

DID THE COVID-19 PANDEMIC IMPACT POSITIVELY ON PERFORMANCE OF DIVERSIFIED BANKS? A CASE OF PAKISTAN

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Abstract:

COVID-19 pandemic has remarkably affected the performance of financial institutions due to constriction of economic activity, slowdown of developmental projects and bankruptcy of business entries. Therefore, it is necessary to bring fresh evidence on performance of diversified banks during the crisis period. This study aims to investigate the impact of COVID-19 pandemic on relationship of banks diversification and performance in Pakistan from 2015-2023. Using the GMM approach, to avoid statistical biasness, profit-diversification link is tested before and during the outbreak of pandemic. The results indicate that COVID-19 has positively impacted the performance of banks' income from non-interest activities. The findings are consistent with recent studies on banking companies during the pandemic. The results of study have implications for policy makers, investors and regulatory offices. Banks with multiple sources of income have survived better during the lockdowns despite the decline in the conventional interest based income.

Key Words: COVID-19, diversification, Pakistan, Banks, performance, pandemic

Introduction:

The effects of outbreak of COVID-19 on business sector have been observed and documented across the globe. However, pandemic hit the businesses differently depending upon their sector and financial capability to absorb the shocks. After, global financial crisis in 2007-2008, COVID-19 caused huge systematic losses of financial and non-financial businesses. It caused 3.2% loss of global economy including 2.1% in emerging countries (IMF, 2021). Banks faced decline in lending and deposits while non-performing loans increased dramatically during the pandemic. The decline in the business activities contributed to decline of almost 25% stock value of European banks and 20% of South Asian markets (World Bank, 2021). One-third of banks in emerging markets were downgraded by credit rating agencies during the lockdown in the various countries (S&P's Global Ratings, 2020).

The worsening indicators of economic development pressurized the banks to maintain lower interest rates in South Asian countries, including China, India, Pakistan and Sri Lanka, which further eroded the bank's net interest income. The assessment of the financial stability of banks by World Bank indicated that the lower interest rates of economy, increasing loan costs, tight lending regulations and low deposits considerably decreased the banks' capability to make profits from conventional business. Such circumstances motivated banks to focus on their non-credit activities and the maintain their profits by increasing the portion of non-interest earnings in the gross revenue.

The empirical studies till date have examined the impact of pandemic on performance and risk of banks (Capraru et al., 2020; Simoens & Vander, 2021) and markets value of shares (Calmes & Theoret, 2020). Similarly, studies on capital adequacy and financial stability of banks (Borri & di Giorgio, 2021; Catalan et al., 2021; Li et al. 2021; Wang & Lin, 2021) have been conducted. However, these studies did not adequately consider the full impact of pandemic as a financial shock on financial performance of diversified banks. With the passage of time, the banks have modified their business models to live in pandemic times and lock downs have been imposed many time after outbreak of new variant of virus in developed and developing countries. Further, most of studies are conducted in USA or European banks while developing countries like

Pakistan is hardly addressed in these studies due to lack of data. Therefore, a study to examine the impact of pandemic on performance of diversified banks operating in Pakistan would fill the gap and provide comprehensive understanding of this relationship.

This study is motivated by the above mentioned gaps and hypothesize that whether non-interest income of banks have improved the profitability during the pandemic and second whether the COVID-19 has strengthened this relationship after controlling the banks and country level factors. After outbreak of 6th wave of COVID-19 variants, it is necessary to document that how banks' performance is influenced during the crisis times. It is critical for monitoring their performance and stability by regulator and policy makers (Kanga, D. 2020). This study is relevant to the recommendations of regulators for banks to increase their share of non-interest income using the commissions and fee based transactions (Stiroh, K. 2006).

This article investigates that how the sources of non-interest earnings of banks affected bank profitability during the COVID-19-related financial crisis. Using sample of 28 commercial banks of Pakistan from 2015 to 2023, the impact of the COVID-19 pandemic and its moderating effects are examined. Using data from emerging nation i.e. Pakistan rather than American data advances the research by establishing if the bank's profit-diversification relationship during the COVID-19 remains same across the countries.

The rest of the article is structured as follows. Literature review and hypothesis development is described in the next section, followed by the research methodology. Then the results of analysis are discussed and conclusion is made at the end of the article.

Literature review:

Three primary categories of bank diversification activities which are defined in the financial literature are geographic, assets, and income diversification (Drucker, D. 2005). Geographic diversification is achieved through international mergers and acquisitions by establishing branches and subsidiaries in other countries (Huang, G. 2018). The effects of such diversity are typically seen negatively. The large distances between bank branches and corporate offices and the undue asset development, which is typically the demonstration of managers' schemes for empire building, can sometimes make the agency problem worse (Rajan, R. 2000). The effectiveness of bank management is likewise decreased by these issues. Long-term, this has the effect of decreasing the market value of banks (Goetz et al., 2013).

