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Impact of Covid-19 Pandemic on the Financial Performance of the Banking Sector of Bangladesh

Mohammad Abul Kashem[1]

[1] PhD Student, Global Governance, Meiji University, Tokyo, Japan. E-mail: kashem24bb@gmail.com

Correspondence: Mohammad Abul Kashem, PhD Student, Global Governance, Meiji University, Tokyo, Japan.

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Abstract

Covid-19 pandemic has affected both real and nominal sectors of all countries in the world. The paper has examined the impact of this pandemic on the banking sector of Bangladesh. Using ratio and correlation analysis on 2019 and 2020 data some interesting findings are invented. Pandemic has incurred devastating and homogeneous impacts for all type of banks in Bangladesh. Profitability and efficiency have decreased sharply. The analysis shows that if the provision criteria had not been relaxed, the profit rate would have been decreased further. Negative growth of profitability and interest earning by the most banks are very glaring. Aggregate profit of the banking system has fallen about 4 percent. Further, evidence of investment scope shrinking is also manifested. Hence, sheer income rearrangement is also detected by the banks in pandemic situation. The loss caused by the decrease of interest earning was attempted to offset by the increase of fee based income. However, productivity is remained largely unchanged during the pandemic. Additionally, drastic fall of major balance sheet items in 2020 are also noticed. Banks were desperate to save themselves from the tsunami of losses by searching alternative sources of business too. Additionally, profit fall and international linkage of individual banks have very high association. The paper has very high stake particularly for crisis management of the banking system of developing countries where banks are suffering from the less variety of product and lending activities.

Keywords: Covid-19 Pandemic, banking sector, Bangladesh

JEL Classification: F65, F65, G10, G21

1. Introduction

Covid-19 pandemic retards both domestic and trans-border people to people contact across the world in order to maintain so-called social distancing. Bangladesh is not out of this global trend as well. In Bangladesh Covid-19 is firstly detected in early March of 2020. Primarily like all other countries government of Bangladesh has also suffered from the lack of knowledge about the nature and technique of tackling the spread of this virus. Therefore, imitating the western world policies, a rigorous shutdown is imposed all over the country instantly after detection of this virus in the human body within the country territory. Thus, initially driven by unknown panic government was very strict to maintain sufficient physical distance among the citizens and imposed harsh policies by law enforcing agencies to prevent the spread. This shutdown prolonged for a long time of all over 2020 since it was extended in multiple spells by repeated amendment of the government notifications. Naturally, it has severe impact on economic activities of the country too. Undoubtedly both real and monetary sector of the economy was affected by such harsh preventive measures. Production of all sectors especially industrial sector has halted for long period in 2020 by the bottlenecks created by such anti-spreading measures of this unprecedented disease.

Banking sector of Bangladesh was fractured by the multiple problems even before the advent of the Covid-19. As a consequence, the banking sector was burdened with non-performing loans (NPLs), with more than 30 percent of the total loan portfolio of some banks, and the industry is facing challenges in terms of maintaining required capital adequacy, provisioning against NPLs and compliance with international banking regulations, *e.g.* Basel Accords (Robin *et. al.* 2016). The sector was fragile by the excessive burden of high non-performing loans for last few years (Table 8). Direct political intervention in the lending system, economic slowdown of the country, sky rocketing non-performing loans, unskilled bank management, unnecessarily licensing of new banks at regular intervals, etc. are the very common problems of the country’s banking sector. Prior analysis reveals that Bangladeshi banking sector is over relied on Readymade Garments (RMG) sector for their business (IFC, 2016). This fact also shows the utter vulnerability of this sector of Bangladesh due to the high dependence in one sector for business activities. Such excessive dependence on one sector creates a one to one relationship between the health condition of RMG sector and banking business of the country. Thus, for their regular business Bangladeshi banks are predominantly dependent on exporting apparel sector, local currency SWAP[1] for the foreign remittance earned by the wage earners and Diasporas, and investment in the government securities etc. Covid-19 pandemic has negatively affected both the production and subsequent exports of apparel industry which have attacked the investment scope for the banking industry of the country. Thus, economic downturn immediately propagates to the banking sector too. A severe economic downturn brought by the Covid-19 pandemic, combined with debt levels globally, raises the peoples spectre of mounting nonperforming loans (NPLs) in global banking system (Park and Shin, 2021).

Since banking sector is closely associated with the general production activities of the economy it has been severely affected by the negative growth of the real sector. However, government and central bank of the country has relaxed various regulatory policies to help the banking sector as well as initiated multiple policies to incentivize the businesses enterprises. But such expansionary policies were not fully capable to save the deteriorating real and banking sector. If central bank adopt expansionary policies it is likely to increase the profit of the banking sector as the monetary policy is primarily transmitted by the banking system of the economy. However, in Bangladesh almost whole banking sector is affected negatively even though money supply (M2) has increased by 25%. (Monthly Economic Trend, January 2021, Bangladesh Bank) in 2020.

To the best of our knowledge until now no research has attempted to gauge the impact of Covid-19 pandemic on banking sector of Bangladesh. Further, no paper is got that has used ratio analysis technique to examine this impact for any other country too. So, this is the first effort to do such research across the world using this very old and classical method. Thus, this paper is pioneer both in terms of topical innovation and methodological applications in the world research repository. There are many ratios which are traditionally used to analyze the bank performance. However, besides of the traditional ratios researchers can produce some new ratios (for example International Linkage in this paper) depending on the business structure of a particular banking industry. So, along with traditional ratios this research has attempted to generate and use some novel ratios in the analysis. In this way, the paper has both empirical as well as theoretical contribution in the existing literature.

