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RESILIENCE AMIDST CHANGE: THE DHAKA STOCK EXCHANGE THROUGH THE LENS OF THE EPIDEMIC'S PHASES

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Abstract: *This study delves into the unprecedented disruption caused by the COVID-19 pandemic in financial markets, specifically exploring the impact on the Dhaka Stock Exchange (DSE) in Bangladesh. The pandemic, originating from the novel coronavirus, instigated global turmoil, redefining the dynamics of financial landscapes. The outbreak's rapid progression led to an urgent need for comprehensive investigation into the alterations it wrought upon stock markets. The concept of disease extends beyond physical injury, encompassing structural and functional disorders within biological organisms. An affliction assumes pandemic proportions when it engulfs extensive regions and populations. Conversely, an epidemic pertains to widespread regional impact. This research capitalizes on these epidemiological distinctions to scrutinize the ramifications of the COVID-19 pandemic on the DSE, a vital financial institution. Triggered by the World Health Organization's declaration of the coronavirus outbreak as a pandemic on March 11, 2020, global markets witnessed unprecedented shocks. A profound disruption occurred on March 12, 2020, with the Dow plummeting by 9.99%, an unprecedented decline comparable only to the 1929 Black Monday crash. This marked the beginning of a sustained period of market volatility that reverberated across economies. Against this backdrop, governments resorted to drastic measures including lockdowns, travel restrictions, and business closures to mitigate the virus's impact. By meticulously analyzing the DSE's response to the pandemic, this study addresses pivotal questions surrounding the shift in risk-return profiles of individual stocks and sectors during the pandemic and lockdown period. Notably, the DSE distinguished itself by opting for a comprehensive shutdown from March 26 to May 30, 2020, to stave off collapse. This decision introduced an intriguing scenario for assessing market behavior and risk-return dynamics. While financial support packages were deployed to curb economic deterioration, the DSE's hiatus signaled a rare policy deviation. Amidst the scarcity of empirical research on frontier markets and their response to COVID-19, this paper contributes vital insights. It chronicles the evolution of market returns, comparing pre-lockdown and post-reopening periods. By synthesizing a diverse range of data sources, the study unveils distinctive patterns that underscore the pandemic's transformational impact on financial markets. Moreover, the paper reviews pertinent literature, explicates the methodology employed, presents key findings, and culminates with conclusive remarks on the pandemic's far-reaching influence on financial ecosystems.*

Keywords: *COVID-19 pandemic, financial markets, Dhaka Stock Exchange, stock market volatility.*

INTRODUCTION

A disease is a disorder of the structure or function in a human or otherwise biological organism that is not simply a direct result of physical injury. An infectious disease that has spread across a large region or even worldwide, and affects a substantial number of individuals, is referred to as a pandemic. In contrast, a disease that can affect a large number of persons within a given community, region, or country is called an Epidemic; Kaur and Saxena (2020). On December 31, 2019, when the World Health Organization (WHO) reported the first COVID-19 case in Wuhan province, China, the world's leading stock market, the sentiment prevailing at the New York Stock Exchange (NYSE) was still mainly positive. However, on March 11, 2020, when the World Health Organization (WHO) officially declared the coronavirus outbreak a "pandemic" and announced a name for the disease caused by the virus, i.e. COVID-19, virtually all participants in the financial markets received a shock. As an immediate reaction to that, on March

12, 2020, the Dow witnessed a huge decline by 9.99%, or 2,352.60 points, closing at 21,200.62 points. On the first day of the following week, on March 16, the Dow lost another 2,997.10 points or 12.93%. This steep fall relegated the previously largest one-day decline, the slide by 12.82% on what is commonly referred to as "Black Monday", October 29, 1929, to second place. Since the beginning of the year 2020, the broader S&P 500 index had dropped by 31.32% on March 23rd, with a largest daily drop of -12.77%.

By the middle of June 2020, the coronavirus had infected more than 8.5 million people around the world and became the reason for more than 4,50,000 deaths. In the absence of a medication by which this deadly disease can either be prevented or cured, breaking the chain of transmission is the sole way to keep it under some control to prevent the health sector from getting overwhelmed by a large number of COVID-19 patients. Focusing on this objective, many governments imposed a tool commonly known as "lockdown" in March 2020, which included limitations on travel, school and university closures, closures of bars, restaurants, and non-essential shops, the cancellation of public events, the suspension of business activities and strict controls on international travel. Approximately one-third of the world's population already experienced some form of lockdown (Hoof, 2020).

