COVID-19 and Financial Distress: A study on Private Commercial Banks in an Emerging Economy

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ABSTRACT

Purpose: The purpose of this research is to predict the financial distress risk of commercial banks in Bangladesh for the pre COVID-19 periods and during COVID-19 timeframes. This study also aims to analyses the effect of COVID-19 on the financial distress risk of commercial banks in Bangladesh.

Methodology: This research uses Altman's Z Score Model (1995) to predict the financial distress risks of 19 publicly listed private commercial banks in Bangladesh over an 8-year period, from 2014 to 2021. The COVID-19 epidemic's main effect on those risks has been evaluated using a regression equation. SPSS has been used to analyze the data.

Findings: The results show that the COVID-19 epidemic has significantly impacted all sampled commercial banks, placing them in the "Distress" zone, and the COVID-19 pandemic has greatly raised the risks of financial distress.

Practical Implications: The findings of this study will help bank executives, depositors, businessmen and policy makers to figure out financial distress of commercial banks during COVID-19 pandemic and be able to take preventive measures for any kind of upcoming uncertainty like COVID-19

Originality: The effect of COVID-19 on the risks of financial crisis that commercial banks in developing countries like Bangladesh confront, however, has not received as much attention yet.

Research Limitations: The likelihood of financial difficulty is linked to numerous internal and external factors in addition to the COVID-19 pandemic. The relationship between the financial distress risks of private commercial banks and macroeconomic factors, global economic crises, and corporate governance compliance can be explored in more detail.

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1. Introduction

Over the past few years, there has been a considerable development in the banking industry in Bangladesh. Bangladeshi citizens have recently been reported to be struggling with the decision of whether to put their money in banks or elsewhere due to inefficient banking, inadequate monitoring, and the approval of new banks rather than strengthening existing banks. Due to these issues, it is becoming more difficult to make investment decisions, and customers are now questioning if Bangladesh's private commercial banks are financially stable enough to survive in the country's economy. Due to interest costs, short-term debt, capital structure, financial structure, and asset structure, the majority of commercial banks in Bangladesh currently face a financial distress risk.

An inability to make timely repayments of short-term loans to lenders and other creditors is known as financial distress. Additionally, it depicts the situation where 'firms' financial responsibilities are difficult to meet. Financial hardship was described by Outecheva (2007) as the company's incapacity to pay its future debts. According to more basic and common logic, financial hardship is a decline in financial efficacy brought on by a cash flow issue (Korteweg, 2007). The business that is having financial problems often possesses the following: First off, the company's earnings before interest, taxes, depreciation, and amortization (EBITDA) have consistently fallen short of its financial costs for the past two years, leaving it unable to produce enough cash from its operating activities to pay its debt obligations. A corporation is deemed to be in a financial crisis when two successive periods of its market value decline (Pindado, Rodrigues, & de la Torre, 2008). Bankruptcy, liquidation, and failure to meet obligations are a few examples of hardship in financial organizations, according to Betz, Oprică, Peltonen, & Sarlin (2014). Constantin, Peltonen, and Sarlin (2018) defined financial distress as a state in which a company faces solvency issues at different points in time that make it impossible for them to run their business on their own and reduce their value until they declare bankruptcy and are compelled to exit the market.

2. Literature Review

According to Ross, Westerfield, Jaffe, and Jordan (2007), financial distress occurs when a company's cash flow statement isn't enough to pay its present debts, necessitating the need for remedial action. According to O'Leary (2001), failure entails a significant cost for the collaborators (firms and organizations), society, and the nation's economy, leading to the prediction of bankruptcy. The potential impact of a pandemic on the global economy is often disregarded. This tendency for financial caution to under invest in preparation to some extent was illustrated by the COVID-19 pandemic's influence on worldwide spending patterns. Leoni (2013) investigated the spread of the Human Immunodeficiency infection in poor countries and found a link between the infection and money removed from commercial banks. Leoni and Lagoarde-Segot (2013) suggest that pandemics have the potential to cause the financial sector to collapse. Furthermore, as a result of banks and investment corporations

being overextended due to the financial crisis, the pandemic affects financing to the poor (Skoufias 2003). Consequently, it is anticipated that the COVID-19 pandemic would affect the financial industry in a comparable way, resulting in a disproportionate drop in loans to the underprivileged and an increase in insolvency.

