of managers and shareholders to lower agency costs and decrease the chances of financial distress. In situations where shareholdings are regulated by a few individuals being the major shareholders, decision-making power, vests on them, unlike the CEOs. In such situations, managers have no say on the firms' growth direction. Alternatively, where the BOD has corporate governance problems, the firm is faced with financial decision problems. According to Jensen (1986) availability of free cash flow force managers invest in projects with negative NPVs due to conflict of interest. Decisions on non-financial variables may affect the firm heavily in the long run and if no interventions are made, this may lead to financial distress.

Shaukat and Affandi (2015) investigated the association between financial distress and financial performance on 15 listed companies from the fuel and energy sector for the period of 2007 to 2012.

They used the Altman Z score to capture the financial distress, while EPS is used as financial performance. They recommend using other performance measures i.e. stock returns, economic value-added and return of investment. Further to enhance the sample size is also suggested. They used simple and multiple regressions but ignored the panel data assumptions. So, they highlighted to use the probit model in future research.

Agrawal and Chatterjee (2015) focused on the relationship of earnings management with financial distress on 150 distressed Indian firms from 2009 to 2014. They used the "Altman's Z Score" and "Merton's distance to default" as the proxies of financial distress, while "discretionary accruals" used as the proxy of earnings management. Their sample selection was based on the top four credit rating agencies from India. The sample period showed a gradual increase in the default firms i.e. 4 firms in 2009 and 150 firms in 2014. Their results proved that both measures of financial distress have a positive and significant impact on discretionary accruals. Which means low distressed firm prone to a higher degree of earnings management and vice versa.

Lee and Yeh (2004) studied the impact of Corporate Governance (CG) on Financial Distress in the context of Taiwan, using the director's ownership with controlling shareholder, the pledge ratio, and control deviation, as the proxies of CG. They took a sample from the Taiwan Stock Exchange, of 45 companies from 1996 to 1999. The Binary Logistic Regression technique reported the financial distress of 63.09 percent on average for crises facing firms, and 23.68 percent for financially healthy firms. Charalambakis (2015) used a discrete hazard approach to predict the future bankruptcy of firms, analyzing the 303 Greece firms' 9 years data i.e. 2002-2010. Four variables were used by researcher to check to predict the chances of the bankruptcy of firms i.e. sales, profitability, liquidity, and financial factors. The researcher found a significant positive relationship between financial risk and bankruptcy while on the other hand sales and profitability have a negative significant relationship with bankruptcy. Liquidity is found to have an insignificant relationship with bankruptcy.

Chen et al. (2013) worked on the factors that cause financial distress. They used the data of 24 Chinese companies for analysis. Data for 4 years i.e. 2007 to 2010 were used by them for prediction of factors behind financial distress. They divide variables that cause financial distress into four categories i.e. solvency, profitability, growth ability, and operations. Cheng et al. (2009) used data of firms that are listed at the Taiwan Stock Exchange for 8 years i.e. 1998 to 2005 to check whether financial ratios and corporate governance are the factors behind bankruptcy or not. 21 different financial ratios were used by them while on the other hand corporate governance is measured by insider holdings of CEO and supervisors. After analysis at the end, they concluded that financial ratios are used for prediction of bankruptcy of firms but if it is integrated along with corporate governance this model can provide a better base for prediction. They formulated a pre-warning model by combining the governance and financial factors for prediction of bankruptcy.

Ciampi (2015) used both financial and governance-related factors for the prediction of financial distress in small enterprises of Italy. For this purpose, the researcher used data from 934 firms for analysis. The researcher established two different models for analysis one was of financial ratios while secondly include the variable of corporate governance. The researcher found the negative relationship of CEO duality, decreased the number of outside directors and ownership concentration with financial distress while on the other hand the accuracy of the model is improved by adding the variable of corporate governance.

Darrat et al. (2016) used the 217 financial firms data over 1996-2006 to estimate the association of CG and financial distress. The analysis proved that a smaller company board increases the probability of financial distress for the firm while the increased number of outside directors on the board of the company increases the chances of bankruptcy in sophisticated firms and vice versa. Results suggested that corporate governance is an important element in financial distress forecast.