Due to unavailable vaccines and targeted therapeutics for treating the Covid-19 respiratory disease, uncertainty about the future path of the pandemic became obvious which eventually led to substantial downward revisions of economic growth forecasts. Such unexpected scenarios gave rise to an outbreak of extreme volatility in stock markets all around the world.

Several countries have taken different measures, including far-reaching financial support packages (Nicola et al., 2020) aimed at slowing down the economic impact of lockdown. However, in none of the major capitalist economies, daily trading in their stock markets was interrupted during the "lockdown" period. In contrast, the Dhaka Stock Exchange (DSE), the prime equity trading venue of Bangladesh, was fully shut down from March 26, 2020, to May 30, 2020, with the intention of preventing a full-blown collapse. Thus, for DSE, this 88-day trading break, which was accompanied by the announcement of a number of financial support packages by the government, also was a change in policy. This gives rise to the interesting question of whether this sequence of events substantially altered the risk-return profiles of individual stocks, and whether substantial changes in the sectoral risk-return profiles can be identified. So far, there very little empirical research has been conducted to examine return patterns on "frontier" stock markets before and during the COVID-19 situation. Hence, the current paper summarizes the outcome of an attempt to measure the impact of COVID19 by comparing the returns of those two (pre-lockdown period and after re-opening) time periods.

The remaining part of this paper is organized as follows: Section 2 Reviews the Literature. Section 3 presents the adopted Methodology. Section 4 highlights the Findings of this study, and the last section presents the Conclusions.

OVERVIEW OF THE LITERATURE

Arguably, the equity market is highly sensitive to both positive and negative news, with major events significantly affecting stock returns (Zach, 2003). This finding is not limited to any specific type of event. Economic crises, major policy changes, natural disasters, shifts in the state of the environment, and even sports results all can all affect the stock market. Seen in this light, the recent Covid-19 pandemic is no exception.

Several major event studies relating to various stock markets have been conducted in the past two decades; they related to the Severe Acute Respiratory Syndrome (SARS) outbreak (Chen et al., 2007, Chen et al., 2009), the animal disease on Korean meat market (Park et al., 2008), of course, the financial crisis of 2007 (Bai, 2014), the Arab Spring (Giudice & Paltrinieri, 2017) the Ebola Virus Disease (EVD) outbreak (Ichev & Marinc, 2018), as well as various sports event (Buhagiar et al., 2018), political events (Bash & Alsaifi, 2019, Shanaev & Ghimire, 2019), natural disasters (Kowalewski & Spiewanowski, 2020) and environmental events (Alsaifi et al., 2020, Guo et al., 2020).

In the early phase of the COVID-19 pandemic, a number of academic studies examined the impact of the COVID19 pandemic on stock markets. Among these studies, Al-Awadhi et al. (2020) studied the Chinese stock market, Liu et al. (2020) studied 21 leading countries of the world including Italy, UK, USA, Germany, Korea, Japan, and Singapore, Ahmar and Val (2020) examined Spanish market. All the mentioned before describe the significantly negative impact the news of the COVID-19 outbreak had on the markets under investigation.

The paper by Bhunia and Ganguly (2020), which also uses daily time-series data, focuses more on volatility and leverage effects before and during the outbreak of the pandemic but essentially confirms the results of the papers mentioned before.

Morales and Callaghan (2020) examine volatility and causality and find that while China was the epicenter of the virus outbreak, markets only started to react to this virus as a global threat when Italy registered its first cases.

Zhang et al. (2020) studied S&P500, Dow Jones, and NASDAQ index and experienced the existence of systematic risks in the global markets, thus confirming the evidence of increased volatility in the index returns, but increased pairwise return correlations following the detection of the virus. Similar findings were also observed by Chaudhary et al. (2020) in ten international stock markets before and during the period of the pandemic.