2. Literature Review

Banking sector performance is affected by many issues as generally regarded into three categories including the bank specific determinants, industry and country specific determinants, and global determinants (Athari, 2021). Some of them are seasonal and the remaining issues cannot be confined to any time frame (Kashem and Islam, 2015, Athari and Bahreini, 2021, Kashem and Rahman, 2018). In recent times, Covid-19 pandemic and subsequent economic downturn coupled with associated political crisis have plunged the banking sector of many countries into grave difficulty (Park and Shin, 2021. and Athari, 2022). As the topic is very recent the literature around the issue is still in nascent stage. Therefore, we get very few researches on the assessment of Covid-19 pandemic impact on banking sector of other countries. All of the papers included here are produced in 2021. It seems that the topic is under researched perhaps because of the novelty of the topic. So, the issue is still suffering from the stark literature gaps. We believe that this paper will fill up this gigantic research lacuna substantially.

First and foremost Duana *et. al.* (2021) have investigated impact of pandemic on 1584 banks of 64 countries across the world with a view to examine loan risk arises from the Covid-19 pandemic. Their results indicate that Covid-19 increases systemic fragility among banks across countries through both the government policies and bank default risk channels.

In next, Hasana *et. al*. (2021) attempt to explore 77 banks syndicated from 28 countries where Bangladeshi data also included in the sample of the study. They involve to examine the impact on the pricing of global syndicated loans during the Covid-19 pandemic. According to their findings loan spreads rates rise by over 11 basis points in response to a one standard deviation increase in the lender's exposure to Covid-19. Further, as per their investigation over 5 basis points for an equivalent increase in the borrower's exposure due to Covid-19.

Subsequently, Colaka and Oztakin (2021) has sought to evaluate the influence of the pandemic on global bank lending. Collecting 800 banks data from 125 countries they have used the Difference in Difference (DID) Model in their study to check whether the effect amplify or weaken due to the disease outbreak by the bank and country characteristics. According to their results bank lending is weaker in countries that are more affected by this

[1] SWAP means The exchange of one security for another to change the maturity,

health crisis.

Afterwards, Park & Shin (2021) have conducted an inspection on capital outflow by banks of emerging countries to G7 countries. In the same study, they also have attempted to investigate the impact of higher NPL ratios on the capacity of the bank foreign credit among international lenders and emerging market borrowers. They have used the data of 28 G7 countries where borrowers were the 202 banks from emerging countries. Their results say that a rise in NPL ratios in both lender and borrower countries is positively associated with higher banking outflows from emerging market economies.

Subsequently, Neef and Schandbauer (2021) have looked into the data of 368 banks from all EU countries to study how European banks responded to the initial Covid-19 outbreak that occurred in the beginning of 2020. They have found that a higher exposure to Covid-19 led to a relative increase in worse-capitalized banks' loans whereas their better-capitalized peers decreased their lending more. Further, they have got that only better capitalized banks experienced a significantly larger increase in their delinquent and restructured loans.

In following attempt, Demirjuc-Kunt *et. al.* (2021) have attempted to demystify the data of 896 banks from 52 countries. Their intension is to examine the impact of financial sector policy announcements on bank stocks around the world during the Covid-19 crisis. Their outcomes reveal that liquidity support, borrower assistance programs, and monetary easing have moderated the adverse impact originated from the crisis. Their impact varied considerably across banks and countries. Further, this study has brought out the fact that countercyclical prudential measures led to negative abnormal returns in bank stocks.

Likewise, Tana *et. al.* (2021) have tested 800 banks data from 27 countries around the globe to assess whether the large government interventions in the banking industry due to Covid-19 pandemic have any impact on Markup (interest rate spread or IRS) of the banking industry. Findings of this study has disclosed no significant evidence in markups. However, government intervention increases costs of the banks operation.

Further, Sang (2021) has scrutinized the data of 26 banks from Vietnam for the two back-to-back years 2019 and 2020. He has hypothesized that Vietnamese banking sector was unharmed 2019 but affected by the pandemic in 2020. His analysis revealed that the impact of Covid-19 pandemic situation has significant impact on the efficiency of Vietnamese banks in 2020.

Later, Ichsan *et. al.* (2021) have reviewed the data of 10 banks from Indonesia collected from the annual financial reports of the respective bank. He has targeted to analyze the financial performance of only Indonesian Islamic Banks in the Covid-19 pandemic season. His findings express that compare to the conventional banks Sharia-based banks' performance is less affected by the pandemic.

Finally, Kozak (2021) has enquired about 141 banks from 18 countries collecting the data from S&P Global database considering return on asset (ROA) and return-on-equity (ROE) as dependent variables to examine the impact of the pandemic shock on the performance of the Central Eastern South Europe (CESE) banks. His result has shown that well capitalized banks had the ability to maintain capital requirements with a 12 percent increase in non-performing loans, and smaller and non-public banks had shown a greater ability to preserve the appropriate level of equity during this crisis moment.

Now, summarizing the above research results it is very clear that banking sector of Bangladesh is grossly ignored by the researchers in this topic. According to the best of the authors' knowledge, this is the first research attempt to assess the impact of Covid-19 using the data of the whole banking sector Bangladesh, In terms of methodological application our research technique of using ratio analysis for such investigation is also new. Thus, it is also a methodological innovation to conduct a banking research on suddenly emerged crisis with a very short period or only two back-to-back years' data.

3. Data

Data of this research is secondary. We have collected the data from the audited balance sheets of the individual banks published in the Annual Report and subsequently uploaded in the website of the respective banks. Since there are many banks yet to upload their Annual Reports of 2021 we have collected and compared just only the data of 2019 and 2020.

However, we abandoned using the data of already sick banks. Problem banks are identified by the profit and loss position of 2019. So, we did not used any data of the banks those had made loss in 2019 before the inception Covid-19 pandemic. List of the shunned banks is given in the Table 9 in Appendix. A complete roster of included banks are also given in this table.