Donker et al. (2009) checked the association of ownership's structure with bankruptcy, using the 177 non-financial firms Netherland data for 11 years (1992-2002) for analysis. Their results found a negative association of management shareholding and trust holding with financial distress while on the other hand relationship of family shareholding and block-holding with financial distress is insignificant. While cash flows, payout, and size was negatively correlated with bankruptcy. The debt of the firm was positively correlated with financial distress.

Du and Lai (2018) worked on low audit quality firms to check the relationship between investment opportunities and financial distress, using 1675 Chinese firms data over seven years (2006-2012). Results suggested that in the case of a low-quality audit, investment opportunity builds up a contagion effect. This effect continued for longer time-period in case of firms having a low-quality audit. Elloumi and Gueyie (2001) used the 92 Canadian firms' data to investigate the impact of CG on bankruptcy. They divided sample into two portions first half was of healthy firms and the next half was of financially distressed firms. They used the six years data 1994-1998. Results suggested that besides financial indicators board composition is an important factor that leads the firm towards financial distress while outside directors and directorship lead the firm towards bankruptcy. While outside directors improve the financial condition of the company because inside directors lack freedom.

Ernawati et al. (2018) used the 310 Indonesian firms' data to explore the association of financial distress with corporate governance and financial performance. They used ten financial indicators and five indicators of corporate governance from which audit opinion has an insignificant impact on financial distress while director ownership is negatively related while block holder ownership is positively related to financial distress. On the other hand not all but mostly financial indicators have a significant impact on the financial distress of the firm. Fawzi et al. (2015) worked to check the impact of cash flows on financial distress. They used 104 Malaysian firms' data over four years (2009-2012) for the purpose of analysis. Data of 52 healthy firms and 52 distressed firms were used. Five indicators of cash flows were used and results suggested that they have significant power to predict the financial distress of firms while on the other hand, this model shows 82% overall model accuracy. Liquidity, solvency, efficiency, and profitability was combined with cash flow base to predict results.

None studies examined the effect of ownership structure, board composition, and financial factors on the prediction of financial distress in the context of PSX listed firms for the latest period 2009-2016.

2.2   RESEARCH HYPOTHESES
The following hypotheses are formulated on theoretical basics and literature:

H₁: Managerial ownership (MO) plays a negative role in detecting financial distress.

H₂: Individual ownership (IO) has a negative impact on the firm's financial distress.

H₃: Institutional ownership (INO) has a positive impact on the firm's financial distress.

H₄: Board size (BS) plays a negative role in detecting financial distress.

H5: CEO and chairman's duality (CD) has a positive impact on the firm's financial distress.

H6: Board independence (BI) has a negative impact on the firm's financial distress.

H7: Insider directors (ID) plays a positive impact on financial distress.

3. RESEARCH METHODOLOGY

This section provides the measurement of the study variables and tools/techniques used for data collection and analysis.

3.1 POPULATION, SAMPLE AND SAMPLING TECHNIQUE

There are 378 listed firms at Pakistan Stock Exchange during 2016 under the non-financial sector, considered as the population for this study. A systematic sampling procedure is used to choose the appropriate samples. A similar sampling method is also used by (Khurshid et al., 2018; Udin et al., 2017). In the first step, the proportion of firms from each representing sector is selected. Then from each sector upper and lower quartile firms finally selected based on EMS distress score.

3.2 SOURCES AND TIME SPAN OF DATA

The data related to ownership and board structure is collected from the firm's annual statements which were available at their respective websites. While data related to financial variables are retrieved from the Balance Sheet Analysis (BSA-2014, BSA-2015, and BSA-2016) published by the SBP. According to BSA-2016, the 378 firms' data were available up to 2016. This study used panel data of 2009-2016 containing the 76 of cross-sections i.e. the firms. Data of 2008 and before this period is not used purposely because this period is known as the economic crisis period. So, this period can over/underestimate the results.

