IMPACT OF FINANCIAL SUSTAINABILITY ON FINANCIAL DISTRESS ACROSS NON-FINANCIAL FIRMS LISTED IN PAKISTAN STOCK EXCHANGE

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DEDICATION

Dedicated to my beloved father Syed Irshad Hussain Gillani (late), mother Syeda Shehnaz Asmat, spiritual leader Prof. Syed Masood Haider Bukhari, wife Humaira Ahmad, children, my brothers and their families and my in-laws. Thank you for your love, support, and understanding.

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ABSTRACT

Corporations fall into financial distress or even go into bankruptcy due to many reasons. It is always a challenge for researchers and business managers to identify those determinants that affect financial distress of firms, and to develop an effective prediction model. Previous studies have identified several determinants of financial distress. Most of these studies focused on firm-level financial determinants. The recent developments emphasized on the effect of multi-level determinants (i.e. firm-level, sector-level and country-level) on financial distress. However, there is scarce research focusing financial sustainability interaction relationship between the firm-level financial factors and financial distress. The financial sustainability is relatively a new concept that demands further exploration. For this reason, this study investigates the moderating effect of financial sustainability between firm-level variables and financial distress. Moreover, in order to get predictive efficiency, this study also investigates the collective effect of both firm's financial and non-financial factors at the sector and country-level on financial distress. In order to carry out vigorous and valid research analysis, this study emphasizes on non-financial firms listed in Pakistan Stock Exchange (PSX). This study is quantitative in nature and it deals with secondary data. Moreover, unbalanced panel data is utilized which comprises of data from year 2009 to 2018. Initially, descriptive statistics was used to explain the basic nature of the collected data. Multiple logistic regression and multiple moderated logistic regressions are applied. In order to account for all the relevant levels of analysis, this study also employs Artificial Nested Tested Procedure (ATNP). Findings of this study reveal that financial sustainability not only has moderating effect on the relationship between firm-level financial variables and financial distress but also improves the predictive accuracy. Moreover, firms-level variables are the best explanatory variables for predicting financial distress followed by sector and country-level variables. In addition, the results of this study are valuable for financial institutions to forecast financial distress and estimate minimum capital requirements to reduce the cost of financial risk. Several limitations that may extend prospects for future research need to be acknowledged. First limitation lies in the fact that due to the incomparable nature of the financial firms with non-financial firms, the study excludes the financial firms from the analysis. Second, limitation is about limited data availability of corporate governance related variables. As financial sustainability is primarily challenge for SME especially in developing countries therefore, investigation of the moderating effect of financial sustainability on the financial behavior of SME sector is a promising agenda for future research. Moreover, in future, macro-level governance variables may also be incorporated in financial distress related studies.

ABSTRAK

Syarikat mengalami masalah kewangan bahkan menjadi muflis kerana pelbagai sebab. Adalah menjadi satu cabaran bagi para penyelidik dan pengurus perniagaan untuk mengenal pasti faktor penentu yang mempengaruhi tekanan kewangan syarikat, dan berusaha untuk membangunkan satu model ramalan yang berkesan. Kajian terdahulu telah mengenal pasti beberapa faktor penentu tekanan kewangan. Sebilangan besar kajian ini tertumpu kepada penentu kewangan peringkat syarikat. Perkembangan terbaru menekankan kepada pengaruh faktor penentu pelbagai peringkat (iaitu tahap firma, tahap sektor dan tahap negara) terhadap tekanan kewangan. Walau bagaimanapun, terdapat kurang kajian mengenai interaksi kesinambungan kewangan ke atas hubungan antara faktor kewangan peringkat syarikat dan tekanan kewangan. Kelestarian kewangan adalah konsep baru yang memerlukan penerokaan lebih lanjut. Atas sebab ini, kajian ini meneliti kesan penyederhanaan kelestarian kewangan antara pemboleh ubah peringkat syarikat dan tekanan kewangan. Tambahan lagi, untuk mendapatkan kecekapan ramalan, kajian ini juga meneliti kesan kolektif kedua-dua faktor kewangan dan bukan kewangan syarikat pada peringkat sektor dan negara ke atas masalah kewangan. Untuk menjalankan analisis penyelidikan yang teliti dan sahih, kajian ini menekankan kepada syarikat bukan kewangan yang tersenarai di Bursa Saham Pakistan (PSX). Kajian ini bersifat kuantitatif dan menggunakan data sekunder. Selain itu, data panel tidak seimbang mulai tahun 2009 hingga 2018 digunakan. Pada mulanya, statistik deskriptif digunakan untuk menjelaskan sifat asas data yang dikumpulkan. Regresi logistik berganda dan regresi logistik moderasi telah digunakan. Untuk menilai semua tahap analisis yang relevan, kajian ini juga menggunakan *Artificial Nested Tested Procedure* (ATNP). Penemuan kajian ini menunjukkan bahawa kelestarian kewangan tidak sahaja mempunyai pengaruh penyederhanaan ke atas hubungan antara pemboleh ubah kewangan peringkat syarikat dan tekanan kewangan tetapi juga meningkatkan ketepatan ramalan. Tambahan lagi, pemboleh ubah peringkat syarikat adalah pemboleh ubah penjelasan terbaik untuk meramalkan masalah kewangan diikuti oleh pemboleh ubah peringkat sektor dan negara. Di samping itu, hasil kajian ini sangat berharga bagi institusi kewangan untuk meramalkan tekanan kewangan dan menganggar keperluan modal minimum untuk mengurangkan kos risiko kewangan. Beberapa batasan yang dapat memperluas prospek penyelidikan masa depan perlu diakui. Batasan pertama terletak pada kenyataan bahawa disebabkan sifat firma kewangan yang tidak ada tandingannya dengan firma bukan kewangan, kajian ini mengecualikan firma kewangan dari analisis. Kedua, batasan adalah mengenai ketersediaan data terhad pemboleh ubah berkaitan tadbir urus korporat. Oleh kerana kesinambungan kewangan adalah cabaran utama bagi PKS terutama di negara-negara membangun, oleh itu penyelidikan mengenai kesan penyederhanaan kewangan yang sederhana terhadap tingkah laku kewangan sektor PKS adalah agenda yang menjanjikan untuk penyelidikan masa depan. Lebih-lebih lagi Di masa depan, pemboleh ubah tadbir urus peringkat makro juga dapat dimasukkan dalam kajian berkaitan masalah kewangan.