4. Methodology

Analysis of a financial firm performance can be done in two ways: (a) ratio analysis (b) regression methods like Frontier Estimation Method (FEM) which can be further segregated as Data Envelop Analysis (DEA), Stochastic Frontier Analysis (SFA), etc. Since the used data is only two back-to-back years, any regression analysis is not done rather ratio analysis has been conducted. Ratio analysis involves in firms' financial health analysis because ratios are easily comparable with those of other firms in the same industry. Even ratio analysis can be used to compare the performance of a same firm for two distinct periods. Further, financial ratios are easy to calculate and interpret (Hassan and Bashir, 2005). Other analytical tools has no such unique advantage of comparison. What changes have taken place between two periods like t and t+1 are easily detectable by ratio analysis techniques. Also it can be used by an analyzer or financial manager to go one step further to compare their ratios with those of two distinct group of companies in the industry. In this case, ratio of one period could be used as a benchmark for other period. Clearly ratio analysis can be used for the data of cross sectional as well as time dimensional. Therefore, this technique is used very frequently by the researchers and other stakeholders. According to Foster (1986) ratio analysis is used by a financial firm for the following three reasons: (a) It provides a perception yardstick in the decision making. (b) It is used by the analysts to directly gauge the performance of a firm. (c) It is useful for an intuitive judgment in regard to decide whether a client should rely on a bank for financial services. Further, Majid *et. al.* (2008) have pointed out that by using financial ratios a bank can understand whether it is successful in cost minimization, revenue maximization, or even profit maximization.

Motivated by the above distinct features in this study ratio analysis method has been used to analyze the impact of Covid-19 outbreak on banking industry of Bangladesh in 2020 – the first year of the pandemic. We have used related ratios to check the impact on profitability, efficiency, productivity, asset quality, and even business behavior of the banks in the financial industry of Bangladesh.

4.1 Profitability Ratio

Researchers use number of ratios to reckon the profitability of banks. The profitability ratios are used to investigate the ability of a bank to generate earnings. These ratios can gauge the bank's maximum ability to utilize its own asset to make profit (Horne, 2005). Usually three ratios like return on assets (ROA), return on equity (ROE), and net interest margin (NIM) or rate of profitability are used to measure the profitability of a particular bank.

ROA is considered as the net profit manifested as a percentage of average total assets. The conventional literature of the bank performance in world repository suggests that ROA is a true measurement of the capability of a bank to incur returns (Rivard and Thomas, 1997), This ratio shows the ability of bank management to extract deposits in a reasonable cost and subsequently invest this fund in a maximum profitable place (Ahmed *et. al*, 1999). This ratio is a clear and very articulated indicator of the bank that how much the bank is skilled to generate net income by per unit of asset. Therefore, it is considered that the higher the ROA, the more profitable the bank is. Mathematically ROA is calculated as follows:

$$\text{(a)}\quad \text{ROA} = \frac{\text{Total Profit Before Tax}}{\text{Total Assets}}$$

ROE is another laudable indicator of profitability and growth potential of a bank (Robin *et. al.* 2016). It is the rate of return to shareholders investment in the bank. In other words, it is the rate of the percentage return by each unit of equity invested in the bank. Alternatively, ROE also reflects how much bank management is successful in using equity capital to yield profit. It is also known as the degree of financial leverage or equity ratio (equity/asset) of the bank. Thus, a bank with a higher ROE will have a higher ROA ratio and a lower ROE will have a lower ROE ratio, given that other things remain the same (Demirguc-Kunt and Huizinga, 1999). So, in most of the cases, ROA and ROE is proportionately related. Technically ROE is measured by the following ratio:

$$\text{(b)}\quad \text{ROE} = \frac{\text{Total Profit Before Tax}}{\text{Total Shareholders' Equity}}$$

Ratio between net profit to expenditure measures the profit generated by per unit of cost which indicates that producing one unit of output is how expensive for the bank. In reality, performance of the bank is also can be considered by this ratio too. The lower the profit expenditure ratio, the better the performance of the bank is. It is calculated by the following formula:

$$\text{(c) Rate of Profitability} = \frac{\text{Total Profit before Tax}}{\text{Total Expenditure}}$$

Another profitability measure, Net Interest Income (NIM = Interest income minus Interest expense) divided by total assets. Variation in NIM may reflect the changes in total assets, the quality of assets, interest earning capacities, and interest expense minimization capacities, etc. of a bank (Demirguc-Kunt and Huizinga, 1999).

$$\text{(d) Rate of Profitability} = \frac{\text{Total Net Interest Margin}}{\text{Total Assets}}$$

4.2 Efficiency Ratio

This ratio indicates that how efficiently and effectively a bank uses its assets. The more the value of an operating efficiency ratio the more the bank is efficient in doing business (Widago and Ika, 2008). General efficiency ratios are as follows:

$$\text{(1) Efficiency} = \frac{\text{Net Interest Income}}{\text{Total Assets}}$$

$$\text{(2) Efficiency} = \frac{\text{Total Revenue}}{\text{Total Assets}}$$

$$\text{(3) Efficiency} = \frac{\text{Total Operating Revenue}}{\text{Operating Expense}}$$

4.3 Productivity

Usually financial institution like bank is considered as a multi-product firms where two main outputs are (a) total loans and advances, and (b) other earning assets. Total loans and advances are constituted by all types of credits like loans, cash credits and overdrafts and bills discounted and purchased. Similarly, other earning asset is contained of investments in government securities, treasury bills, shares, bonds, debentures, and all other type income generating investments. On other hand, generally three items are considered as surrogates of inputs of banking industry which are (a) labour, (b) capital, and (c) loanable funds. In this regard, number of employees is the true measure of labour. However, since each bank of Bangladesh does not mention the number of employees in their annual reports we consider the salaries and allowances given to employees is a representative of labour input. Likewise, capital is proxied by the total expenditures on premises and fixed assets. Here, fixed assets is measured by expenses on rent on spaces, costs on postage, stamps, telecommunications, stationaries, printings, advertises, new purchases of computers, copier machines, electric and other accessories, depreciation and repairmen costs etc. Lastly, loanable funds equals to summation of total deposits and non-deposited funds a bank has for investments.