The worldwide impact of the COVID-19 pandemic on people's health, migration, and social welfare sets it apart from other pandemics. It is anticipated that family income and business revenue would continue to fall sharply (Sadang 2020).

The worldwide business community has experienced an external shock as a result of the COVID-19 outbreak. The corporate sector must manage debts, pay increased borrowing rates, and deal with growing bankruptcy risks as a result of uncertainty (World Bank, 2020). As per recent research conducted by Guerrieri, Lorenzoni, and Straub (2020), the business sector experienced a shock due to the COVID-19 epidemic, which resulted in firm closures, layoffs, and insolvency. This is largely due to the need to establish physical distance, which has disrupted the supply chain and reduced demand from developed nations, much to what happened in Malaysia and Indonesia. As a result, the IMF's economic outlook forecasts that the epidemic would cause a loss of global output of close to US$28 trillion over the course of the next five years. Businesses are compelled to curtail production during an economic shock because they put a halt to recruiting and investment owing to uncertainty (Bloom, 2007). Claessens, Djankov, and Xu (2000) assert that businesses with large debt loads are more vulnerable to crises. Their study revealed how strongly East Asian companies rely on foreign funding, especially from the banking sector. Based on studies conducted during the United States Great Depression (1928–1938) (Graham, Hazarika, and Narasimhan, 2011), businesses that have a lot of debt are more likely to face financial difficulties. Additionally, this study indicated that as businesses committed to taking on more debt, the possibility and projected costs of distress had grown.

Several academic studies have looked into how earlier pandemics impacted the banking sector and the overall economy. Pandemics can have a major impact on the financial systems and result in large economic costs, as past experiences have shown (Haacker, 2004; Santaeulalia-Llopis, 2008; Yach et al., 2006). Goodell (2020) asserts that, like previous preventable tragedies like earthquakes, volcano eruptions, airline accidents, and terrorist actions, the COVID-19 epidemic may have been predicted. In the wake of the COVID crisis, Cecchetti and Schoenholtz (2021) underscore the importance of stress testing and a creative disclosure strategy for restoring investor confidence in the financial sector. According to Agosto and Giudici (2020), the COVID-19 cases sped up the spread during the first week of February, which caused the composite index of the Shanghai Stock Exchange (SSE) to crash. Demirguc-Kunt et al., (2020) assess the impact of the COVID-19 pandemic on the banking sector by examining worldwide bank stock prices. They draw attention to the fact that, during the COVID-19 crisis, bank stocks did better than those of other non-bank financial companies and the home market. There will be a lot of pressure on banks to perform the role of

countercyclical lending. Evidence of the COVID-19 pandemic's detrimental effects on financial stability and increased risk-taking behavior is shown by Li et al., (2021). They also stress how the government's financial injections and the COVID-19 pandemic have harmed the efficiency gains from shadow banking.

Gordon and Jones (2020) have identified three potential scenarios for loan default rates in the event of the COVID-19 pandemic, contingent upon the nature of governmental responses. They project that the US loan default rate will rise from 2.3% in 2019 to 3.1% in 2021 under the base case scenario. The projection is intermediate. These hikes could occur simultaneously at a rate of 2.6% to 3.5%, depending on the steps taken by the government. Z-score examination of 27 Indian leasing companies revealed that 22% were in the danger zone and 27% had a very high risk of being sick (Jaisheela, 2015). Vaziri, Bhuyan, and Manuel (2012) used 100 banks from Asia, Europe, and the USA as examples in their examination of financial institutions. They predicted bankruptcy using a number of models, one of which was the Z score. Their findings demonstrate that while all models are capable of correctly predicting bankruptcy before filing, the z-score model outperformed the others in this aspect. Distress analyses have been conducted on a number of industries in Bangladesh, including capital markets, banking, insurance, small and medium-sized businesses (SME) (Jahur & Quadir, 2012), cement (Hossain & Moudud-Ul-Huq, 2014), pharmaceutical companies (Islam & Mili, 2012), insurance companies, and manufacturers of ceramics (Masum & Johora, 2015). Using the Z-score methodology, Ahmed and Alam (2015) found that the bulk of Bangladesh's fifteen commercial banks are in trouble. It is shown that in 2009, just 7 percent of the sample banks were in good financial status; by 2011, that percentage had dropped to zero. Additionally, they demonstrated how the banks shifted from the distressed to the gray areas. Mostofa, Rezina, and Hasan (2016) looked into the level of insolvency and probability of bankruptcy in Bangladesh's banking industry. Comparing their findings to earlier research, they found that their investigation, which involved 25 traditional and non-traditional commercial banks, produced positive results. Twenty percent of the sample banks were situated in a risky zone, whereas twenty percent were located in a safe zone, per the study's final conclusions. Chowdhury and Barua (2009) evaluated the bankruptcy risk of Z category firms listed on the Dhaka Stock Exchange using the Z score model. Their findings showed that 53 businesses were safe, whereas 41 businesses were in the distress zone as a result of subpar operational performance and a lack of management strength. They also discussed Bangladesh's potential use of the z-score approach.