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LIST OF ABBREVIATIONS

AGR	-	Actual Growth Rate
AIC	-	Akaike Information Criteria
ANOVA	-	Analysis of Variance
ANTP	-	Artificial Nested Testing Procedure
AVT	-	Activity
BS	-	Board Size
CCG	-	Code of Corporate Governance
CEOD	-	Chief Executive Officer Duality
CG	-	Corporate Governance
CGI	-	Corporate Governance Indicators
CS	-	Corporate Sustainability
DYN	-	Dynamism
FD	-	Financial Distress
FS	-	Financial Sustainability
GDP	-	Gross Domestic Production
HHI	-	Herfindahl-Hirschman Index
INF	-	Inflation
IO	-	Institutional Ownership
ISE	-	Islamabad Stock Exchange
KSE	-	Karachi Stock Exchange
LEV	-	Leverage
LIQ	-	Liquidity
LSE	-	Lahore Stock Exchange
MO	-	Managerial Ownership
MUN	-	Munificence
NOID	-	Number of Independent Directors
OC	-	Ownership Concentration
OLS	-	Ordinary Least Square
PAMA	-	Pakistan Automobile Manufacturing Association
PBI	-	Pakistan Board of Investment

PROF	-	Profitability
PSX	-	Pakistan Stock Exchange
ROC	-	Receiver Operating Characteristic Curve
SBP	-	State Bank of Pakistan
SECP	-	Security and Exchange Commission of Pakistan
SGR	-	Sustainable Growth Rate
SI	-	Stock Index
VIF	-	Variance Inflation Factor Analysis

CHAPTER 1

INTRODUCTION

1.1 General Overview

Financial distress is always an undesired situation for the firm and it may have an adverse impact not only on the firm itself but also on the global economy (Rafiei, Manzari, & Bostanian, 2011). The recent global financial crisis has led several enterprises to financial distress in the United States of America, European, and Asian countries (World Bank, 2010). In order to minimize the economic loss caused by bankruptcy, it has always been a focal point for managers, investors, government agencies, and researchers that what are the determinants and how these determinants affect financial distress. Most of the companies are financed through external debt provided by banks or financial institutions. Therefore, assessment of lending risk and prediction of financial distress is also a key issue for the lending institution (Liang, Lu, Tsai, & Shih, 2016).

Financial distress and bankruptcy issue are core areas of corporate finance. Theories related to capital structure (e.g. agency theory and trade-off theory) highlight the importance of financial distress or bankruptcy costs. Moreover, several models related to prediction financial distress have also been developed by researchers. In this regard, FitzPatrick (1932) carried out the researcher on bankruptcy prediction. Later on, Beaver (1966) and then Altman (1968) developed models by using financial ratios and significantly contributed in the area of financial distress prediction. The seminal paper of Altman (1968) has led to the development of an extensive body of corporate finance literature particularly in the area of financial distress. However, since 1966 the area of financial distress and bankruptcy got attention from many researchers. Therefore, many key studies (Booth, 1983;

Cheng-Ying, 2004; Daily & Dalton, 1994a; Mensah, 1984; R. C. Merton, 1974; Ohlson, 1980; Tian, 2012) have been carried out and developed their own models to predict financial distress by using different types of information and statistical techniques.

1.2 Background of the Study

Bankruptcy is one of the most important events in a company's life that can place shareholders in serious financial trouble. In financial distress phase, management feels difficulty in repaying its obligations, (H. D. Platt & Platt, 2006). Moreover, financial distress is a serious situation in a company's life which can lead not only shareholders but also suppliers and lending institutions into financial trouble (Tano & Nainggolan, 2019). According to Altman (1968), the market value of a distressed company falls sharply before it officially shut down. However, financial distress can be avoided by predicting it and can be managed by opting precautionary measures before its occurrence. Therefore, the prediction of financial distress and assessment of credit risk is an important task of financial managers, credit rating agencies, and lending institutions (Mirzaei, Ramakrishnan, & Bekri, 2016).

A considerable amount of literature has been published on financial distress and bankruptcy prediction. The prediction of corporate financial distress has always been the point of focus of many researchers. During the past 50 years, several studies have been used financial ratios as predictors of financial distress. According to Lincoln (1984), major factors of business success and business failure are related to financial statements. The first and foremost systematic study was carried out by FitzPatrick (1932). Later on, many researchers used financial ratios in financial distress studies (Blum, 1974; Deakin, 1972; Edmister, 1972; Merwin, 1942; Meyer & Pifer, 1970; Norton & Smith, 1979). However, Beaver (1966) and Altman (1968) conducted notable work to find out the predictive ability of individual ratio to classify distress and non-distress firms. The selected ratios are commonly used for

overall financial analysis of companies these ratios are profitability, liquidity, leverage, and activity.

The focus of early studies of financial distress was only based on financial and accounting information. However, several researchers argue that financial data alone do not provide better predictive quality of financial distress. Therefore, it is necessary to add non-financial information like variable related to corporate governance for building better models (H.-H. Chen, 2008; Fich & Slezak, 2008; Lee & Yeh, 2004). The first time in 1985 Chaganti, Mahajan, and Sharma used non-financial variables like corporate governance. Since the 1980s, there is a large body of literature available that pointed out the importance of corporate governance and financial distress (Chaganti, Mahajan, & Sharma, 1985; Ciampi & Gordini, 2013b; Daily & Dalton, 1994a; Elloumi & Gueyie, 2001; Lee & Yeh, 2004; Manzaneque, Priego, & Merino, 2016; Polsiri & Sookhanaphibarn, 2009; Wang & Deng, 2006).