$$\text{(a) Labour Productivity} = \frac{\text{Total Loans and Advances+Total Security}}{\text{Total Salary and Allownces}}$$

(b) Capital Productivity =

$$\frac{\text{Total Loans and Advances} + \text{Total Investments in Securities}}{\text{Costs for Stationary, Printing, Advertizes, \& Telecom, and Fixed Assets etc.}}$$

4.4 Asset Quality

This ratio is indicated by the proportion of the total provisions and total loans and advances of the bank. Provisioning is a regulatory requirement which is kept and calculated as a percentage of total loan and advances that has been either in default stage or very close to enter in the default status. Usually, total provision and total non-performing loans and advances are always proportional. That is, if non-performing loans and advances increases provision increases too. Most of the provisions are kept for the non-performing loans and advances only. Increase of non-performing loans has very negative financial implications for a bank including affecting the bank's profit and loss, and tax situations (deferred tax amount) etc. Increase of non-performing loans and advances seriously hinders the business capacities of a bank. Thus, ratio of total provisions to loans and advances is considered as a very good representative or yardstick of assets quality of a bank.

$$\text{Asset Quality} = \frac{\text{Total Provision}}{\text{Total Loans and Advances}}$$

4.5 Investment Shifting Tendency

Due to the characteristics of the Corona virus disease people to people contact is needed to break or dismantle further spread of the disease. In this case, imposing so-called shutdown was the only option for the governments across the world. Since movement and free mixing of the people is a precondition of working in a factory, manufacturing production activities are seriously impeded after such declaration of shutdown soon after the initial identification and gradual subsequent increase of infections. In this adverse condition industrial units have halted or slowed to enlarge their existing production units as well as investment in new production projects due to the uncertainty. It has lessened aggregate demand of loans and advances in the manufacturing sectors. On the other hand, making orders from foreign buyers have stopped as the demand in their retail shops has decreased. It has decreased banking sector LC advising, issuing and servicing business. Thus, Covid-19 pandemic has curtailed business opportunity much for the banks by giving credits and services to the apparel manufacturing sector of Bangladesh. Thus, shrinking of investment scope in traditional areas has goaded banks to divert alternative business scopes. In this way, a tendency has grown from the banking industry side to increase their investments in the government securities (Table 6 in Appendix). Banks officials usually think that investment in government securities is a safe investment as per it is considered that government security is a hundred percent risk less investment for a bank. This is how there is a supply push effect has worked from the part of each bank to raise their investment in the security based assets backed by government.

On the other hand, government revenue has also fallen by the Covid-19 effect in the economy (Table 3 Appendix). Substantially shrinkage of production activities in the economy has decreased value added tax (VAT), import tariff, consumer tax, etc. Thus, government is forced to increase the borrowing from the banking sector to finance the ongoing development projects as well as giving the salaries and allowances to government employees, and various types of preplanned transfer payments. By this way, a demand pull effect is generated from the government side to increase bank borrowing.

Both of the demand-pull and supply-push effect have increased individual bank investment on security based assets. So, most banks have showed a tendency to increase and shift their investments from private lending to investments in government and other type of securities. We detect investment shifting behavior of the bank by the following ratio:

$$\text{Investment Shifting Tendency} = \frac{\text{Total Investment in Government Securities}}{\text{Total Loans and Advances}}$$

If a bank has any such tendency this ratio should be higher in 2020 than in 2019.

4.6 International Linkage

Bangladeshi banks are highly reliable on trade and working capital financing of readymade garments (RMG) sector. Financing in the back-to-back LCs, and upward and backwardly linked industries of the apparel industries are also a big source of business of the banks in Bangladesh. If exports of RMG goods decreased, it is a likely that proportion of business and financing related to RMG trade and related other mode of financing would be fallen. To test this likelihood we have checked whether Covid-19 pandemic has incurred any changes in the international linkage of the banking sector. We measure international linkage by the ratio of total 'off-balance sheet items' to total assets of the bank. 'Off-balance sheet items' comprises two broad items like contingent liabilities and other commitments. Further, contingent liabilities includes various acceptance and endorsements, letter of guarantees, irrevocable letter of credits, bills for collections, and other contingent liabilities etc. Similarly, other commitments contains direct and short-term trade related transactions, forward assets purchased, and forward deposits placed, undrawn note issuance, and revolving underwriting facilities, and undrawn standby formal facilities, etc. All of these products are mostly related to the foreign trade and foreign exchange affair transactions. So, technically international linkage is measured by the following ratio of the each bank:

$$\text{International Linkage} = \frac{\text{Total Off Balance Sheet Items}}{\text{Total Assets}}$$

4.7 Income Shifting Tendency

A bank has grossly two types of income: interest income and fee based income. Net interest income is pure arithmetic difference between total interest bank earns from loans and advances distributed and interest paid for the deposits that the bank has gleaned. One other hand, bank earns fees from the clients for the services it gives. Price elasticity of these two income source can also be different. Therefore, when a bank anticipate that year end aggregate profit may decrease due to economic contraction of the country, management of the bank may think to switch its attention to the less elastic fee based income. This is exactly what has perhaps happened in case of Bangladeshi banks in the Covid-19 outbreak in 2020. We tried to detect income shifting behavior of a bank by the following ratio:

$$\text{Income Shifting Tendency} = \frac{\text{Non Interest Income}}{\text{Interest Income}}$$