Table 1: Proxies of study variables

Variable Name	Variables Measurement
Dependent Variable	
Financial Distress (EMS)	Emerging Markets Score (Demsetz & Lehn, 1985) EM Z Score (2006) $EMS = 3.25 + 6.56X1 + 3.26X2 + 6.72 X3 + 1.05X4$ Where: $X1 = \frac{Working\ Capital}{Total\ Assets}$, $X2 = \frac{Retainted\ Earnings}{Total\ Assets}$ $X3 = \frac{EBIT}{Total\ Assets}$, $X4 = \frac{BV\ of\ Equity}{Total\ Debt}$ EMS = Overall score Discrimination Zones: Safe zone: $EMS > 5.85$ Grey zone: $4.15 < EMS < 5.85$ Distress zone: $EMS < 4.15$ Source: Altman & Hotchkiss (2006, pp. 267-8)
Independent Variables	
Managerial Ownership (MO)	$= \frac{Shares\ held\ by\ BOD's}{Total\ No.\ of\ Shares\ Outstanding}$
Individual's Ownership (IO)	$= \frac{Shares\ owned\ by\ public}{Total\ No.\ of\ Shares\ Outstanding}$
Institutional Ownership (INO)	$= \frac{Shares\ owned\ by\ Institutions}{Total\ No.of\ Shares\ Outstanding}$ (Manzaneque et al. 2016)
Board size (BS)	Total number of members or directors on the company's board
CEO Duality (CD)	A Dummy variable (1,0) 1 if the CEO is also the chairman of the board, otherwise 0.
Board Independence (BI)	$= \frac{No.of\ Independendt\ NonExecutive\ Directors}{Total\ No.of\ Board\ Members}$ (Fracassi & Tate, 2012)
Control Variables	
Firm's Size (FS)	Natural Log of Total Assets
Leverage (Lev)	$= \frac{Total\ Debts}{Total\ Assets}$

3.3 ECONOMETRIC MODEL

This study applied the econometric model as

$$EMS_{it} = \beta_O + \beta_1(MO)_{it} + \beta_2(IO)_{it} + \beta_3(INO)_{it} + \beta_4(BS)_{it} + \beta_5(CD)_{it} + \beta_6(BI)_{it} + \beta_7(ID)_{it} + \beta_8(FZ)_{it} + \beta_9(Lev)_{it} + e_{it} \tag{1.}$$

Here, EMS=Emerging Markets'Z Score; MO=Mangerial Ownership; IO=Individual's Ownership: INO=Institutional Ownership; BS=Board Size; CD=CEO's Duality, BI=Board Independence; ID= Insider's Directorship; FS=Firms Size, and LEV=Leverage

4. DATA ANALYSIS AND RESULTS DISCUSSION

The study employed different statistical tools for data analyses purpose. These data analysis tools include descriptive statistics, correlation, and regression analysis. A panel data regression was employed on the secondary data obtained from the financial statements of sample firms.

4.1 DESCRIPTIVE ANALYSIS

Descriptive statistics are applied to the collected data. Which summarizes the data in a meaningful way to show the pattern of the data. However, descriptive statistics cannot be used to make a conclusion about the relationships of study variables. So simply descriptive statistics describe the data and its pattern.

Table 2: Descriptive Statistics

	Min.	Max.	Range	Mean	Median	S. D.	Skw	Kurt.	N
EMS	0.059	15.114	15.055	2.532	1.568	2.522	2.167	8.985	608
MO	0.000	98.132	98.132	41.584	42.869	28.957	0.088	1.799	608
IO	0.788	80.375	79.587	29.165	26.645	19.352	0.780	3.116	608
INO	0.274	91.400	91.126	23.889	15.623	23.608	0.877	2.648	608
BS	6.000	13.000	7.000	7.788	7.000	1.419	2.653	9.776	608
CD	0.000	1.000	1.000	0.320	0.000	0.467	0.773	1.597	608
BI	0.000	0.333	0.333	0.089	0.123	0.098	0.756	2.497	608
ID	0.077	0.692	0.615	0.314	0.286	0.152	0.311	2.454	608
FS	4.573	8.548	3.975	6.360	6.237	0.749	0.656	3.677	608
LEV	0.180	2.147	1.967	0.794	0.764	0.390	1.003	4.175	608

NOTE: here; EMS=Emerging Markets' Z-Score, MO=Managerial Ownership, IO=Individual's Ownership, INO=Institutional Ownership, BS=Board Size, CD=CEO's Duality, BI=Board Independence, ID= Insider's Directorship, FS=Firms Size, and LEV=Leverage