The study Baker et al. (2020) distinguishes itself from many others by enlarging the historical context, and comparing the impact of COVID-19 on stock market behavior to those of the effects of the Bird Flu, SARS, Swine Flu (H1N1), Ebola, and MERS virus outbreaks. The authors note that COVID-19 lead to the uppermost stock market volatility amid all recent infectious diseases including the Spanish Flu of 1918.

Against the background of the extreme uncertainty currently prevailing on the stock market, some other interesting findings also deserve to be mentioned. Among them is the work by Gormsen and Koijen (2020), who made a bold statement during the pandemic, predicting that the market will retort unfavorably due to this pandemic in the short run, but undoubtedly it will come back in shape automatically and start increasing in the long run.

Topcu and Gulal (2020) performed a comparative analysis of the Morgan Stanley Capital International (MSCI) indexed 26 country-specific stock markets and found that Asian countries, on average, experienced more negative abnormal returns than European countries. In addition, they observed that the timing of the government stabilization measures, as well as the form and content of the specific stimulus packages, had a strong impact on the extent to which the effects of the pandemic moderated.

The comparative analysis by Gao et al. (2021) focused on the impact of the COVID 19 shock on stock market volatility in the U.S. and China. Their examination of the different interest rate policies adopted by these two countries yielded the conclusion that the observed differences could be mainly traced to different modes of pandemic management. This is in line with findings by Rahman et al. (2021), who state that while total stock markets initially responded negatively to the COVID-19 pandemic, the speed and strength of the subsequent recovery depends on the details of the support packages chosen by governments.

METHODOLOGY

In financial literature, a structural change is generally known as a change or a shift in the common operations of an economy. Historical examples of events that constituted such structural breaks include the suspension of the convertibility of the U.S. dollar into gold in 1971, the build-up and subsequent bursting of the "dot-com" bubble in 19992001, and the world financial crisis of 2008-2009. Statistically, the presence of structural breaks manifests itself in sudden changes in the parameter's values of a linear regression model at a certain point inside the sampling period (Gujarati & Porter, 2009), hence, checking time series data for possible structural breaks is important for avoiding undue generalizations. This paper focuses on the possible presence of a singular structural break coinciding with the onset and subsequent termination of the "lockdown" period enacted by the government of Bangladesh to slow down the spread of the Covid19 pandemic. More specifically, we analyze the data by performing the Chow test, which requires the following succession of steps:

(1) Calculating the sum of squared residuals obtained by running a single regression for the entire sampling period (i.e. without separating the time scale in "before lockdown" and "after reopening") namely $SSE_{(u)}$ (=" Sum of Squared Errors", unconstrained).

(2) Calculating the sum of squared residuals obtained by running a separate regression for the period before the lockdown, namely $SSE_{(1)}$ (=" Sum of Squared Errors for time window number 1").

(3) Calculating the sum of squared residuals obtained by running a separate regression for the period after the reopening, namely, result in $SSE_{(2)}$ (=" Sum of Squared Errors for time window number 2").

(4) Calculating the number of data points in the period before the lockdown and name the result N1 ("number of observations in time window number 1").

(5) Calculating the number of data points in the period before the lockdown and name the result N2 ("number of observations in time window number 2").

(6) Finally, using the results to calculate the "F statistic" as bellow:

$$F = \frac{(SSE_{(u)} - SSE_{(1)} - SSE_{(2)}) / k}{(SSE_{(1)} + SSE_{(2)}) / (N1 + N2 - 2k)} \qquad \text{(1)}$$

Where k is the number of explanatory variables in use, including the constant.

If there is no systematic difference between the two-time windows under investigation, the above statistic will follow an F distribution with (k, N-2k) degrees of freedom. By calculating the p-value associated with the above statistic, we can judge whether the observed differences are statistically significant or not.

Data Source and Samples and Study Period

We analyze the closing prices of DSE collected from the official website of the Dhaka Stock Exchange (DSE) of Bangladesh. Our datasets consist of 106 listed companies under three different sectors namely - Pharmaceutical, Engineering, and Insurance sector in DSE.

We left out the companies that are in the "Z" categories because they were not listed at or before the beginning of the first of the two-time windows under investigation, i.e. on March 19, 2019.