4.8 Investment Scope Shrinkage

Advance (or loan) deposit (AD) ratio is a measurement that measures loans or advances as a percentage of total deposits collected. It also shows how much a bank is capable to convert its collected deposits or liabilities into income generating assets (like loans and advances). It is also a measurement of efficiency of a bank management to reduce risks by diversifying loans among multiple clients so that investment does not become vulnerable by investing on few big wholesale fund receiving clients (investing in the capital markets or others). So, clearly a decrease of AD ratio means that a decline of investment scope in the economy due to pandemic situations. Further, an alternative measurement of AD ratio can be cash ratio of a bank. In principle, after keeping cash reserve ratio (CRR) all banks segregate its deposits into two parts: (a) one part is keeping cash in hand, and (b) another part is making investment in interest earning assets. Keeping cash in hand is necessary to meet the depositors' demand of regular cash withdrawal. Banks decides to keep cash in hand by prior experience based on the depositors' past tendency and maturity schedules of deposits. So, if a bank keep cash more than its past tendency, it indicates investment scope in the economy has decreased. Thus, an increase of cash ratio in 2020 from 2019 means that banks are unable to invest their investible funds in the changed scenario of the economy. Therefore, AD ratio and cash ratio are inverse of one another. In this way, we can infer that if AD ratio decreases or cash ratio increases, it is highly probable that investment opportunities in the economy are declined due to the pandemic related crisis. The ratios are as follows:

$$\text{AD Ratio} = \frac{\text{Tptal Loans and Advances}}{\text{Total Deposits}}$$

$$\text{Cash Ratio} = \frac{\text{Total Cash in Hand}}{\text{Total Deposits}}$$

5. Analysis of the Results

5.1 Decrease in Profitability Ratio

In the Table 1 and 2 of Appendix it is shown that according to the all indicators of profitability, profitability of more than half of the banks has fallen in the first year of the pandemic. Elaborately, the above mentioned tables also show that out of 31 conventional private banks profitability ratios from 16 to 22 have fallen in 2020 from 2019. Totally out of 58 commercial banks, profitability of 32 to 38 of them have decreased in 2020 from 2019. This statistics justifies that aggregate impact of Covid-19 is devastating for Bangladeshi banks in its first year of outbreak.

5.2 Decrease in Efficiency Ratio

Efficiency ratios of Table 1 and 2 in Appendix 1 postulate that efficiency ratios have fallen almost all categories of banks uniformly. Such drastic fall of efficiency of the banking industry of Bangladesh reflects that impact is almost uniform and overwhelming across the industry. Out of 58 banks in the sector three indicators show that 38, 45 and 48 banks efficiency has fallen in 2020.

5.3 Decrease in Productivity

The productivity ratios of Table 1 and 2 in Appendix are asserting that in terms productivity indicators the banking industry of Bangladesh is bit in comfortable position. In the area of capital and labour productivity banking industry is less affected in 2020. However, productivity of deposits is affected for more than 50 percent of banks.

5.4 Asset Quality Fall

Keeping provision is a regulatory requirement. So, central bank has jurisdiction to relax the stringency of condition in provision keeping whenever it wants. By envisaging the forthcoming disaster of the banking sector, the central bank of the country (Bangladesh Bank) has relaxed the conditions as well as requirement for the banks in provisioning for the existing and newly created non-performing loans. Out of 58 considered banks totally for 43 banks percentage level of provisions have increased even though regulatory authority has relaxed the provisioning conditions for them (Table 1 in Appendix). This ratio indicates that how much banking sector assets is rotten by the impact of Covid-19 tsunami in Bangladesh. Changes from 2019 to 2020 is very narrowly negative for remaining 10 banks which means that provisioning levels are almost same in 2019 and 2020 even after regulatory relaxation which further means that if the banks were supposed to keep provision in 2020 as per the regulatory rules of 2019, provisions for these 10 banks also would have increased in 2020. Overall, without any reservation it can be claimed that asset quality of the banking sector of Bangladesh has considerably fallen in 2020 compare to 2019.

5.5 Investment Shifting Tendency

When scope of the investing options in the loans and advances (main product of the banking business) shrinks it is very natural that banks will intend to search for alternative investment scopes and income sources. It is likely that banks will try to shift their investable funds to alternative products or options to generate income or to minimize inevitable losses as the funding cost involves in each unit of investible fund. This is what exactly Bangladeshi banks tried to do in 2020.

Percentage share of government securities in total assets has increased for totally 37 banks in 2020 from 2019 (Table 1 in Appendix) which means that majority of the banks have utterly tried to shift their investments from loans and advances to the possible alternative portfolios like government securities. Since private sector loan demand has decreased drastically banking sector tendency to invest to government securities increased. The matter can be explained viewing that as production of the private sector has decreased and government revenue earning falls markedly, that’s why government borrowing from the banking sector has increased sharply (Table 3 in Appendix) and thus crowding out effects has been inevitable and the banking sector is forced to lend government. This is happened for both supply push and demand pull effects of the credit market emerged from the both sides, - banking sector and the government, respectively.

Asset shifting and business shifting from loans and advances and services to government securities and to providing fee based activities respectively mean that the banks have tried to save themselves from the wave of losses for this devastating impact of Covid-19.

5.6 Decrease of International Linkage

We have measured international linkage of a bank by the ratio of total off-balance sheet items and total assets of a bank. In case of Bangladeshi banks usually off-balance sheet items are calculated in terms of US Dollar - the world vehicle currency. Considering this indicator as an international linkage has decreased for 37 banks in 2020 from the position of 2019 (Table 1 and 2 in Appendix). It confirms that majority of the banks international linkage has been fallen which may be one of the big causes of profit fall in 2020. Our investigation says that banks with more international linkage has been hurt more seriously than relatively less internationally linked banks (Table 5 in Appendix). In 1998 and 2008 financial crisis low level international linkage of Bangladeshi banks has worked as immune or shield to be affected. However, international linkage of Bangladeshi banks have substantially increased during this more than one decade of time, and thus it proved that vulnerability of Bangladeshi banks in regard to global financial crisis is also increased.