Table 2 shows that EMS has 0.059 and 15.114 values for the lowest and highest. Its mean value is 2.532, with a standard deviation of 2.522. While its range is 15.055 with a median value of 1.568. The managerial ownership has the lowest value of zero and the highest value of 98.132 with a range of 98.132 and a deviation of 28.957. The individual`s ownership has the lowest value of 0.788 and the highest value of 80.375 with a range of 79.587 and standard deviation of 19.352. The institutional ownership has the lowest value of 0.274 and the highest value of 91.4 with a range of 91.126 and standard deviation of 23.601. The board size has the lowest value of 6 members and highest members of 13 with a range of 7, mean value of 7.788 and standard deviation of 1.419. The CEO duality has the lowest value of zero and the highest value of 1with a range of 1, mean value of 0.320 and standard deviation of 0.467. The board's independence has the lowest value of zero and the highest value of 0.333 with a range of 0.333, mean value of 0.089 and standard deviation of 0.098. The ratio of insider directors in the board has the lowest value of 0.0769 and the highest value of 0.692 with a range of 0.615, mean value of 0.314 and standard deviation of 0.152. The firm size has the lowest value of 4.573 and the highest value of 8.548 with a range of 3.975, mean value of 3.975 and standard

deviation of 0.749. The Leverage has the lowest value of 0.18 and the highest value of 2.147 with a range of 1.967, mean value of 0.794 and standard deviation of 0.390.

4.2 CORRELATION ANALYSIS

Table 3 describes the correlation relationship of variables with each other including all the independent and dependent variables. Its value may be positive or negative but its values cannot be greater than one or less than one.

Table 3: Correlation Matrix

	EMS	MO	IO	INO	BS	CD	BI	ID	FS	LEV
EMS	1									
MO	0.016	1								
IO	-0.160	-0.427	1							
INO	0.240	-0.398	-0.138	1						
BS	0.094	0.109	-0.111	-0.048	1					
CD	0.216	0.325	-0.022	-0.183	-0.293	1				
BI	0.055	0.155	0.026	-0.108	0.176	-0.103	1			
ID	-0.162	0.209	0.196	-0.450	-0.219	0.192	0.270	1		
FS	0.150	0.343	-0.314	0.098	0.413	-0.049	0.221	-0.034	1	
LEV	-0.518	-0.041	0.233	-0.193	0.124	0.227	-0.198	0.098	-0.297	1

NOTE: here; EMS=Emerging Markets'Z Score, MO=Mangerial Ownership, IO=Individual's Ownership, INO=Institutional Ownership, BS=Board Size, CD=CEO's Duality, BI=Board Independence, ID= Insider's Directorship, FS=Firms Size, and LEV=Leverage

Table 3 shows a positive little correlation of EMS with managerial ownership, institutional ownership, size of the board members, the duality of the CEO & the chairman, board independence and firm's size with the values less than 0.25. While the correlation values of -0.16, -0.162 and -0.518 show a negative correlation of individual ownership, insider directorship and financial leverage with the financial health (EMS) of the firms.

4.3 PANEL DATA ANALYSIS

Panel data analysis is widely used in econometrics and social sciences. Panel data caters two-dimensional i.e. cross-sectional and times series data at a time. Usually, the data is collected over time and individuals. Then regression is run on both dimensions. Different models such as "Fixed Effects Model (FEM)" and "Random Effects Model (REM)" or "Error Component Model (ECM)" can be used for panel data analysis. To choose an appropriate model between "fixed effects" and "random effects" models; the Hausman test can be used (Gujarati, 2004).

Table 4: Redundant Fixed Effects and HausmanTest

Effects Test	Statistic	d.f.	Prob.
Cross-section F	13.540	(27,185)	<0.001
Cross-section Chi-square (RF Effects Test)	242.119	27	<0.001
Cross-section random (Hausman Test)	47.488	9	<0.001

Table 4 presents the results of the Redundant Fixed Effects Test and Hausman Test. The statistic value of Cross Section F-Test is 13.540164 with a degree of freedom of 27,185 and a p-value of <0.001, while the statistic value of cross-section Chi-square of 242.119 with a degree of freedom of 27 is <0.001 suggest applying "Fixed Effects Model" rather than "Common Effects Model". The significant P-Value (<0.001) with the statistic value of Chi-Square 47.488 and degree of freedom of 9 suggests applying the "Fixed Effects model" rather than "random effects model".