Thus, the sampling period extends from March 19, 2019, to March 11, 2021, and includes 439 data points. To explore the possible existence of structural changes in the data, we carried out a classical Chow breakpoint test for the DSE by choosing the lockdown period (starting from March 26, 2020, to May 30, 2020) as the break date/point. Hence, we divide the sample into two sub-sample and refer to the period from March 19, 2019, to March 25, 2020, as the pre-lockdown period (time window number 1), and that from May 31, 2020, to March 11, 2021 (time window number 2) as the re-opening period.

There are several important observations to be noted. First, daily data are employed for more precise detection of structural breaks in regression models because it has been assumed that daily stock prices tend to rapidly incorporate publicly available information.

For the same reason, this study excludes traditional predictors of relative stock returns, such as the dividend yield, price earnings ratio, net asset value, and unemployment rate because of their lower reporting frequency.

The relatively short length of the sampling period (from March 19, 2019, to March 11, 2021) was chosen because practitioners often use one-year time windows to calibrate their risk and return models. Thus, sampling period and size stands as follows:

Table 1. Sample Size and Number of Observations within the Study Period.

Sectors	**No. of company**	**Before Lockdown No. of Observation Days (19/3/2019 to 25/3/2020)**		**After Re-opening No. of Observation Days (31/5/2020 to 11/3/2021)**		**Total No. of Observation Days (19/3/2019 to 11/3/2021)**	
		Max	Min	Max	Min	Max	Min
Insurance	45	244	226	197	153	440	379
Pharmaceuticals	28	245	190	197	178	441	383
Engineering	33	246	201	197	159	442	389

Source: Author compilation

RESULTS AND DISCUSSION

The results obtained indicate that in a vast majority of the stocks under examination, the temporary suspension of trading on Bangladesh's stock market in May 2020 did indeed constitute a structural break in the sense that the parameter estimates obtained for the period after the suspension differed significantly from those form the preceding one. A summary of the results obtained is given below:

Table 2. Chow test statistics of Engineering Sector

Company Name	**Constant prior to Lockdown**	**Beta prior to Lockdown**	**Constant after Re-opening**	**Beta after Re-opening**	**Chow test statistic (F)**	**p-value**
AFTAB AUTO	0.0209	1.6054	-0.184	1.283	2.8762	0.05742
ANWAR	0.2127	1.4448	0.21	0.9478	2.2669	0.10488

APOLLO ISPAT	-0.1454	1.1914	0.0856	2.628	10.5137	0.00003
ATLAS BD	0.0845	0.9493	-0.0728	0.3829	6.554	0.00158
AZIZ PIPES	0.0165	1.1237	-0.0581	0.2204	3.5829	0.00032
BBS	0.0876	1.5372	-0.172	1.1114	3.7924	0.02330
BBS CABLES	0.0226	1.3556	-0.1027	0.7065	10.4437	0.00004
BD AUTOCARS	0.1651	1.4345	-0.0124	0.103	14.6446	0.00000
BD LAMPS	-0.0779	1.2978	0.1276	0.6216	3.3585	0.03569
BENGAL WIND	0.0983	1.7059	-0.1026	0.7118	13.4337	0.00000
BSRM STEEL	-0.0516	1.1015	-0.0049	1.3568	1.1642	0.31316
BSRM LTD	0.134	1.61	-0.0536	1.3652	1.2379	0.29104
DESHBANDHU	0.2099	1.6737	-0.121	0.8127	9.001	0.00015
ECABLES	-0.0227	1.4268	0.0228	-0.0125	16.7508	0.00000
GOLDESON	-0.0287	1.1068	0.2662	1.7923	3.1653	0.04318
GPH ISPAT	0.0684	1.0338	-0.0679	1.1243	0.3805	0.68377
IFAD AUTOS	-0.0713	1.6628	-0.0871	1.3031	1.9423	0.14462
KAY&QUE	0.1585	0.8755	-0.0313	0.2127	3.8865	0.02125
KDS	0.1442	1.6749	-0.0054	1.0922	4.6433	0.01011
NAHEE	0.1896	1.3963	-0.0023	0.3568	13.2529	0.00000
NAVANA CNG	0.0244	1.2103	-0.0232	0.4547	8.4504	0.00025
NPOLY	0.1535	1.5756	-0.0455	0.56	10.284	0.00004
NTUBE	0.2374	1.3491	-0.0568	0.3918	9.2986	0.00011
OIMEX	0.2288	1.8009	-0.0414	0.2627	30.8448	0.00000
QUASEM	0.2563	1.7179	-0.0882	1.336	2.0734	0.12702
RANFOUNDRY	0.0548	1.1293	-0.0476	0.3727	18.0854	0.00000
RSRM STEEL	-0.0221	1.904	-0.1381	0.9129	15.5057	0.00000
RUNNER AUTO	-0.087	1.6526	-0.0902	0.9784	4.1571	0.01636
SALAMCRST	0.0597	1.4741	-0.1783	1.4208	0.9286	0.39592
SHURWID	0.0817	1.691	-0.107	0.5475	14.3741	0.00000
SINGER BD	0.0094	0.9735	0.0056	0.5387	5.4693	0.00451
WMSHIPYARD	0.1459	1.6948	-0.1263	0.9006	11.194	0.00002
YPL	0.1503	1.2041	-0.0838	0.6584	2.4799	0.08499