Hasan and Khanam (2013) performed research on Sadharon Bima Corporation of Bangladesh between 2007 and 2011 and found that long-term solvency and liquidity were insufficient to assess the crisis' severity. They also provided some recommendations on how to make the problem better, such as utilizing modern asset management techniques and modern marketing approaches. William H. Beaver was among the first to recognize modern business failure prediction models. Altman (1968) developed the first version of the Altman Z model, that was $Z=0.012 X_1 + 0.014 X_2 + 0.033 X_3 + 0.006 X_4 + 0.999 X_5$. Altman (1983), Altman,

Hartzell, and Peck (2002), and Altman, Hartzell, and Peck (1995) continuously modified the Z score model to address new characteristics and corporate landscape. Altman (1983) developed a model formula for individual businesses, that was $Z = 0.717X_1 + 0.847X_2 + 3.107X_3 + 0.420X_4 + 0.998X_5$. Altman (1995) revised and further refined Z model to forecast business failures for companies in emerging markets, developing countries, and for non-manufacturers, that was $Z = 6.56X_1 + 3.26X_2 + 6.72X_3 + 1.05X_4$. (Where X_1=Working Capital/Total Assets, X_2= Retained Earnings/Total Assets, X_3= EBIT/Total Assets, X_4= Book Value Equity/Total liabilities).

Ozkan-Gunay and Ozkan (2007) evaluated 59 Turkish banks using a non-linear artificial network approach; of them, 23 were failing and 36 were not. They found that 66% of the bankruptcies and 90% of the non-failing institutions possessed reliable indicators. Yim (2007) predicted that a hybrid artificial neural network would lead to business failure in Australia's financial services industry. Only 33.3% of failing firms two years previous to failure were accurately predicted by Yim (2007), but 100% of failed enterprises one year prior to failure. Schaeck (2008) used quartile regression to analyze bank failures with high and low costs. Notwithstanding criticism and the application of other strategies, ratio-based models have shown to be fairly successful in forecasting business failures. The Altman Z score is especially useful for a variety of research endeavors. Pustylnick (2009) asserts that the Altman Z score demonstrates the firm's robustness and solvency in terms of its financial status. Nandi and Choudhary (2011) developed an internal credit rating for the banks using six years' worth of data from Indian banks and the Altman Z score model in order to predict future bank failures. Subsequently, to demonstrate that the Altman Z score model may be able to forecast future bank distress, confirmatory research was carried out in 2013 using Euro Banks. Cheing (2013) analyzed data from the previous five years and chose four banks that were in trouble. Stepanyan (2014) found the model to be quite helpful in his analysis of the US airline sector.

Samarakoon and Hasan (2003) examined the third iteration of Altman's Z-score models and discovered that it had the greatest accuracy rate overall. While their overall accuracy seems to be decreasing in the two years preceding financial problems, Z-score models appear to have an exceptional ability to anticipate financial issues of enterprises in developing economies. This research demonstrates the suitability of Altman's Z-score model as an analytical tool, which is used by businesses to forecast financial troubles. Based on that finding, Nanyakkara and Azeez (2013) developed a model specifically for Sri Lanka that uses the "Altman's Z" score model to predict financial troubles three years away. According to a study Pam (2013) on the Nigerian banking sector, the main elements of the Altman's Z-score—liquidity, profitability, operating effectiveness, and total assets turnover—are a helpful instrument for assessing a bank's financial difficulties.