Following Campa J. et al. (2002), assets diversification is defined as the ratio of non-interest bearing assets to total assets. Where non-interest bearing assets can be calculated as total assets minus total advances and loans. A higher ratio of indicates a more diversification of assets of a bank. Demsetz and Strahan (1997) assert that increased capital ratios and excessive lending to commercial and industrial consumers are the effects of diversification.

The distribution of income among sources of interest and sources of non-interest is the concept of functional diversity (Abedifar, P. 2018). Numerous analyses of its implications on bank profitability, risk exposure, and financial stability can be found in the financial literature. Increased systematic and unsystematic risks, decreased management quality, and decreased market value are all consequences of a bank's overreliance on non-interest businesses (DeYoung & Roland, 2001). Rajan et al. (2000) claims that the more profitable and successful banking conglomerate firms subsidize the less profitable ones, reducing the total profitability of the capital group. This ensures that a variety of financial services will always be accessible.

State Bank of Pakistan (SBP) has heavily regulated the commercial banks of Pakistan and encourages the banks to generate revenues through fees and commissions (SBP, 2021). However, Pakistani economy is far less digitalized than the developed countries making it hard for the banking sector to ripe moderate income through non interest activities. Though, decline in the income of banks have been reported in 2020-21 financial statements mainly due to increase in non-performing loans and limited economic activities, yet banking industry has well tolerated the detrimental consequences of COVID-19 pandemic (SBP, 2021). Due to scarce literature on performance of Pakistani banking industry during COVID-19, there is need to revisit the relation of performance and income diversification of Pakistani banks during the crisis time and find out role of SBP and government of Pakistan on this relation.

Saunders et al. (2020) found that better revenue diversification helped banks increase profitability while lowering credit risk and bankruptcy risk (DeYoung & Torna, 2013). In the Asian banking sector, Mergaerts and Vander Venet (2016) found that retail-oriented banks' profitability and stability rose with increasing income diversification. According to the economics of scope, banks' market value and franchise value increase with a greater variety of non-interest services (Elsas et al., 2010).

Studies on the profitability, market value, and risk of the US banking sector demonstrated the benefits of banks' diversification (Busch & Kick, 2009). There aren't many studies on the impact of revenue diversification on bank revenues during the COVID-19 pandemic in Asian countries. Income diversification protected Pakistani banks by absorbing adverse pandemic shocks and by lowering bank business risk (Li et al. 2021). Wang & Lin, (2021) asserts that the decline in lending and tightened lending rules during the pandemic, forced US banks to increase fees and commission income in order to retain profitability.

Summarizing the above mentioned literature, the following hypotheses are formulated in this study:

H1: Income diversification of Pakistani commercial banks has positively impacted the performance.

H2: COVID-19 pandemic has positively impacted the relation of income diversification with performance of banks.

Research methodology:

The study employs a linear regression model using the annual bank-level data from 2015-2022 to examine the impact of the COVID-19 pandemic on the relationship of income diversification and performance of 28 commercial banks (224 observations) operating in Pakistan. Performance of banks is measured by the average return on total assets (ROA) and taken as dependent variable in the model (Saunders, A. 2020). Income diversification of banks is measured following the Li, X. (2021) with following equation;

$$\text{Income diversification} = 1 - \left(\frac{\text{interest income}}{\text{total income}} \right)^2 + \left(\frac{\text{non-interest income}}{\text{total income}} \right)^2$$

To examine the impact of COVID-19, a dummy variable is used in the equation. It takes the value of 1 for the year 2020-22 while it is zero during the year 2015-19. In this way, the study will be able to test the above mentioned hypothesis 2. Furthermore, the data of total number of infections in Pakistan during the 1/3/2020 – 30/7/2023

is also taken as proxy. This data is available on website of World Health Organization (WHO). Secondary data of banks is sourced from published balance sheet analysis of financial companies by SBP. Country level data is taken from the website of World Banks. Following the Laeven

(2007), bank level and country level variables are used in the econometric model to control the other factors affecting the variables under study. The brief description of all variables is given in table 1 below.

Table 1. Description of variables

Variables	Description
Performance	Average Return on assets: net profit to the average total assets
Diversification	Income diversification: non-interest income to operating income
Covid-19	Dummy variable takes value of 1 for 2020-22 and zero for previous years. Total numbers of inactions during the 1/3/2020 – 30/7/2022
Control Variables	
Size	Bank size: natural logarithm of total assets
Asset growth	Annual growth in bank assets
Loan-to-asset	Loans to non-financial sector to total assets
GDP Growth	Gross Domestic Product (GDP) growth rate
Inflation rate	Annual Inflation rate

Following is the econometric equation of model;

$$perf_{it} = \alpha_0 + \alpha_1 perf_{it-1} + \alpha_2 div_{it} + \alpha_3 covid_{it} + \alpha_4 bank_{it} + \alpha_5 GDP_{it} + \alpha_6 Infl_{it} + \epsilon_{it} \quad (1)$$

In the above equation $perf_{it}$ represents the performance of bank i , and time t . Div_{it} represents the income diversification and $covid_{it}$ represents the COVID-19 proxy which is a dummy variable and total number of infections. $Bank_{it}$ shows the bank level control variables and GDP_{it} represents GDP of Pakistan and $Infl_{it}$ represents the annual inflation rate of Pakistan.