Table 5: Panel Regression Analysis

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	30.251	5.928	5.103	<0.001
MO	0.031	0.015	2.077	0.0391
IO	-0.028	0.013	-2.155	0.032
INO	0.027	0.012	2.214	0.028
BS	0.794	0.304	2.614	0.010
CD	-2.573	0.422	-6.094	<0.001
BI	2.595	1.103	2.353	0.020
ID	-3.337	1.020	-3.271	0.001
FS	-4.649	0.800	-5.808	<0.001
LEV	-4.184	0.516	-8.110	<0.001
R-squared	0.767	F-statistic		16.957
Adjusted R-squared	0.722	Prob (F-statistic)		<0.001

NOTE: here; EMS=Emerging Markets'Z Score, MO=Mangerial Ownership, IO=Individual's Ownership, INO=Institutional Ownership, BS=Board Size, CD=CEO's Duality, BI=Board Independence, ID= Insider's Directorship, FS=Firms Size, and LEV=Leverage

Table 5 describes the regression results of the research model. The F-statistic (16.957) and p-value (<0.001) depicts the overall significance and fitness of the model. The value of adjusted R2 depicts that all the study variables put a change of 0.767 in the dependent variable i.e. EMS. The coefficient value of MO is 0.031 with a probability value of 0.039 demonstrates that one unit change in MO gives 0.031 change in EMS i.e. financial health. In other-words one-unit increase in MO gives 0.031 units a decrease in FD of the firms. These results support the agency theory in the sense that an increase in MO reduces the agency cost and agency conflict and improves the financial health. Further the results of the study are aligned with past studies (Donker et al., 2009; Khurshid et al., 2018; Manzaneque et al., 2016; Nahar Abdullah, 2006). The results accept the "H1: Managerial ownership (MO) plays a negative role in detecting financial distress." The coefficient value of individual's ownership is -0.028 with a probability value of 0.032 demonstrates that one-unit increase in individual's i.e. public ownership gives -0.028 changes in EMS i.e. financial health of the selected firms. In other-words one-unit increase in individual ownership gives 0.028 units increase in FD of the firms. These results prove that public ownership causes financial distress. The results reject the "H2: Individual Ownership (IO) has a negative impact on financial distress."

The coefficient value of institutional ownership is 0.027 with a probability value of 0.028 demonstrates that one unit increase in institutional ownership gives 0.027 units change in EMS i.e. financial health of the selected firms. In other-words one-unit increase in institutional ownership gives 0.027 units a decrease in FD of the firms. These results support that institutional ownership plays a vigilant role in corporate governance matters of the firms and improves the financial health of the firms. Further, the results of the study are aligned with past studies (Donker et al., 2009; Khurshid et al., 2018) and opposed to (Manzaneque et al., 2016). The results reject the "H3: Institutional ownership (INO) has a positive impact on the firm's financial distress."

The coefficient value of board size is 0.794 with a probability value of 0.010 demonstrates that a one-unit increase in board size gives 0.794 change in EMS i.e. financial health of the selected firms. In other words, a one-unit increase in the board-size gives 0.794 units decrease in FD of the firms. These results proved that a larger size board improves the quality of the corporate governance and in turn, reduces the chances of FD. Further the study results are aligned with past studies (Ciampi, 2015; Elloumi & Gueyie, 2001; Khurshid et al., 2018; Manzaneque et al., 2016; Wang & Deng, 2006). The results accept the "H4: Board size (BS) plays a negative role in detecting financial distress."

Khurshid, M. K.,Sabir, H. M., Tahir, S. H., Abrar, M.