Furthermore, it is also well established from a variety of studies that business activities are significantly influenced by external factors like macroeconomic variables. The economic and political condition of any county affects business activities. It is expected that the general economic condition is the foremost issue affecting the business failure rate. According to Altman (1973), financial distress increases during financial crises due to tough financial policies by the government. During the recession time of the economy, the chances of business failure are high (Mensah, 1984). In the light of above discussion, several studies concluded that firm-specific variables alone cannot predict financial distress so there is also a need to incorporate country-level variables (Altman, 1968; Johnson, 1970; Mensah, 1984). In this regard, many scholars developed several models for predicting financial distress by incorporating macroeconomic variables (Goudie & Meeks, 1991; Smith & Liou, 2007; Taffler, 1984). Many important variables have been used by several researchers including GDP, interest rate, stock market index, and inflation.

Another strand of documented literature is that every firm operates in its specific sector and each sector is different from each other due to different sizes and

nature. Therefore, financial distress varies among different sectors in a single economy. In this regard, few researchers have investigated the effects of industrial variables on financial distress (Mirzaei *et al.*, 2016; Ramakrishnan *et al.*, 2016). In the case of developed economies, a little amount of literature highlighted the importance of sector-level determinants of financial distress. These sector-related variables were formulated based on price competition, uniqueness, and R&D (Frank & Goyal, 2009; MacKay & Phillips, 2005). Furthermore, Kayo and Kimura (2011) pointed out that the effect of the sector-level variables was ignored in previous studies. However, in limited studies, dummy variables were used to define sector characteristics but failed to clear the illustration of the sectoral effect on a firm's capital structure. Moreover, in the case of developing economies, researchers faced problems related to the availability of data and variables measurements.

The parallel literature from financial management research may explain the issue of default prediction in more detail. Every manager aims to grow the firm to increase the value of the firm (Ashta, 2008). However, growth must be sustainable if the firm aims to get benefits for the long term. The overwhelming growth of revenue can lead a corporation to financial distress. For assessment of the financial sustainability of the firm, the formula of sustainable growth rate (SGR) is a very useful measure. The concept of sustainable growth was developed by Robert C. Higgins in 1977 and extended previous work for a continuous-time framework (Higgins, 1977a, 1981). According to Higgins, a sustainable growth rate (SGR) is a maximum revenue growth rate that can be sustained by a firm (internal financing) without changing in operating ratio and financing ratio as well as without issuing new equity. In other words, there is a significant relationship between financial policy (debt and equity ratio) and operational policies (asset turnover and firm size) with a sustainable growth rate (Rahim, 2017). Therefore, the SGR is a valuable tool for setting financial and operating policies (Subbareddy & Reddy, 2017). Mubin and Hanif (2017) carried out research on non-financial firms, this research investigated determinants of sustainable growth rate and founded that the leverage and cash generation ability of firms is the key factor of financial sustainability. However, some researchers found partial validation that the growth of a successful business is in a sustainable manner (Vasiu & Ilie, 2018).

1.3 Background of the Problem

Credit risk management is an essential part of corporate finance. Due to internal and external economic shocks, credit risk modeling has become a crucial topic among banks, financial institutions, financial managers, and regulators. In this regard, vast literature is available for predicting financial distress. From the viewpoint of the background of the study, most of the studies focused on firm-level factors. Another strand of literature also considered macroeconomic or country-level variables (Beaver, 1966; Altman, 1968; Norton and Smith, 1979; Ohlson, 1980; Mensah, 1984; Laitinen, 1991; Liou, 2007; Smith and Liou, 2007; Tian, 2012;).For predicting financial distress, the researchers used only accounting and economic variables as predictors. However, the first time in 1985 Chaganti, Mahajan, and Sharma used a non-financial variable like corporate governance. Since the 1980s there is a large body of literature available that pointed out the importance of corporate governance and financial distress. Hence, the financial data alone do not provide better predictive quality of financial distress because financial reports are ex-post in nature, but these can be window dressed through earning management. Moreover, corporate governance factors are positively related to financial distress even after controlling the possible influence of firms' financial performance (Chaganti et al., 1985; Ciampi & Gordini, 2013b; Daily & Dalton, 1994a; Elloumi & Gueyie, 2001; Lee & Yeh, 2004; Manzaneque et al., 2016; Polsiri & Sookhanaphibarn, 2009; Wang & Deng, 2006).

In financial distress studies, the majority of researchers used only firm-level financial variables (ratios) or used firm-level non-financial variables (corporate governance) or a combination of both. Some researchers used only country-level variables or a combination of firm-level and country-level variables. Therefore, mixed results have been observed in different models based on a different combination. Although, the combined effect of firm-level variables (ratios and corporate governance) with country-level was investigated on financial distress, however, very little attention has been given to the sector-level (munificence, dynamism, and HHI) variables. However, a few studies highlighted the sector-level variables with the firm and country-level variables but again ignored corporate

governance effect within firms as well as across sectors (M. N. Alifiah, 2014; Altman, 1968; Beaver, 1966; Laitinen, 1991; Liou, 2007; Mensah, 1984; Mirzaei et al., 2016; Norton & Smith, 1979; Ohlson, 1980; Ramakrishnan, Nabi, & Anuar, 2016; Smith & Liou, 2007; Tian, 2012). Therefore, it is also necessary to add variables related to corporate governance along with sector-level variables across different sectors for better understanding and building better models (H.-H. Chen, 2008; Fich & Slezak, 2008; Lee & Yeh, 2004).