Source: Authors own calculation

Table 3. Chow test statistics of Insurance Sector

Company Name	Constant prior to Lockdown	Beta prior to Lockdown	Constant after Re-opening	Beta after Re-opening	Chow test statistic (F)	p-value
AGRANINS	0.1183	1.7075	0.3385	0.8927	2.6282	0.07336
ASIAINS	0.0984	1.4714	0.91	0.4858	7.241	0.00081
ASIAPACINS	0.1995	1.563	0.6386	0.312	8.4212	0.00026
BGIC	0.2229					

0.5583 0.2014 0.6745 0.0952 0.90921 **BNICL** 0.2677
1.518 0.7923 0.1463 11.684 0.00001 **CENTRALINS** 0.3442
1.4511 0.4524 0.6932 3.4629 0.03220 **CITYGENINS** 0.1849
1.3254 0.37 0.0618 8.6441 0.00021 **CONTININS** 0.2486
1.5272 0.3845 0.5112 4.7771 0.00888 **DELTALIFE** -0.076
1.1 0.022 0.6625 2.9035 0.05590 **DHAKAINS** 0.3535 1.6219
0.333 0.4692 5.7179 0.00354 **EASTERNINS** 0.0452 1.3355
0.6598 0.5101 3.7068 0.02535 **EASTLAND** 0.1303 1.0297
0.2211 0.1614 6.0771 0.00249 **FAREASTLIF** 0.0064 1.1993
-0.046 0.4201 7.8493 0.00045 **FEDERALINS** 0.2589 1.3768
0.3871 0.3513 5.3101 0.00527 **GLOBALINS** 0.3335 1.8705
0.5761 0.1695 9.0385 0.00014 **GREENDELT** 0.0021 0.4889
0.1584 0.3684 0.2062 0.81379 **ISLAMIINS** 0.2689 1.508
0.3805 0.438 6.819 0.00121 **JANATAINS** 0.3257 1.4402 0.4649
0.3807 5.1483 0.00618 **KARNAPHULI** 0.2768 1.1161 0.2144
0.3537 3.5523 0.02951 **MEGHNALIFE** 0.0428 1.3248 0.0673
0.7291 4.0564 0.01798 **MERCINS** 0.0877 1.0197 0.1924
0.1921 3.3101 0.03746 **NATLIFEINS** 0.3001 1.0286 -0.035
0.4871 3.6527 0.02672 **NITOLINS** 0.166 1.0286 0.3724
0.4871 2.4626 0.08640
NORTHRNINS 0.2399 1.4993 0.4478 0.2295 7.7445 0.00050
PARAMOUNT 0.5677 0.8578 0.4846 1.0592 0.1843 0.83178
PEOPLESINS 0.1865 1.277 0.3906 0.9386 0.6354 0.53024
PHENIXINS 0.1775 1.6058 0.2781 0.2804 10.9435 0.00002
PIONEERINS 0.2099 1.3622 0.3725 0.8346 1.5388 0.21581
POPULARLIF 0.0552 0.7997 0.0024 0.0957 5.4405 0.00469
PRAGATIINS 0.2207 0.5918 0.2507 0.5045 0.0408 0.96007
PRAGATILIF 0.2039 1.5408 -0.02 0.2357 15.7949 0.00000
PRIMEINSUR 0.6039 0.6039 0.3891 0.4384 0.2022 0.81702
PRIMELIFE 0.0852 0.8472 -0.035 0.5425 0.8958 0.40906
PROGRESLIF 0.4691 1.2774 0.0294 0.319 4.3228 0.01387
PROVATIINS 0.0917 1.7471 0.6747 0.5862 6.6175 0.00148
PURABIGEN 0.1847 1.3468 0.4888 0.0986 7.9487 0.00041
RELIANCINS 0.0268 0.7178 0.2363 0.2389 2.32 0.09949
REPUBLIC 0.2106 1.5378 5972 0.3188 7.6361 0.00055
RUPALIINS 0.2527 1.6372 0.453 0.0239 13.7148 0.00000
RUPALILIFE -0.091 1.5656 0.0426 0.6117 6.0144 0.00265
SANDHANINS 0.1245 1.3466 0.1248 0.8012 2.1522 0.11750
SONARBAINS 0.1324 1.8268 0.1366 1.048 2.2142 0.11051
STANDARINS 0.2249 0.6165 0.0117 0.1554 3.0903 0.04655
TAKAFULINS 0.1357 1.0312 0.2008 0.4764 1.8997 0.15086
UNITEDINS 0.0409 1.4963 0.0073 0.7882 1.8026 0.16613