5.7 Income Shifting Tendency

Income shifting tendency of the bank is determined by the ratio between non-interest based income to net interest income. We have invented that from 2019 out of 58 banks, this ratio has increased totally for 45 banks’ in 2020 (Table 1 and 2 in Appendix) which means that banks have looked for increasing alternative scopes like fee based income by foreseeing that conventional income sources for them is going to be narrowed. It is expected that banks would switch their eyeballs to other type available scope of income since its interest based income is going to be decreased.

From 2019 to 2020 ratios of non-interest based to interest based income has increased for 45 banks which means that banks were very desperate to save themselves from the invincible and catastrophic effects of losses caused the Covid-19 pandemic. It can also be viewed in here that if the banking industry in Bangladesh would have more product variety like a developed countries financial system they would have switch their business much more and perhaps negative impact would have been bit lower than now.

5.8 Investment Scope Shrinkage

As per our investigation out of 58 banks AD ratio decreases for 40 banks and cash ratio increases in 41 banks (Table 1). So, Covid-19 pandemic has reduced investment scope sharply for the banks in general. This shrinkage is somewhat remedied by the increase of scope to investment in government securities. But it has not healed them enough. This finding is reinforced by the fact that in 2020 yearly growth in aggregate deposits, and cash in hand of the banking sector of Bangladesh have increased 15.58 and 22.17 percent respectively (Table 6). However, aggregate loans and advances, and assets of the banking sector have increased only by 3.35 and 2.43 percent respectively which means that banks were unable to translate their deposits into income generating loans and advances efficiently during first year of pandemic.

5.9 Changes in Aggregate Balance Sheet and Aggregate PL Accounts in 2020 from 2019

Balance sheets (BS) and Profit and Loss (PL) Accounts of Bangladeshi banks are uniform, and format is prescribed by the central bank of the country as per the International Accounting Standard (IAS). Therefore, we also attempted to produce an aggregate BS as well as PL accounts of the entire banking industry. This gross BS and PL accounts are given in the Table 6 in Appendix. A summary of this aggregate BS and PL accounts is given in the Table 4 in Appendix.

It is seen from the table 4 that figures of net interest and operating income, and off-balance sheet items have decreased for more than half of the banks included in this study. Additionally, out of 58 commercial banks 24 of them have increased provision level in 2020 compare to 2019 (Table 4 Appendix).

Further, drastic fall of major balance sheet items in 2020 from 2019 is noticed. According to aggregate balance sheet (Table 6) net interest income, total profit before tax, and retained earnings are decreased by 14.25 percent, 4 percent, and 14 percent respectively. However, even though provisioning criteria is relaxed in 2020 total provision, total operating expense, and total non-interest income in 2020 have increased by 7 percent, 17 percent, and 42 percent respectively. As provision is kept from the operating profit of the bank, provision reduces ‘profit after provision’, ‘profit before tax’ and ‘profit after tax’ by two ways: (1) it reduces profit after provision, (2) it reduces ‘interest earnings’ of the bank. So, nonperforming loans erodes banks’ profit like the scourge of double edged sword.

5.10 Correlation Matrix of Some Important Indicators

To explore further we have formulated correlation matrix of some important balance sheet indicators which is presented in the Table 5 of Appendix. We have constructed cross section data of all individual 58 banks for 2019 and 2020. Correlation coefficients of 2019 is in parenthesis. We have got very high correlation coefficients off-balance sheet items with total non-interest earning, operating income, profit before taxes, and retained earnings in each year. Total investment also highly correlated with total operating income and profit before taxes both in 2019 and 2020. Correlation coefficient of profit fall and international linkage of individual banks are also calculated. The findings of this correlation matrix have also much policy implications by the future financial policy makers as well as commercial bank officials of Bangladesh.

6. Conclusion

This paper has tried to assess the impact of Covid-19 pandemic on the banking sector of Bangladesh. To do that we have relied on ratio analysis on the data given in the audited balance sheet and profit and loss accounts of 2019 and 2020 by each bank. To compile the data we have collected the published in annual reports from the all banks websites. By this technique we have detected incidence of homogenous impact among government, foreign, conventional and Islamic private banks by the scourge of pandemic. It is confirmed that most banks’ profitability and efficiency have drastically decreased in 2020 compare to 2019. Further, majority of the banks’ have changed their business and investment behavior due to the influence of pandemic. This investigation has also got that the all affected banks have higher international linkage. Due to the Covid-19 crisis banks in Bangladesh have tried to increase non-interest based income as interest based income has fallen sharply during the first year of pandemic. This study has also noticed that due to the pandemic crisis banks in the country were also suffering from the lessened investment scope in 2020. Additionally, some interesting relationship between pandemic situation and balance sheet items of the individual banks have also been invented which are postulated in the Appendix. An aggregate balance sheet for banking sector of Bangladesh is also constructed. It is seen that aggregate profit has decreased 4 percent in 2020 and aggregate provision against bad loans have increased markedly. Many important indicators of balance sheet and PL accounts of the banks like total loan and advances, total off balance sheet items, total profit before taxes, and retained earnings etc. have fallen in 2020 from 2019. Our investigation across individual bank balance sheets also indicates that such deadly impact is partially reasoned of not having much investment and product variety in the banking industry of Bangladesh.