According to the literature analysis mentioned above, the majority of research is done to forecast the likelihood of financial difficulty or bankruptcy for various financial and non-

financial enterprises in Bangladesh. Nevertheless, as of right now, no empirical study has examined how the COVID-19 pandemic has affected the risks of financial distress connected to private commercial banks in Bangladesh. The purpose of this study is to analyze the possible effects of the COVID-19 pandemic on the financial distress risks related to private commercial banks in Bangladesh.

3. Objectives of the Research

Analyzing the impact of COVID-19 on the financial distress risks associated with private commercial banks in Bangladesh is the primary goal of the research. The following particular goals served as the study's guidance in achieving this goal:

➢ To predict the financial distress risk of commercial banks in Bangladesh for pre COVID-19 periods.

➢ To forecast Bangladeshi commercial banks' risk of financial difficulty during COVID-19 timeframes.

➢ To analyse the effect of COVID-19 on the financial distress risk of commercial banks in Bangladesh.

3.1 Research Hypothesis

In light of the particular goals, the research aimed to investigate the following hypotheses:

➢ H_0: The financial distress risks associated with private commercial banks in Bangladesh are not significantly affected by COVID-19.

➢ H_1: The financial distress risks associated with private commercial banks in Bangladesh are significantly affected by COVID-19.

4. Data and Methodology

4.1 Research Design

This research is quantitative research and analytical in nature. To conduct the study 19 conventional commercial banks out of 23 listed conventional commercial banks in DSE are selected as sample. Non-probability convenience sampling is used to select 19 conventional commercial banks on the basis of availability of information and access to the information.

4.2 Data Collection and Variable Selection

In this study, the secondary data have been collected from the annual financial statements of selected conventional commercial banks for 8 years (2014-2021) to determine the Altman Z-Scores. For conducting this research Z-Score is defined as dependent variable and COVID-19 is defined as independent variable taken as dummy variable.

Table-1: The Use of the Altman Z-Score in Financial Distress

Z-Score	$Z = 6.56X_1 + 3.26X_2 + 6.72X_3 + 1.05X_4$``
Where: Z-Score = Financial distress index (emerging market companies for non-manufacturers), X_1 = Working capital/Total assets, X_2 = Retained earnings/Total assets,	

X_3 = Earnings before Interest and Taxes/Total Assets,

X_4= Book value of equity/Total liabilities.

Zones of discrimination: Z > 2.99: Safe zone, 1.81 <Z <2.99: Zone of ignorance or

Grey zone, Z <1.81: Distress zone.

Source: Altman, Hartzell and Peck (1995)

The Z-Score was selected as a statistical model primarily because of its strong prediction ability, which it generated over a long period of time for banks.

4.3 Regression Equation

Regression equation used for analysis is as follows:

$$Y = \beta_0 + \beta_1 X + \text{\euro}$$

Where; Y= Z-score, X= Covid-19, β_0 = Value of x-intercept which is constant, β_1 = Proportionate change in dependent variable due to independent variables, € = Error term.

5. Analysis and Findings

Table- 2: Descriptive Statistics for Z scores for the periods 2014 to 2021

Banks	N	Minimum	Maximum	Mean	Std. Deviation
AB Bank	8	.50	.81	.6125	.12870
Bank Asia	8	.62	.93	.7088	.12789
UCBL	8	.45	1.04	.8450	.18237
Dhaka Bank	8	-.92	.34	**-.1950**	.48691
DBBL	8	-.55	.83	.5375	.45229
Eastern Bank	8	.98	1.35	1.1900	.13836
IFIC Bank	8	.15	1.11	.6438	.39060
Jamuna Bank	8	-.56	1.97	.4300	.79053
Mercantile Bank	8	-.41	1.16	.6438	.46303
Mutual Trust	8	-.85	.49	.1775	.52030
National Bank	8	-.28	1.37	.6025	.58930
NCC Bank	8	-.80	.91	.5088	.56514
One bank	8	-.78	.62	.2163	.56442
Prime bank	8	.41	3.28	1.1700	.88331
Southeast Bank	8	-.27	.96	.3037	.47331
The City Bank	8	-.20	1.14	.4125	.49865
Premier Bank	8	-1.50	.20	**-.7112**	.57630

Trust Bank	8	-1.67	.56	**-.4612**	.93545
Uttara Bank	8	-.22	2.23	1.2238	.92359
Valid N (list wise)	8				

Table 2 reveals that all the sampled banks are in financial distress condition where the average Z value over the study periods is less than 1.81. Among these banks 3 banks such as Dhaka Bank, Premier Bank and Trust Bank are in the worst condition as the Z score of the banks are highly negative.