The coefficient value of the CEO's duality is -2.573 with a probability value of <0.001 demonstrates that one-unit increase in duality gives -2.573 changes in EMS i.e. financial health of the selected firms. In other-words one-unit increase in duality gives a 2.573-unit increase in FD of the firms. These results prove that duality plays a negative impact on financial health and positive impact on FD. Further, the results of the study are aligned with the past studies (Ciampi, 2015; Daily & Dalton, 1994; Khurshid et al., 2018) and opposed to the (Manzaneque et al., 2016; Nahar Abdullah, 2006; Salloum & Azoury, 2012). The results accept the"H5: CEO and chairman's duality (CD) has a positive impact on the firm's financial distress." The coefficient value of BI is 2.595 with a probability value of 0.020 demonstrates that one-unit increase in board independence gives 2.595 change in EMS i.e. financial health of the selected firms. In other-words one-unit increase in board-independence gives 2.595 units decrease in FD of the firms. These results proved that board-independence improves the quality of corporate governance and in turn reduces the FD. Further, the results of the study are aligned with the past studies (Donker et al., 2009; Li et al., 2008; Manzaneque et al., 2016; Nahar Abdullah, 2006) and opposed (Khurshid et al., 2018). The results accept the H6: Board independence (BI) has a negative impact on the firm's financial distress."

The coefficient value of insider directorship is -3.337 with a probability value of 0.001 demonstrates that one-unit increase in insider directorship gives -3.337 change in EMS i.e. financial health of the selected firms. In other-words one-unit increase in insider-directorship gives 3.337 units an increase in FD of the firms. These results negate the agency theory in the sense that an increase in insider directorship increases the agency cost and agency conflicts and reduces financial health. Further the results of the study are aligned with the past studies (Khurshid et al., 2018; Salloum & Azoury, 2012). The results reject the "H7: Insider directors (ID) plays a positive impact on financial distress. The coefficient value of a firm's size is -4.649 with a probability value of <0.001 demonstrates that a one-unit increase in a firm's size puts -4.649 changes in EMS i.e. financial health of the selected firms. In other-words one-unit increase in business, size gives 4.649 units increase in FD of the firms. The results indicate that larger size firms have a higher propensity to catch in financial distress. Further the results of the study are aligned (Donker et al., 2009). The coefficient value of leverage is -4.184 with a probability value of <0.001 demonstrates that one-unit increase in leverage puts -4.184 changes in EMS i.e. financial health of the selected firms. In other-words one-unit increase in financial leverage gives 4.184 units increase in FD of the firms. The results indicate that high financial levered firms have a higher propensity to catch in financial distress. Further, the results of the study are aligned (Elloumi & Gueyie, 2001; Li et al., 2008) but opposed to (Donker et al., 2009).

5. CONCLUSION

The study is conducted to check the role of ownership structure and board composition in financial distress. To measure "financial distress" the Emerging Markets Z-Score model is used. To capture the ownership structure three proxies are used i.e. managerial ownership, individual ownership, and institutional ownership, while the board composition is proxied by board size, CEO's duality, board independence and insider's ownership. To check the impact of ownership structure and board composition on financial distress Fixed Effects Model is applied based on panel data of 608 firm observations. It is found that there exists a positive correlation of managerial ownership,

institutional ownership, the board size, CEO's duality and board independence with EMS while individual ownership and insiders' directors have a negative correlation with EMS. Fixed Effects Model depicts that managerial ownership, institutional ownership, the board size, and board independence have a positive impact on Emerging Markets Z-Score, while individual's ownership, CEO's duality, and insider's ownership put negative influence on Emerging Markets Z-Score. The overall conclusion is as:

- Higher managerial ownership leads to an increase in the financial health of the firms and reduces the chances of financial distress.
- Individual's i.e. public ownership leads to a decrease in the financial health of the firms and in turn, can lead a firm to face financial distress.
- Institutional ownership enhances the financial health of the firms and hence reduces the occurrence of financial distress.
- Larger board size and board independence also enhance the financial health of the firms and in turn, reduces the chances of financial distress.
- Duality and insider's directorship lead towards the financial crises and puts an adverse effect on financial health.

6. AVAILABILITY OF DATA AND MATERIAL

Data can be made available by contacting the corresponding author.

7. REFERENCES

Agrawal, K., & Chatterjee, C. (2015). Earnings management and financial distress: Evidence from India. *Global Business Review*, *16*(5_suppl), 140S-154S.

Altman, E. I. (1968). Financial ratios, discriminant analysis and the prediction of corporate bankruptcy. *The Journal of Finance*, *23*(4), 589–609.

Altman, E. I. (1993). Evaluating the chapter 11 bankruptcy-reorganization process. *Colum. Bus. L. Rev.*, 1.

Altman, E. I., & Hotchkiss, E. (2010). *Corporate financial distress and bankruptcy: Predict and avoid bankruptcy, analyze and invest in distressed debt* (Vol. 289). John Wiley & Sons.