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Appendix

Table 1. Various Ratios of of Bangladeshi Banks in 2020

Total Bank / Ratios	(a) Govt	(b) Private	(c) Islamic	(d) Foreign	(Total=) a + b + c + d
	7	**31**	**11**	**9**	**58**
Fall of Profitability Ratios of Banks in 2020					
(a)ROA	4	17	5	8	34
(b)ROE	3	16	3	9	31
(c) Profitability	4	22	5	7	38
(d)Profitability	4	21	5	6	36
Fall of Efficiency Ratios of Banks in 2020					
1.Efficiency	5	29	7	7	48
2.Efficiency	5	25	8	7	45
3.Efficiency	4	23	6	6	38
Fall of Productivity Ratios of Bangladeshi Banks in 2020					
Labor	1	5	3	4	13
Capital	1	12	5	4	22
Deposits	5	16	5	7	28
Fall of Asset Quality of Bangladeshi Banks in 2020					
Provision / Assets	2	21	9	6	43
Investment Shifting Tendency of Bangladeshi Banks in 2020					
Govt. Securities / Total Assets	5	19	6	6	37
Fall of International Linkage of Bangladeshi Banks in 2020					
Off Balance Sheets Items / Assets	3	17	11	6	37
Income Shifting Tendency of Bangladeshi Banks in 2020					
Non-Interest Income / Interest Income	4	28	6	7	45
Investment scope shrinkage					
Total Loans & Advances / Total Deposits	5	5	6	22	40
Investment scope shrinkage					
Total Cash / Total Deposits	6	6	9	20	41

Table 2. Results of All Ratios at a glance

Issues	**Ratio**	**No. of banks decreased**	**No. of banks increased**
Profitability	ROE	32	26
	ROA	34	24
	Profitability =(Prof before tax/Total Assets)	37	21
Efficiency	NIM = (Net Interest Income/Total Asset)	45	13
	Asset Utilization = (Total Revenue/Total Asset)	47	11
	Operating Efficiency =(Operating Expense/Total Operating Revenue)	44	14
Productivity	Labor Productivity	15	43
	Capital Productivity	25	33
Business Shifting	Security/Loans & Advances	36	22
	Security*100/(Security + Loans & Advances)	37	21
Income Shifting	Non-Interest Income / Interest Income	13	45
International Linkage	Off Balance Sheet Items/Total Assets	37	21
Assets Quality	Total Provision/Total Assets	41	17
Gross Profit Before Tax	Difference between profit before taxes of 2020 to 2019	34	24
Retained Earnings		33	25

Table 3. Government Borrowing and Revenue during Covid-19 Pandemic (Taka in Billion)

Time Point	From Central Bank	From Commercial Banks	Government Revenues
Dec' 2018	243.68	672.85	183.33
Dec' 2019	422.65	1110.26	223.53
Dec' 2020	128.89	1643.32	181.39
Dec' 2021	99.43	2109.75	211.16

Table 4. Changes of Aggregate BS and PL Accounts of Bangladeshi Banks in 2020

Total Banks / Indicators	(a) Govt.	(b) Private	(c) Islamic	(d) Foreign	a + b + c + d (=Total)
	7	**31**	**11**	**9**	**58**
Net Interest Earnings Decreased	5	28	9	3	45
Non Interest Earnings Decreased	1	5	5	2	13
Operating Income Decreased	4	19	6	4	33
Total Provision Increased	4	13	6	1	24
Retained Earnings Decreased	2	13	3	5	23
Off Balance Sheet Items Decreased	2	21	8	3	34

Table 5. Correlation Matrix of the major BS items of Bangladeshi banks in 2020 & 2019

	Net Interest Income	Off balance sheet items	Retained Earnings	Total Investment	Total Loans and Advances	Total Non-Interest Income	Total Operating Income	Total Profit Before Taxes
Net Interest Income	1							
Off balance sheet items	**0.8777 (0.8393)**	1						
Retained Earnings	**0.9483 (0.9689)**	**0.8708 (0.8534)**	1					
Total Investment	**0.8649 (0.8786)**	0.5730 (0.4693)	**0.8647 (0.8727)**	1				
Total Loans and Advances	**0.9719 (0.9854)**	0.4141 (0.5872)	**0.9525 (0.9632)**	**0.9267 (0.9295)**	1			
Total Non-Interest Income	**0.9220 (0.9364)**	**0.9681 (0.9568)**	**0.9298 (0.9282)**	0.5245 (0.4853)	**0.9678 (0.9698)**	1		
Total Operating Income	0.9733 (0.9875)	**0.9364 (0.8998)**	**0.9598 (0.9662)**	**0.9425 (0.9334)**	**0.9913 (0.9947)**	**0.9820 (0.9752)**	1	
Total Profit Before Taxes	0.9631 (0.9538)	**0.8979 (0.9259)**	**0.9529 (0.9388)**	**0.8859 (0.9596)**	**0.9612 (0.9799)**	**0.9386 (0.9815)**	**0.9784 (0.9820)**	1
Total Provisions	0.5983 (0.37622)	0.3626 (0.4618)	0.5888 (0.4561)	0.3792 (0.4187)	**0.9487 (0.9700)**	0.5806 (0.6146)	0.4138 (0.4831)	0.4926 (0.4500)

Table 6. Aggregate Balance Sheet of the Bangladeshi Banking Sector in 2019 and 2020

(Only major items are reported.) Figures are in Billion Taka

Property and Assets	**2020**	**2019**	**Change**
Total Cash	1,229	1,006	223
Total Balance with other Banks	655	721	-65
Money at Call and short notice	147	138	9
Investments	3,273	2,562	712
Total Loans and Advances	11,100	10,740	360
Fixed Assets	1,035	257	778
Others Assets	1384	665	719
Non-Banking Assets	20	19	1
Total Assets	**16,175**	**15,791**	**384**