In relation to empirical results, as discussed in the background of the study literature the observed financial distress mechanism mostly reported varying and inconsistent results. In developed economies, the business environment is more stable as well as macroeconomic variables e.g. GDP, inflation, and stock market index (Altman, Iwanicz-Drozdowska, Laitinen, & Suvas, 2017; Chenchehene, 2019). In developed economies, corporate governance determinants have also a significant impact on financial distress especially in the banking sector (Baklouti, Gautier, & Affes, 2016; Poortstra & Marton, 2019). Besides the banking sector, corporate governance mechanism is equally important in non-financial firms and it has a significant impact on financial performance as well as financial distress in developed countries like Poland (Gruszczynski, 2006). However, in some cases, voluntary adoption of corporate governance is less associated with financial distress and other determinants of CGIs e.g. block holders, ownership concentration, managerial ownership, and audit committees have also less impact on financial distress (Miglani, Ahmed, & Henry, 2015).

Moreover, this inconsistent and varying results of financial distress appear to become more severe when it comes to developing markets. The varying nature of developing economies and the potential monetary and political impact imposes challenges to researchers, in terms of analytical focus and framework (Ferraz & Hamaguchi, 2002). The emerging markets as compared to developed markets are more volatile, having weaker regulations, less efficient, and are more risky (Edwards & Lawrence, 2010). Indeed, bankruptcy which is a worldwide problem can happen both in developed and developing economies. However, it occurs overly in developing economic environments. Some of the major causes behind corporate

failures that vary across countries are the differences in capital structures, accounting standards, social, political, and economic environment (Rashid & Abbas, 2011a). Furthermore, there is an increasing awareness that theories originating from developed countries such as the USA and the UK may have limited applicability to underdeveloped or developing economies. Developing countries have different characteristics such as different political, economic, and institutional conditions, which limit the application of empirical models in developed. Recent studies of corporate governance suggest that geographical position, the tax system, industrial development, and cultural characteristics along with other factors affect ownership structure which in turn have impacts on a firm's performance and its default risk (Zeitun & Tian, 2007). In the case of Pakistan, 105 out of 570 listed firms got delisted during 2012-2016 due to default, and loss in the form of cumulative non-performing loans reached 9.04 billion dollars in 2017 (State Bank of Pakistan, 2017).

In the recent decade, March 28th, 2002, Although Security and Exchange Commission of Pakistan (SECP) has introduced the Code of Corporate Governance (CCG) but the Pakistani companies still have weak internal and external corporate governance mechanisms as compared to developed countries (Ahmed Sheikh & Wang, 2012). In addition, corporate governance is an emerging issue in Pakistan therefore, limited studies have been carried out to investigate the effect of CG on firm's performance, dividend policy and capital structuring related issues (Ahmed Sheikh & Wang, 2012; Butt & Hasan, 2009; Javid & Iqbal, 2008; Majeed, Aziz, & Saleem, 2015; Yasser, Entebang, & Mansor, 2015). However, an issue related to corporate governance's effect on financial distress in Pakistan is still untapped. Therefore, the first issue of the current study is to investigate the combined effect of firm-level (i.e. ratios and corporate governance), sector-level, and country-level variables on financial distress of non-financial firms across major sectors in Pakistan.

Although a major part of the literature on financial distress highlights the importance of firm-level financial variables (ratios), these ratios individually have been taken as determinants of financial distress but the interlink effect of these ratios has been ignored. In other words, in financial distress studies, it has been unnoticed that either firm is financially sustainable or not. Financial sustainability is another

key area of the modern corporate world that has been getting much consideration by policymakers and investors. Moreover, it is also an important aspect of corporate sustainability (Bobinaite, 2015; Przychodzen & Przychodzen, 2013; Rahim, 2017). Financial sustainability deals with not only long-term financial planning with a firm's growth but also considers firm sustainability (Junaidi, Sulastri, Isnurhadi, & Adam, 2019). Although, there is an established relationship between a firm's growth and financial planning (Fabozzi & Peterson, 2003) but inappropriate financial planning or under/overgrowth rate may lead the business towards financial distress. However, it has been always challenging for managers that how to set financial policies to accommodate the firm's growth (Junaidi et al., 2019). Mostly managers believe that high growth is favorable for firm performance but if such growth is not sustainable then it may lead the firm toward financial difficulties. Moreover, unmanageable growth may also lead firm to the more financial burden for example, for accommodate such high growth, the firms usually take loans on the high-interest rate in result, the market value of the share may decrease due to poor outlook of the firm (M. Fonseka, Constantino García Ramos, & Gao-liang Tian, 2012). According to Higgins (1977a) the firm's growth is beneficial only up to a certain level but beyond that level, it may exert financial pressure on firms.

In addition, if firms are not financially sustainable then serious financial difficulties can occur, however, the trade-off between high growth and high financial risk may enable firms to gain enough cash from the market to maintain its long-term existence (Przychodzen & Przychodzen, 2013). The last major six financial crises are the best shreds of evidence for it. These financial crises include (1) the collapse of the speculative stock market in 1929 to 1933, (2) the collapse of real estate value in 1929 to 1933, (3) the collapse of savings and loan institutions in the 1980s, (4) the Latin American bank debt crisis in 1980s, (5) the collapse of long-term capital management in 1997 and (6) the subprime home mortgage loan crisis in 2006 to 2009. Sustainability in finance focuses on mutual compatibility between growth and established operating and financial policies. In other words, both situations are not suitable for business in the long-term, when the actual growth rate is higher or lower than the sustainable growth rate.