Table- 3: Descriptive Statistics for Z scores for PRE-COVID periods (2014 to 2019)

Banks	N	Minimum	Maximum	Mean	Std. Deviation
AB Bank	6	.50	.81	.6417	.13732
Bank Asia	6	.62	.93	.7350	.13996
UCBL	6	.84	1.04	.9250	.07893
Dhaka Bank	6	-.41	.34	.0267	.30761
DBBL	6	.53	.83	.7050	.12178
Eastern Bank	6	.98	1.35	1.2083	.15145
IFIC Bank	6	.29	1.11	.7717	.36086
Jamuna Bank	6	-.56	1.97	.6100	.83869
Mercantile Bank	6	-.41	1.16	.6500	.54659
Mutual Trust	6	-.85	.49	.0817	.57850
National Bank	6	-.28	1.37	.7300	.62058
NCC Bank	6	.28	.88	.6600	.21194
One bank	6	.30	.62	.5150	.11658
Prime bank	6	.41	3.28	1.2717	1.01641
Southeast Bank	6	-.27	.96	.2867	.53500
The City Bank	6	-.20	1.14	.5717	.47566
Premier Bank	6	-1.50	-.15	**-.8483**	.52419
Trust Bank	6	-1.38	.56	**-.1817**	.89170
Uttara Bank	6	-.22	2.23	1.0400	1.01058
Valid N (list wise)	6				

Table 3 reveals that in the pre COVID-19 periods (2014-2019) all the sampled banks were in financial distress condition where the average Z value was less than 1.81. Among these banks 2 banks such as Premier Bank and Trust Bank were in the worst condition as the Z score of the banks were negative.

Table-4: Descriptive Statistics for Z scores for COVID periods (2020 to 2021)

Banks	N	Minimum	Maximum	Mean	Std. Deviation
AB Bank	2	.50	.55	.5250	.03536
Bank Asia	2	.63	.63	.6300	.00000
UCBL	2	.45	.76	.6050	.21920
Dhaka Bank	2	-.92	-.80	**-.8600**	.08485
DBBL	2	-.55	.62	.0350	.82731
Eastern Bank	2	1.06	1.21	1.1350	.10607
IFIC Bank	2	.15	.37	.2600	.15556
Jamuna Bank	2	-.31	.09	**-.1100**	.28284
Mercantile Bank	2	.57	.68	.6250	.07778
Mutual Trust	2	.44	.49	.4650	.03536
National Bank	2	-.02	.46	.2200	.33941
NCC Bank	2	-.80	.91	.0550	1.20915
One bank	2	-.78	-.58	**-.6800**	.14142
Prime bank	2	.71	1.02	.8650	.21920
Southeast Bank	2	.10	.61	.3550	.36062
The City Bank	2	-.09	-.04	**-.0650**	.03536
Premier Bank	2	-.80	.20	**-.3000**	.70711
Trust Bank	2	-1.67	-.93	**-1.3000**	.52326
Uttara Bank	2	1.61	1.94	1.7750	.23335
Valid N (list wise)	2				

Table 4 reveals that in the COVID-19 periods (2020-2021) all the sampled banks are in financial distress condition where the average Z value is less than 1.81. Among these banks 6 banks such as Dhaka Bank, Jamuna Bank, One Bank, City Bank, Premier Bank and Trust Bank are in the worst condition as the Z score of the banks are highly negative.