Andrade, G., & Kaplan, S. N. (1998). How costly is financial (not economic) distress? Evidence from highly leveraged transactions that became distressed. *The Journal of Finance*, *53*(5), 1443–1493.

Asquith, P., Gertner, R., & Scharfstein, D. (1994). Anatomy of financial distress: An examination of junk-bond issuers. *The Quarterly Journal of Economics*, *109*(3), 625–658.

Balcaen, S., & Ooghe, H. (2006). 35 years of studies on business failure: an overview of the classic statistical methodologies and their related problems. *The British Accounting Review*, *38*(1), 63–93.

Beaver, W. H. (1966). Financial ratios as predictors of failure. *Journal of Accounting Research*, 71–111.

Charalambakis, E. C. (2015). On the prediction of corporate financial distress in the light of the financial crisis: empirical evidence from Greek listed firms. *International Journal of the Economics of Business*, *22*(3), 407–428.

Chen, Y., Zhang, L., & Zhang, L. (2013). Financial distress prediction for Chinese listed manufacturing companies. *Procedia Computer Science*, *17*, 678–686.

Cheng, W.-Y., Su, E., Li, S.-J., Fen, Y.-G., & Dong, G.-M. (2009). Corporate governance and financial distress: evidence from public- listed electronics companies in Taiwan. *Journal of Statistics and Management Systems*, *12*(5), 813–827. https://doi.org/10.1080/09720510.2009.10701424

Ciampi, F. (2015). Corporate governance characteristics and default prediction modeling for small enterprises. An empirical analysis of Italian firms. *Journal of Business Research*, *68*(5), 1012–1025.

Daily, C. M., & Dalton, D. R. (1994). Bankruptcy and Corporate Governance: The Impact of Board Composition and Structure. *Academy of Management Journal*, *37*(6), 1603–1617. https://doi.org/10.2307/256801

Darrat, A. F., Gray, S., Park, J. C., & Wu, Y. (2016). Corporate Governance and Bankruptcy Risk. *Journal of Accounting,*

Auditing and Finance, *31*(2), 163–202. https://doi.org/10.1177/0148558X14560898

DeAngelo, H., & DeAngelo, L. (1990). Dividend policy and financial distress: An empirical investigation of troubled NYSE firms. *The Journal of Finance*, *45*(5), 1415–1431.

Demsetz, H., & Lehn, K. (1985). The structure of corporate ownership: Causes and consequences. *Journal of Political Economy*, *93*(6), 1155–1177.

Donker, H., Santen, B., & Zahir, S. (2009). Ownership structure and the likelihood of financial distress in the Netherlands. *Applied Financial Economics*, *19*(21), 1687–1696. https://doi.org/10.1080/09603100802599647

Du, X., & Lai, S. (2018). Financial distress, investment opportunity, and the contagion effect of low audit quality: Evidence from china. *Journal of Business Ethics*, *147*(3), 565–593.

Elloumi, F., & Gueyie, J.-P. (2001). Financial distress and corporate governance: an empirical analysis. *Corporate Governance: The International Journal of Business in Society*, *1*(1), 15–23.

Ernawati, E., Handojo, S. E., & Murhadi, W. R. (2018). Financial performance, corporate governance, and financial distress. *Advances in Social Science, Education and Humanities Research*, *186*.

Fama, E. F., & Jensen, M. C. (1995). SEPARATION OF OWNERSHIP AND CONTROL *, *XXVI*(June), 301–325.

Fawzi, N. S., Kamaluddin, A., & Sanusi, Z. M. (2015). Monitoring Distressed Companies through Cash Flow Analysis. *Procedia Economics and Finance*, *28*, 136–144.

Fracassi, C., & Tate, G. (2012). External networking and internal firm governance. *The Journal of Finance*, *67*(1), 153–194.

Hendel, I. (1996). Competition under financial distress. *The Journal of Industrial Economics*, 309–324.

Jensen, M. C. (1986). Agency costs of free cash flow, corporate finance, and takeovers. *The American Economic Review*, *76*(2), 323–329.

Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, *3*(4), 305–360.

Julius, T. (2012). Predicting financial distress in commercial banks in Kenya. *Finance Jounal of Finance. University of Nairobi*.