In relation to empirical shreds of evidence, most of the studies documented that the financial sustainability of firms influences their financial performance (Amouzesh, Moeinfar, & Mousavi, 2011; Przychodzen & Przychodzen, 2013; Rahim, 2017; Subbareddy & Reddy, 2017). However, sustainability practices affect not only internal financial determinants but also affect stock market price volatility. These studies argued that unsustainable growth could exert tremendous stress on the firm's operational and financial characteristics and eventually this situation may lead towards financial distress. In line with these arguments, it is decisive to figure out the moderating effect of financial sustainability on a firm's financial determinants and the likelihood of financial distress. Since sustainable development has become a part of the public agenda around the world. In this regard, the corporations are addressing this issue at the micro-level by defining corporate sustainability (CS). A sustainable firm can be seen as a business unit that considers its long-term health as a combination of proper management of all major areas of its activities (e.g. financial, social, and environmental) at the same time. From a financial perspective, sustainability means that revenue and assets growth should be balanced with a firm's operating and financial policies (Mukherjee & Sen, 2019). In both developed and developing countries, many research studies have been carried out by taking fully or partially aspects of corporate sustainability (Amouzesh et al., 2011; Bobinaite, 2015; Mahmood, Kouser, & Iqbal, 2017; Mardani, Jusoh, Zavadskas, Cavallaro, & Khalifah, 2015; Mubin & Hanif, 2017; Przychodzen & Przychodzen, 2013; Rahim, 2017). Although, several studies have been carried out related to corporate sustainability practices and the firm's performance, however financial sustainability and its impact on financial distress are still untapped.

According to the State Bank of Pakistan (2012) in the last decade, the economy of Pakistan got acceleration and the average growth is reported 7% between the period 2000-2007. In addition, the growth of the manufacturing sector reached a remarkable double-digit from 2000 to 2007. However, when growth exceeds a certain level, there is a need for more funds to facilitate the acceleration of growth. Eventually, such an increase in funds (additional debts) may lead the firms towards financial distress or sometime may face bankruptcy (Amouzesh et al., 2011; Przychodzen & Przychodzen, 2013). Furthermore, the consequences of financial

distress are risky to many firms are forced to wind up their operations and this condition is worst in emerging economies. Asian markets are more delicate and more likely to financial difficulties; e.g. in Pakistan 105 out of 570 listed firms got delisted during 2012-2016 due to default. Owing to this high rate of corporate default, the cumulative non-performing loans of the country reached to 9.04 billion dollars in 2017 (State Bank of Pakistan, 2017). In light of these arguments, this study intends to investigate this point of view that if a firm's growth of firms is higher than the sustainable growth rate then there is a probability that firms may face financial distress in the future.

In continuation of the above discussion, in recent decades the Pakistani economy has faced several ups and downs due to frequent changes in government structure, policies, and economic reforms (Nishat, 2001). Moreover, according to the Economic Survey of Pakistan (2012), the economic growth of Pakistan dipped into recession in a few couple of years due to global financial crises in 2008. Secondly, in Pakistan high-interest rates, limited access to leverage, acute electricity shortfall, and high production cost are also major reasons for slowing down the economy. In accordance with Ali and Afzal (2012) the recent global financial crises (2008) affected both the financial and non-financial sectors of developed and developing economies. Companies can face financial distress due to changing economic dynamics such as a decrease in aggregate demand, an increase in the cost of borrowing, and a change in government regulation (Aktas, Kaya, & Özlale, 2010). For all these reasons, firms fail to sustain their growth at the level of sustainable growth rate. Therefore, this study seeks to answer that either financial sustainability of firms moderates the relationship between firm financial determinants (e.g. profitability, liquidity, leverage, and activity) and financial distress.

Furthermore, effective bankruptcy prediction is always critical and challenging especially for the financial institution while taking a lending decision. Most of the studies use prediction models by using the financial ratio as an input variable. Some research studies incorporated corporate governance indicators (CGIs) with financial ratios for better predictive accuracy (Ciampi & Gordini, 2013a; Liang et al., 2016; Polsiri & Sookhanaphibarn, 2009). Besides these arguments, N. A. H.

Abdullah, Zainudin, Ahmad, and Rus (2014) incorporated macroeconomic indicators with financial ratios in the services sector of Malaysia, they argued that the influence of economic factors may vary country to country especially while comparing developed and developing countries. In recent, financial distress studies (Mirzaei et al., 2016; Ramakrishnan et al., 2016) used industrial/sectoral level variables with all variables except corporate governance indicators (CGIs). However, from the perspective of financial sustainability, the accuracy of all the above variables including corporate governance indicators is still not examined. Therefore, this study also highlights the issue that how prediction accuracy can be improved by adding CGIs. Although, the artificial intelligence expert system performs marginally better than the statistical and theoretical model but the use of MDA and logistic regression dominates in the research studies (Adnan Aziz & Dar, 2006).

Furthermore, in the literature of financial distress, the direct impact of firm-level variables on financial distress has been discussed in detail. However, very little attention has been given to the relative importance of each level of factors (firm, sector, and country-level) that best explains the firm performance and its impact on financial distress. The relevant literature has shown that higher-level factors may directly or indirectly influence the characteristics of lower-level factors (Ramakrishnan, 2012). The multilevel factors and their effect may lead to certain violations of the statistical assumptions, which are made by OLS regression (Luke, 2004). To account for all the relevant levels of analysis, the current study adopts an artificial nested testing procedure (ANTP) to assess the relative importance of each level of factors on the probability of financial distress. The ANTP compares restricted models against unrestricted models. The restricted models are the ones that can be reduced by imposing a set of linear restrictions on the parameter vector (Clarke, 2001). However, the unrestricted models are the ones that cannot be reduced by imposing a set of linear restrictions on the parameter vector.

Lastly, the current study employs nested model statistics based on a preferred model to evaluate the explanatory power of each level of determinants in explaining the financial distress in Pakistan. The nested model statistics in sequence add blocks for each level of determinants and then displays the comparison statistics between

nested models (Acock, 2012). Likewise, in other developed and developing economies, 559 firms from different 36 sectors are listed on Pakistan Stock Exchange. These firms are nested in different sectors and these sectors are nested in a single economy. In the past, there is no empirical evidence is found which explores the explanatory power of each level of determinants in financial distress research. Therefore, this study intends to investigate that which level of determinants (firm-level, sector-level, or country-level) are well explaining the financial distress in Pakistan.