LIABILITIES and CAPITALS	**2020**	**2019**	**Change**
Borrowings from other banks, FIs, Agents	858	754	103
Deposits and Other Banks	12,268	10,438	1830
Other Liabilities	3,040	2,599	441
Total Liabilities	**14,758**	**14,364**	**393**
Capital and Shareholders' Equity	137	85	52
Paid up capital	505	510	-5
Reserve	252	245	7
Statutory Reserve	114	73	41
General reserve	377	394	-17
Total Shareholders' Equity	1,458	1,364	94
Total Liabilities and Shareholders' Equity	**16,175**	**15,791**	**384**

OFF Balance Sheet Items			
Contingent Liabilities	1,489	2,580	-1,091
Acceptances and Endorsements	1,117	1,035	82
Letter of Guarantees	2,054	1,064	989
Irrevocable Letters of Credit	1,284	2,105	-821
Bills for Collection	213	191	22
Other Contingent Liabilities	18	18	0
Claims Against the Bank	1,638	674	965

Total Contingent Liabilities	3,236	3,895	-660
Other Commitments			
DC and Short Term trade related transactions	24	32	-7
Forward Assets Purchased and Forward Deposits Placed	87	64	23
Undrawn Note Issuance and Revolving Underwriting facilities	277	290	-13
Undrawn Standby Formal Facilities	0	0	0
Total Other Commitments	180	155	25
Total Off Balance Sheet Items Including Contingent Liabilities	**3,797**	**4,521**	**-724**

Profit and Loss Accounts	**2020**	**2019**	**Change**
Interest Income	906	980	-74
Interest paid	636	666	-30
Net Interest Income	**270**	**314**	**-43**
Investment Income	185	153	33
Commission, exchange & Brokerage	98	114	-17
Other Operating Income	85	34	51
Total Non-Interest Income	**428**	**301**	**127**
Total Operating Income	**698**	**615**	**83**
Total Operating Expenses	**305**	**285**	**20**
Profit Before Provisions/ Operating Profit	**393**	**330**	**63**
Total Provisions	**167**	**97**	**71**
Total Profit Before Taxes	**226**	**233**	**-7**
Provision for Taxation			
Provision for Current Tax	45	37	8
Provision for Deferred Tax	26	18	8
Total Provision for Taxation	**72**	**55**	**16**
Net Profit After Taxation	**154**	**178**	**-24**
Appropriations	38	21	17
Retained Surplus/Deficit	**117**	**157**	**-41**

Table 7. Ownership and NPL Ratios of Bangladeshi Banks

Bank Type	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
Nationalized	21.5	25.0	26.5	30.0	23.9	20.9
Specialized	23.2	26.0	23.4	19.5	15.1	13.3
Private	4.9	4.5	4.9	5.5	5.8	4.7
Foreign	7.8	9.6	7.0	6.5	5.7	3.5
Total	**8.8**	**9.2**	**9.3**	**10.3**	**9.3**	**7.7**

Source: Annual Report (2021), Bangladesh Bank (The Central Bank of Bangladesh)

Table 8. Trend in NPL as Percent of Total Loans 1995-2020(Entire Sector)

Bank Type	1995	2000	2005	2010	2015	2020
SCBs	39.8	39.1	25.2	11.3	21.5	22.7
PCBs	31.2	22.1	4.2	2.9	4.9	5.9
FCBs	4.3	3.2	2.1	3.2	7.3	5.5
Total	37.1	35.1	11.4	6.1	8.8	9.2

Source Bangladesh Bank Annual Report, Various Issues

Table 9. Bank Names included in this articles

Government Banks	Foreign Banks	Islamic Banks
1. Sonali Bank Ltd.	1. Standard Chartered Bank	1. NRB Global Bank Ltd.
2. Janata Bank Ltd.	2. National Bank of Pakistan	2. Union Bank Ltd.
3. Agrani Bank Ltd.	3. Habib Bank Ltd.	3. Al Arafa Bank Ltd.
4. Rupali Bank Ltd.	4. ICB Bank Ltd.	4. EXIM Bank Ltd.
5. BASIC Bank Ltd.	5. State Bank India Ltd.	5. Shahjalal Bank Ltd.
6. RUKUB Bank Ltd.	6. Woori Bank Ltd.	6. First Security Bank Ltd.
7. Bangladesh Krishi Bank	7. Bank Al Falah	7. Standard Bank Ltd.
	8. Commercial Bank Cylon	8. Islami Bank Ltd.
	9. Citi Bank N A	9. Social Islami Bank Ltd.
	10. HSBC	10. Jamuna Bank Ltd.
Private Banks		
11. Uttara Bank Ltd.	21. BRAC Bank Ltd.	31. Eastern Bank Ltd.
12. Pubali Bank Ltd.	22. The City Bank Ltd.	32. One Bank Ltd.
13. NRB Bank Ltd.	23. AB Bank Ltd.	33. Trust Bank Ltd.
14. NRB Commercial Bank	24. IFIC Bank Ltd.	34. Mutual Trust Bank Ltd.
15. SBAC Bank Ltd.	25. United Commercial Bank	35. Premier Bank Ltd.
16. Midland Bank Ltd.	26. NCC Bank Ltd.	36. Dhaka Bank Ltd.
17. Shimanto Bank Ltd.	27. Prime Bank Ltd.	37. Community Bank Ltd.
18. Meghna Bank Ltd.	28. Bank Asia	38. Probashi Kollyan Bank
19. Mercantile Bank Ltd.	29. Dutch Bangla Bank Ltd.	39. Bengal Commercial Bank
20. Modhumati Bank Ltd.	30. Bangladesh Commerce Bank Ltd.	40. Community Bank Ltd.
		41. Probashi Kollyan Bank Ltd.

Excluded Banks

1. Padma Bank Ltd.
2. Peoples Bank Ltd.
3. Citizen Bank Ltd.
4. National Bank of Pakistan
5. Bangladesh Development Bank Ltd.