Table-5: Comparison between pre COVID-19periods and COVID-19 periods

	Pre COVID-19 Periods (2014-2019)		COVID-19 Periods (2020-2021)	
Banks	Mean	Std. Deviation	Mean	Std. Deviation
AB Bank	.6417	.13732	.5250	.03536
Bank Asia	.7350	.13996	.6300	.00000
UCBL	.9250	.07893	.6050	.21920
Dhaka Bank	.0267	.30761	**-.8600**	.08485
DBBL	.7050	.12178	.0350	.82731
Eastern Bank	1.2083	.15145	1.1350	.10607
IFIC Bank	.7717	.36086	.2600	.15556
Jamuna Bank	.6100	.83869	**-.1100**	.28284
Mercantile Bank	.6500	.54659	.6250	.07778
Mutual Trust	.0817	.57850	.4650	.03536
National Bank	.7300	.62058	.2200	.33941
NCC Bank	.6600	.21194	.0550	1.20915
One bank	.5150	.11658	**-.6800**	.14142
Prime bank	1.2717	1.01641	.8650	.21920
Southeast Bank	.2867	.53500	.3550	.36062
The City Bank	.5717	.47566	**-.0650**	.03536
Premier Bank	**-.8483**	.52419	**-.3000**	.70711
Trust Bank	**-.1817**	.89170	**-1.3000**	.52326
Uttara Bank	1.0400	1.01058	1.7750	.23335
Valid N (list wise)				

Table 5 reveals that both in the pre COVID-19 periods (2014-2019) and the COVID-19 periods (2020-2021) all the sampled banks are in financial distress condition where the average Z value is less than 1.81. But in the pre COVID-19 periods, (2014-2019) 2 banks such as Premier Bank and Trust Bank were in the worst condition as the Z score of the banks were negative where as in the COVID-19 periods (2020-2021), 6 banks such as Dhaka Bank, Jamuna Bank, One Bank, City Bank, Premier Bank and Trust Bank are in the worst condition as the Z score of the banks are highly negative. Moreover, from the pre COVID-19 periods (2014-2019) to the COVID-19 periods (2020-2021) the Z score of each bank has been decreased. It could be summarized that; the sampled banks have been fallen more in financial distress risk by COVID-19 pandemic.

Table-6: Regression Analysis

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.547	.067		8.113	.000
	COVID19	-.324	.135	-.193	-2.403	.017
	R	.193[a]				
	R Square	.037				
	ANOVA(Sig)	.017[b]				

a. Dependent Variable: Z-Score

b. Predictors: (Constant), COVID19

The Coefficients table provides necessary information to determine whether COVID-19 significantly affects financial distress risk of commercial banks. Unstandardized coefficients are used to evaluate each independent variable's impact on the result. Here, -.324 indicates that -.324 unit decrease in Z score is associated with1unit increase in COVID-19. Sig. value is very important for interpretation. In the above table at 95% confidence interval the value .017 is below 0.05. If Sig. is < 0.05, the null hypothesis is rejected. As a result, COVID-19 significantly affects the risks of financial hardship for Bangladesh's private commercial banks. The R and R2 values are shown in this table. The simple correlation is represented by the R value, which is 0.193, indicating a low degree of connection. The value of R2.3.7% of the dependent variable's total variance, or 037, has an explanation. Given that the p value in this case is less than 0.05 (0.017), the regression model clearly predicts the outcome variable. As a result, COVID-19 significantly affects the risks of financial hardship for Bangladesh's private commercial banks. The null hypothesis is thus disproved.

6. Conclusion

It is clear from the analysis provided that every bank has been in the "Distress" zone. Two banks, Premier Bank and Trust Bank, were in the worst condition during the pre-COVID-19 periods (2014–2019), as their Z scores were negative. In contrast, six banks—Dhaka Bank, Jamuna Bank, One Bank, City Bank, Premier Bank, and Trust Bank—were in the worst condition during the COVID-19 periods (2020–2021), as their Z scores were extremely negative. Furthermore, each bank's Z score dropped from the pre-COVID-19 (2014–2019) to the COVID-19 (2020–2021) periods. It should be mentioned that the COVID-19 epidemic has increased the sampled banks' risk of financial hardship.

Taking coefficients into account, it is discovered that the p value of .017 is less than 0.05 at the 5% significance level. The null hypothesis is thus disproved. As a result, COVID-19 significantly affects the risks of financial hardship for Bangladesh's private commercial banks.

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