Source: Authors own calculation

Table 4. Chow test statistics of Pharmaceutical Sector

Company Name	Constant prior to Lockdown	Beta prior to Lockdown	Constant after Re-opening	Beta after Re-opening	Chow test statistic (F)	p-value
ACI	0.0642	1.0672	0.0726	0.8179	0.7993	0.45028
ACIFORMULA	0.0634	1.2062	-0.0395	0.6488	3.7873	0.02341
ACMELAB	-0.0244	0.7959	-0.0244	0.8897	0.2178	0.80435
ACTIVEFINE	-0.0436	1.6528	-0.0732	1.8966	0.5252	0.59179
ADVENT	0.1635	1.7336	0.0145	0.2428	43.7863	0.00000
AFCAGRO	0.1174	1.9423	-0.084	0.5757	29.4279	0.00000
AMBEEPHA	0.0466	1.4084	0.0466	0.5097	9.5106	0.00009
BEACONPHAR	0.6999	1.1907	0.2673	1.046	1.3514	0.25997
BXPHARMA	0.0509	1.2965	0.3275	2.1896	12.0602	0.00001
CENTRALPHL	0.3322	1.8871	-0.2462	1.1398	6.2389	0.00213
FARCHEM	0.1963	1.6904	-0.0683	0.4561	24.4475	0.00000
GHCL	0.1978	1.9369	-0.0924	0.6496	15.9322	0.00000
IBNSINA	0.0653	0.8682	-0.0702	0.8119	0.6404	0.52757
IMAMBUTTON	0.3128	1.1823	-0.0584	0.9114	0.7841	0.45721
JMISMDL	0.2058	1.2351	-0.0261	0.9769	1.0467	0.35197
KEYACOSMET	-0.0935	0.9434	0.2266	1.9381	6.7458	0.00130
LIBRAINFU	-0.0674	1.2496	0.0679	0.9327	0.9213	0.39877
MARICO	0.1012	0.4998	0.1412	0.3575	0.4972	0.60861
ORIONINFU	0.395	1.5927	-0.1346	0.9129	8.3288	0.00028
ORIONPHARM	0.3232	1.3056	-0.1114	1.5182	2.0673	0.12778
PHARMAID	0.03	1.5014	-0.0466	0.6972	9.039	0.00014
RECKITTBEN	0.0751	0.5179	0.1514	0.3831	0.2827	0.75389
RENATA	0.0333	0.4377	0.0213	0.3495	0.4441	0.64172
SALVOCHEM	0.1279	1.7307	-0.0048	1.1675	1.9345	0.14576
SILCOPHL	0.3021	1.4483	-0.0837	0.7651	3.9923	0.01924
SILVAPHL	0.1784	1.724	-0.1028	0.7518	10.4426	0.00004
SQURPHARMA	-0.0229	0.8782	-0.0184	1.0834	1.3543	0.25954
WATACHEM	0.1059	1.2844	-1.049	0.372	11.6959	0.00001