In summary, since the last two decades due to the inconsistent nature of the socio-economic environment of Pakistan, a large number of bankruptcies have occurred. Therefore, it provides an in-depth and insightful investigation of firm-level, sector-level and country-level factors in bankruptcy research. In the macroeconomic context, sustainable growth means the growth rate in real GDP that can be sustained over a long period also can extend the boom period as long as possible. In developing economies, fluctuation in economic growth is due to many factors. In the case of Pakistan, change in government policies due to shifting power from democratic (civil) governments to dictatorship (army) governments and then dictatorship to democratic governments is the main reason for unsustainable economic growth. Moreover, it also shacked investors' confidence, damages the business environment and eventually, companies faced financial distress (Ramakrishnan et al., 2016). Although, in recent past, both financial and non-financial sectors of Pakistan have been faced with serious financial difficulties, but the prediction of financial distress is still less explored in terms of research. As there are few studies conducted on financial distress in Pakistan. For instance, Rashid and Abbas (2011b) studied the non-financial sector of Pakistan and identified those financial ratios that are most suitable for predicting financial distress. later on, Roomi, Ahmad, Ramzan, and Zia-ur-Rehman (2015) also argued that financial ratios are the best predictors in the Pakistani context and founded that the Abbas model has better ability to predict bankruptcy in Pakistan. However, Ramakrishnan et al. (2016) incorporated sector-level and country-level variables along with financial ratios and also investigated the impact of the different political regimes (both democratic and dictatorship) on financial distress.

Nevertheless, these studies did not address the financial sustainability of firms which may play a moderating role in financial distress mechanisms. It is discussed earlier in the literature of financial distress that very little attention has been given towards financial sustainability. Therefore, to serve this gap, the current study firstly aims to predict the financial distress in Pakistan. In particular, this study seeks to answer four distinctive queries; (a) what are the significant factors (i.e. firm-level, sector-level and country-level) of financial distress across non-financial listed firms in Pakistan? (b) Does financial sustainability matter in developing county like Pakistan and does it moderate the relationship between firm-level variables and financial distress? (c) In the case of the Pakistani non-financial sector, is there a possibility to improve predictive ability by incorporating all factors e.g. firm-level (financial ratio and corporate governance), sectoral and country-level, whether and how financial sustainability improves prediction ability? and (d) Which level of variables (i.e. firm-level, sector-level, and country-level) that best explain the issue of financial distress across non-financial firms as well as across different sectors listed in Pakistan Stock Exchange?

1.4 Problem Statement

Financial distress prediction is an important issue in corporate finance literature. Recent financial global crises 2007-2009 refer to the period of extreme stress on financial markets especially the banking sector. According to the State Bank of Pakistan (2017), likewise other Asian economies, the Pakistani economy has also experienced high corporate defaults and in Pakistan, accumulative non-performing loans have been reached 9.04 billion USD. Financial distress can be seen as a result of poor operating performance and irrational capital structure choices. According to J. C. Van Horne (1988) a firm's growth requires the careful balancing of the sale objective with its operating efficiency and financial resources. In other words, firms should be financially sustainable for supporting its targeted growth.

Firstly, in light of the background of the study and background of the problem, the current study aims to highlight the issues from the following four distinctive viewpoints. Primarily, the majority of financial distress studies incorporated firm-level variables either financial factors (financial ratios) or non-financial factors (corporate governance). In addition, for a better understanding of financial distress, some researchers combined both financial and non-financial factors with macroeconomic factors (M. N. Alifiah, 2014; M. N. Alifiah, Salamudin, & Ahmad, 2013; Altman, 1968; Baysinger & Hoskisson, 1990; Chaganti et al., 1985; Cheng-Ying, 2004; Daily & Dalton, 1994a; Elloumi & Gueyie, 2001; Johnson, 1970; Lee & Yeh, 2004; Libby, 1975; Ohlson, 1980; Wadhwani, 1986; Wilcox, 1973; Zeitun, Tian, & Keen, 2007). Furthermore, recent studies also added industrial/sector related variables e.g. munificence, dynamism, and HH Index in financial distress prediction but ignored the firm's non-financial factors (Mirzaei et al., 2016; Ramakrishnan et al., 2016). However, as per the best knowledge combined effect of all factors i.e. firm-level (financial ratio and corporate governance), sector-level and country-level variables have not been examined until the present. Therefore, this study captures all aspects of variables and incorporated them for better understanding of financial distress in Pakistan.

Secondly, till date research has tended to focus on firm-level, sector-level and country-level variables (M. N. Alifiah, 2014; Ciampi & Gordini, 2013b; Gan & Sahu, 2017; Lin, Wu, & Lo, 2018; Mirzaei, Hosseini, Gan, & Sahu, 2017; Mirzaei et al., 2016; Owoputi, Kayode, & Adeyefa, 2014; Paradi, Sherman, & Tam, 2018; Polsiri & Sookhanaphibarn, 2009; Ramakrishnan et al., 2016; Rashid & Abbas, 2011b; Roomi et al., 2015; B. C.-F. Yap, Yong, & Poon, 2010; Zhang, 2015). Although, most of the researches have been carried out by taking firm-level variables (financial ratios) but it has been ignored that either firm is financially sustainable or not. In accordance with Ali and Afzal (2012) the recent global financial crises (2008) affected both the financial and non-financial sectors of developed and developing economies. Companies can face financial distress due to changing economic dynamics such as a decrease in aggregate demand, an increase in the cost of borrowing, and a change in government regulation (Aktas, Kaya, & Özlale, 2010). However, very little attention has been given to examining the moderating impact of

financial sustainability on the relationship between a firm's financial variables and financial distress. Corporate sustainability is an emerging concept of the modern corporate world and financial sustainability is an integral part of it. Although the financial aspect of corporate sustainability is limited examined by finding its impact on firm performance and shareholders wealth related issues (Amouzesh et al., 2011; Bobinaite, 2015; Mubin & Hanif, 2017; Przychodzen & Przychodzen, 2013; Subbareddy & Reddy, 2017; Vasiu & Ilie, 2018) but its impact on financial distress and bankruptcy is still untapped. Therefore, this study aims to highlight the moderating effect of financial sustainability on the association between firms' financial variables and financier distress of firms listed in the Pakistan Stock Exchange (PSX).