Khurshid, M. K., Sabir, H. M., Tahir, S. H., & Abrar, M. (2018). Impact of Corporate Governance on the Likelihood of Financial Distress: Evidence from Non-Financial Firms of Pakistan. *PACIFIC BUSINESS REVIEW INTERNATIONAL*, *11*(4), 134–149.

Lee, T.-S., & Yeh, Y.-H. (2004). Corporate Governance and Financial Distress: evidence from Taiwan. *Corporate Governance*, *12*(3), 378–388. https://doi.org/10.1111/j.1467-8683.2004.00379.x

Li, H., Wang, Z., & Deng, X. (2008). Ownership, independent directors, agency costs and financial distress: evidence from Chinese listed companies. *Corporate Governance: The International Journal of Business in Society*, *8*(5), 622–636.

Mangena, M., & Chamisa, E. (2008). Corporate governance and incidences of listing suspension by the JSE Securities Exchange of South Africa: An empirical analysis. *The International Journal of Accounting*, *43*(1), 28–44.

Manzaneque, M., Priego, A. M., & Merino, E. (2016). Corporate governance effect on financial distress likelihood: Evidence from Spain. *Revista de Contabilidad*. https://doi.org/10.1016/j.rcsar.2015.04.001

Memba, F., & Job, A. N. (2013). Causes of Financial Distress : A Survey of Firms Funded by Industrial and Commercial Development Corporation in Kenya. *Interdisciplinary Journal of Contemporary Research in Business*, *4*, 1171–1185.

Nahar Abdullah, S. (2006). Board structure and ownership in Malaysia: The case of distressed listed companies. *Corporate Governance: The International Journal of Business in Society*, *6*(5), 582–594.

Ohlson, J. A. (1980). Financial ratios and the probabilistic prediction of bankruptcy. *Journal of Accounting Research*, 109–131.

Salloum, C., & Azoury, N. (2012). Corporate governance and firms in financial distress: evidence from a Middle Eastern country. *International Journal of Business Governance and Ethics*, *7*(1), 1–17.

Shaukat, A., & Affandi, H. (2015). Impact of Financial Distress on Financial Performance: A Study Related to Pakistani Corporate Sector. *International Journal of Current Research*, *7*(02), 12991–12996.

Sheifer, A., & Vishny, R. W. (2007). A Survey of Corporate Governance Andrei. *The Journal Of Finance*, *52*(2), 737–783.

Shumway, T. (2001). Forecasting bankruptcy more accurately: A simple hazard model. *The Journal of Business*, *74*(1), 101–124.

Udin, S., Khan, M. A., & Javid, A. Y. (2017). The effects of ownership structure on likelihood of financial distress: an empirical evidence. *Corporate Governance: The International Journal of Business in Society*, *17*(4), 589–612.

Wang, Z.-J., & Deng, X.-L. (2006). Corporate governance and financial distress: Evidence from Chinese listed companies. *Chinese Economy*, *39*(5), 5–27.

Wruck, K. H. (1990). Financial distress, reorganization, and organizational efficiency. *Journal of Financial Economics*, *27*(2), 419–444.

Yermack, D. (1996). Higher market valuation of companies with a small board of directors. *Journal of Financial Economics*, *40*(2), 185–211.

Muhammad Kashif Khurshid is a Ph.D. candidate at GC University. He is a Lecturer at National University of Modern Languages in the Department of Management Science. He did his MS in the field of Business Administration with specialization in Finance from Mohammad Ali Jinnah University. His research is in the field of Corporate Governance and Corporate Finance.

Professor Dr. Hazoor Muhammad Sabir is Dean of the Faculty of Economics and Management Sciences, Lyallpur Business School (LBS) at GC University. His researches are related to Modern Business Mangement.

Dr. Safdar Hussain Tahir is Chairperson and an Associate Professor in the Department of Lyallpur Business School (LBS) at GC University. Currently, he is pursuing a postdoc in the field of small family businesses at UWA Business School, Perth, Australia. His research is in the field of Corporate Governance and Corporate Finance.

Dr. Muhammad Abrar is Director and Associate Professor in the Department of Lyallpur Business School (LBS) at GC University. His researches encompass Digital Management.