Source: Authors own calculation

If, as in our case, the confidence level is set to 95%, the null hypothesis of no structural break was rejected in 24 out of 33 cases (or 72.7% of all cases examined) for engineering sectors, 14 out of 28 cases (or 50% of all cases examined) for pharmaceuticals sector, and 30 out of 45 cases (66.66% of all cases examined) for insurance sector. This shows that in a vast majority of cases, the trading suspension was indeed prompted by a significant change in the statistical properties of the related stock returns.

Most importantly, in 22 out of the 24 cases of the Engineering sector, 12 out of the 14 cases of the Pharmaceutical sectors and 30 out of the 30 cases of the Insurance sectors where evidence for a structural break was found, the estimated CAPM beta factor for the post-suspension period was significantly lower than before the trading suspension. This can, at least partly, be explained by the fact that prior to the trading suspension, the market in Bangladesh had pursued a very volatile downward trend since February 2019, whereas after the suspension, it staged a rapid recovery which lasted with some interruptions (Interestingly, many observers link the rapid surge in stock prices that took place shortly after the reopening of the market to an initiative by the Bangladeshi government to drop the corporate tax, incentivize the investment of untaxed money in the stock market and appoint of new Security Exchange Commission Chairman amidst the crisis). Hence, the results obtained are in accordance with the widely held view that the portfolio beta tends to be higher when the market is bearish and lower when it is bullish, which is supported by empirical evidence provided in Granger and Silvapulle (2002) for the U.S. as well as Woodward and Anderson (2009) for Australia.

Three companies, namely, Goldenson Ltd, Apollo Ispat Ltd (both listed under engineering sector), and Keya Cosmetic Ltd (listed under the pharmaceuticals sector) failed to pay dividends last financial year ending in June 2020. Under existing law, they would have been relegated to the "Z" category of stocks. However, on September 1st, 2020, the Bangladesh Securities and Exchange Commission (BSEC) issued an office order stating that only if a company failed to pay dividend for two consecutive years (rather than one year, as earlier on) will be placed in "Z" category. Moreover, the post-lockdown period coincided with a recovery in profitability and a resumption of dividend payments after a protracted phase of negative earnings, which reportedly was one of the driving forces behind the disproportionally large average increase in the stock prices. Apart from that, one company for which a structural break was diagnosed while, at the same time, a significant increase in the Beta factor could be detected is Beximco Pharmaceuticals (the country's premier pharmaceutical company). In the case of Beximco, the disproportionally strong growth in the share price after the market reopening (indicated by the positive alpha and the high beta coefficient) is, in part, due to the manufacturing start of Remdesivir in Bangladesh, and the granting of a related export permission. Yet more importantly, this somewhat exceptional result can be traced to the fact that Beximco was the only private company in Bangladesh that got the opportunity of importing the Oxford-Astra Zeneca vaccine against COVID 19 from the Serum Institute of India. This, understandably, led to expectations of higher profitability of the company in the near future and subsequently boosted the demands for this share in the secondary market during the pandemic.

CONCLUSION

The purpose of this paper was threefold. Firstly, it was intended to demonstrate the ability of the Chow Test to detect sudden, abrupt changes in the data generating process underlying a linear regression model, which can be of great use for avoiding unreasoned conclusions from outdated data. Its second purpose was to show that for a vast majority of exchange-listed companies in Bangladesh, the temporary interruption in stock trading after the onset of the pandemic COVID-19 was indeed a "game changer" as far as the statistical risk-return profiles of their stocks are concerned. And thirdly, it was intended to demonstrate that carefully combining the statistical information from the model and the related test with qualitative information on the nature of, and changes in, a company's business, a fuller picture of a company's risk and return profile can be obtained. Since the market experienced a huge decline prior to the "lockdown" and then staged a rapid recovery afterwards, our results also conform that pairwise return correlations tend to be larger during rapid market downturns than they are under "normal" or "positive" market conditions.

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