The third issue is related to the improvement in the prediction model. It is always being a focal point for researchers, policymakers, and credit managers. Therefore, this study explores the predictive ability of the financial distress model when all levels of variables (firm-level, sector-level, and country-level) are combinedly incorporated. Especially, when corporate governance-related determinants are added with financial ratios, sector, and country-level variables. Moreover, it is also needed to investigate whether and how the moderating effect of financial sustainability improves the prediction ability.

Lastly, the direct impact of firm-level, sector-level, and country-level variables have been discussed in detail. However, very little attention has been given to indirect effect of each level of variables on financial distress. There are multi-level variables e.g. firm level, sector level and country-level. As firms are nested in a single specific sector and several sectors are nested in a single country. Therefore, in order to determine the importance of each level of variables, this study also highlights the explanatory power of each level of variables (firm-level, sector-level, and country-level) in explaining the financial distress of non-financial firms listed in the Pakistan Stock Exchange (PSX).

1.5 Research Questions

The research questions of this study are:

i. a) What are the overall significant determinants of financial distress at firm-level, sector-level, and country-level across non-financial firms listed in the Pakistan Stock Exchange (PSX)?

   b) Whether determinants of financial distress differ across sectors of the non-financial firm listed in the Pakistan Stock Exchange (PSX)?

ii. a) Does financial sustainability moderate the relationship between firm-level financial determinants and financial distress across non-financial firms listed in Pakistan Stock Exchange (PSX)?

   b) Does financial sustainability moderate the relationship between firm-level financial determinants and financial distress across sectors of non-financial firms listed in the Pakistan Stock Exchange (PSX)?

iii. How much predictive accuracy is improved, as entire determinants (i.e. firm-level, sector-level, and country-level) are collectively incorporated with and without moderating effect of financial sustainability?

iv. a) Which level of determinants (i.e. firm-level, sector-level, and country-level) that best explain the issue of financial distress of non-financial firms listed in the Pakistan Stock Exchange (PSX)?

   b) Which level of determinants (i.e. firm-level, sector-level, and country-level) that best explain the issue of financial distress across sectors of non-financial firms listed in the Pakistan Stock Exchange (PSX)?

1.6 Objectives of the Study

The objectives of this study are:

i. a) To investigate the overall significant determinants of financial distress at firm-level, sector-level, and country-level across non-financial firms listed in the Pakistan Stock Exchange (PSX).

   b) To examine whether determinants of financial distress differ across sectors of the non-financial firm listed in the Pakistan Stock Exchange (PSX).

ii. a) To investigate the moderating effect of financial sustainability on the association between firm-level financial determinants and financial distress across non-financial firms listed in the Pakistan Stock Exchange (PSX).

   b) To investigate the moderating effect of financial sustainability on the association between firm-level financial determinants and financial distress across sectors of non-financial firms listed in the Pakistan Stock Exchange (PSX).

iii. To assess the predictive accuracy of the distress model, as entire determinants (i.e. firm-level, sector-level, and country-level) are collectively incorporated with and without moderating effect of financial sustainability.

iv. a) To identify which level of determinants (i.e. firm-level, sector-level, and country-level) that best explain the issue of financial distress of non-financial firms listed in the Pakistan Stock Exchange (PSX).

   b) To identify which level of determinants (i.e. firm-level, sector-level, and country-level) that best explain the issue of financial distress across sectors of non-financial firms listed in the Pakistan Stock Exchange (PSX).

1.7 Significance of the Study

In general, the significance of this study is twofold (1) empirical development and (2) policy implications. In relation to the empirical development, this current study fills the gap in the literature by capturing the effect of the financial sustainability of firms on financial distress. In past literature, most studies have been carried out which, emphasized firm-level, sector-level, and country-level variables. Moreover, a major part of financial distress literature consists of firm-level determinants (financial ratios). Nonetheless, aspect of financial sustainability has

been ignored though, sustainable growth rate (SGR) is a viable tool for financial planning (M. N. Alifiah, 2014; Ciampi & Gordini, 2013b; Gan & Sahu, 2017; Lin et al., 2018; Mirzaei et al., 2017; Mirzaei et al., 2016; Owoputi et al., 2014; Paradi et al., 2018; Polsiri & Sookhanaphibarn, 2009; Ramakrishnan et al., 2016; Rashid & Abbas, 2011b; Roomi et al., 2015; B. C.-F. Yap et al., 2010; Zhang, 2015). However, a few studies explored the effect of financial sustainability on firm performance and shareholders wealth related issues (Amouzesh et al., 2011; Bobinaite, 2015; Mubin & Hanif, 2017; Przychodzen & Przychodzen, 2013; Subbareddy & Reddy, 2017; Vasiu & Ilie, 2018). Thus, the current study serves to fill this gap by incorporating the effect of financial sustainability in financial distress literature. Moreover, this study also contributes to the growing body of literature to highlight the relative importance of each level of factors in financial distress.

Moreover, an improvement in the accuracy of financial distress models has always been challenging for researchers and practitioners. Pakistan is a unique market as compared to the developed markets due to its distinctive nature of the political and economic environment. Nevertheless, the issue of financial distress in Pakistan is less explored particularly in terms of indicating the key determinants of financial distress. By using an effective prediction model, credit managers can access risk for making better lending decisions. Therefore, the contribution of this study from the methodology point of view is to enhance the prediction ability by using different methods e.g. moderated multiple binary logit models and artificial nested testing procedures.

From a policy implication point of view, this study will provide a proposed prediction model for managers, credit officers, investors, policymakers, and lending institutions, that will specify an early warning about financial distress. Due to volatile economic growth and recent financial crises (2008), both the financial and non-financial sectors of Pakistan have been badly affected. Pakistan is an emerging economy and the corporate sector of Pakistan plays a vital role in economic development. However, the growth of corporations is not possible without financing services proved by lending institutions. Furthermore, especially in developing countries like Pakistan where economic growth is not sustainable in the sustainable

wave, therefore this study may help in decision making for policymakers, credit officers, financial managers, and investors. Thus, this study also attempts to provide policy direction for banking and other lending institutions of Pakistan.

1.8 Scope of the Study

This current study gains the importance of financial sustainability and its impact on the financial distress of firms. Moreover, this study also identifies not only the significant determinants which affect financial distress but also explain the explanatory power of different levels of variables (i.e. firm-level, sector-level, and country-level). Regardless of identifying the significant determinants of financial distress, this study also improves the accuracy of financial distress prediction models. With these perspectives, this study examined the financial distress of non-financial firms listed in the Pakistan Stock Exchange (PSX).

Moreover, this study used panel data of non-financial firms listed on PSX for 10 years from 2009 to 2018. As per the Pakistan Stock Exchange (PSX), currently, there is total of 559 firms are listed. This study considers the population consists of only non-financial firms. From the population, 122 non-financial firms are chosen as a sample size from the dataset across the major sectors in Pakistan namely as automobile, cement, chemical, energy, sugar, and textile. The period between 2009 to 2018 is characterized by the significant amount of both political and economic factors of Pakistan. Changes in governance in Pakistan from dictatorship government to democratic government and financial crises of 2008. Then, the revival period from financial crises and the continuity of democratic government is also considered.

In this regard, the study performs an overall analysis of all levels of variables and their impact on financial distress from the perspective of financial sustainability. Furthermore, this study attempts to improve the accuracy of financial distress models by incorporated all factors. Finally, this study employs different techniques (e.g.

binary logistic, moderated multiple logistic, and artificial nested testing procedure) to identify the most significant determinants of financial distress and also examine their explanatory power.

1.9 Operational Definitions of Variables

The operational definitions of firm, sector, and country-level variables are as follows.

1.9.1 Firm-level Variables

The following are operational definitions of firm-level variables considered for this research.

1.9.1.1 Profitability

The profitability of a firm can also be considered as an important factor of financial distress and it can be measured as earnings before interest and tax divided by total assets.

1.9.1.2 Liquidity

Liquidity means short-term debts repaying the ability of firms and it can be measured by a current ratio as total current assets divided by total current liabilities.

1.9.1.3 Leverage

Leverage ratios measure how much capital comes from debts, and it assesses the repaying ability of the financial obligation of firms. This study measures leverage as total debt divided by total assets.

1.9.1.4 Activity

Activity ratios describe how a firm's assets are performing or how much are these are efficient. This study measured efficiency by assets turnover ratio, and it is measured as sales divided by total assets.

1.9.1.5 Ownership Concentration

Owner concentration refers to the number of shares of stock owned by the individual investor and large block holders. Percentage % of share owned by large shareholders (large shareholders are those that own 3% or more of shares).

1.9.1.6 Institutional Ownership

This study refers to institutional Ownership when the Percentage % of share owned by institutional large shareholders (large shareholders are those that own 3% or more of shares).

1.9.1.7 Managerial Ownership

This research study refers to managerial ownership when the Percentage % of share owned by managers or directors as large shareholders (large shareholders are those that own 3% or more of shares).

1.9.1.8 Board Size

Board size can be measured by the number of members on the Board of Directors (BOD).

1.9.1.9 No. of Independent Director

A large number of independent directors show the board's independence. It's measured as Percentage % of independent directors on board.

1.9.1.10 Chairman/CEO Duality

When the CEO also holds a position of chairman board is called duality. It is measured by a dummy variable. When a value is 1, means duality exists, 0 for otherwise.

1.9.1.11 Financial Sustainability

Financial sustainability is measured by difference between actual growth rate (AGR) and sustainable growth rate (SGR). Moreover, firms are said to be financially sustainable when there is no or less deviation of the actual growth rate (AGR) from the sustainable growth rate (SGR).

1.9.2 Sector-level Variables

Sector-level variables used in this study are as follows:

1.9.2.1 Munificence

The ability to preserve the constant atmosphere is called munificence. It can be calculated by regressing time against the sale.

1.9.2.2 Dynamism

Dynamism measures the extent to which an environment is stable or unstable and this study calculated by taking standard error of munificence and average sale.

1.9.2.3 Herfindahl-Hirschman Index (HH Index)

It deals with high and low sector concentration and it is widely measured through Herfindahl Hirschman Index (H-H Index) is calculated by summing the squared of the percentage of market shares held by the firms within a given sector.

1.9.3 Country-level Variables

Country-level variables related to this study are defined as follows:

1.9.3.1 Inflation

It measures the increase in the overall price level of the goods and services in the country and Inflation is measured by the Consumer Price Index (CPI).

1.9.3.2 Stock Price Index

It is computed from the prices of the selected stocks and it depicts the economic activity of a country. For this purpose, the current research study used the Pakistan Stock Exchange Index (PSX Index).

1.10 Organization of the Study

The rest of the study is organized in the following way, chapter 2 deals with empirical about theoretical literature about financial distress related to firm-level variables, sector-level, and country-level variables. Moreover, in the current corporate sustainability wave, it describes insight into the effect of financial sustainability on financial distress. Chapter 3 explains the data and methodology being employed for the investigation purpose. Chapter 4 deals with the results and analysis of the data based on research questions and objectives. Finally, chapter 5 describes the probable answers of the research questions and analytically and also sheds light on conclusions, future recommendations, and implications.

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