This research uses the $perf_{it-1}$, lagged performance in the estimation, due to the fact that bank profits tend to remain persistent over time. Informational opacity, market competition barriers and effects of macroeconomic shocks to the degree of their correlation are some of the reasons of persistence of profit (Berger et al., 2000). Persistence of profits in banking sector is also documented by other studies (Goddard et al., 2004; Eichengreen & Gibson, 2001). Consequently, most of empirical researches studying determinants of bank profitability adapted the same technique of using a lagged dependent variable in the model (Dang & Nguyen, 2022).

Moreover, an interaction term between the COVID-19-related variables and income diversification is also introduced to test the effect of the COVID-19 on the link between performance of banks and income diversification. Following are the equations of the model:

$$perf_{it} = \alpha_0 + \alpha_1 perf_{it-1} + \alpha_2 div_{it} + \alpha_3 covid_{it} + \alpha_4 div_{it} * covid_{it} + \alpha_5 bank_{it} + \alpha_6 GDP_{it} + \alpha_7 Infl_{it} + \epsilon_{it} \quad (2)$$

It can be observed from results of statistical analysis that data does not fulfil conditions of homoscedasticity and normality of residuals of data. The former problem may cause biased standard errors resulting in false findings about the significance of the regression coefficients. This problem is addressed by using White's (1980) heteroscedasticity-consistent standard errors. As far as the second problem concerns, it is considered as minor issue as Woodridge (2012)

recommends that t and F statistics have approximately t and F distributions even without the normality assumption.

Results and discussion

Table 2 represents the descriptive statistics of variables. It shows that the mean profit of Pakistani Banks is 4.15 while in some year's losses are also reported. Diversifications has increased over the years from 2015 to 2023 as it has maximum value of 4.601. Covid infections' value has minimum value of -2.811 and maximum value of 4.114 which represents variation of rate of infections during the year. A similar trend between the performance and Covid can be interpreted that during the pandemic times, banks have shifted their focus from interest based activities to non interest based activities.

Table 2 Descriptive statistics

Variables	Mean	Standard Deviation	Skewness	Minimum	Maximum
Perf	4.155	2.122	0.235	-1.555	9.567
Div	2.250	1.315	0.1530	2.605	4.601
Covid	1.611	0.230	-0.101	-2.811	5.114
Infections	0429	0.130	0.261	-2.361	6.178
Size	1.974	1.969	0.840	1.605	3.621
Assets	2.165	0.215	1.055	1.986	5.265
Loan	1.268	1.025	0.599	1.452	2.156
Inflation	8.534	0.807	0.690	0.124	1.094
GDP	5.538	2.974	1.566	2.964	4.243

Table 3 shows the Pearson correlation of key variables of study. The results of this table also represents similar pattern that performance is positively correlated with the diversification (0.325) as well as the Covid (0.336) dummy variable. These results support the hypothesis 1 that Covid and diversification are positively correlated with the performance. Bank level control variables are also significantly correlated with Covid infections and inflation is negatively correlated with the most of variables which is logical that inflation has negative impacts on performance and income generating activities of banks. Overall, it can be concluded that diversified banks have performed better during the Covid pandemic.

Table 3. Pearson correlation matrix of variables

	1	2	3	4	5	6	7	8	9
1. Perf	1								
2. Div	0.325**	1							
3. Covid	0.346**	0.420**	1						
4. Infections	0.325**	0.524**	0.470**	1					
5. Size	-0.209	-0.225	0.31	0.65**	1				
6. Assets	0.150	-0.567	-0.63	0.531**	0.414**	1			
7. Inflation	-0.165	-0.455**	-0.368**	-0.225	0.052	0.24	1		
8. Loans	0.152**	0.148	0.987	0.635**	0.256	0.264	0.682	1	
9. GDP	0.2565	0.155	0.169	0.166**	0.255	0.156	0.466	0.166	1

** and ***represents the significance level at 5% and 1% .

It shows that Hypothesis 1 cannot be rejected on the basis of data shown in table 4 since diversification has a statistically significant positive effect on bank performance. Banking sector

maintained higher levels of profitability during the pandemic by increasing the proportion of non-interest revenue or by promoting income diversification. During economic crises like the COVID-19 outbreak, which resulted in a decline in demand for industrial loans and tighter credit policies, banks that expanded their activities outside traditional lending-related services may be better able to stabilize their revenue. The results are consistent with the research previously stated as well as Li et al. analysis of US banks from 2021.

Additionally, some bank characteristics are essential to discuss. First, there is a positive association between bank earnings in 2020 and those from the previous year. According to this association, banks that had done well prior to the COVID-19 outbreak may have continued to do so after the pandemic. The fact that smaller business units are better able to accommodate customers may be the reason why smaller banks performed better overall in 2020 than larger banks did. The loan-to-asset ratio, or the percentage of loans in a bank's assets, may be increased, which helps banks be more profitable. Even if banks' involvement in non-interest services has grown, in the case of the banking industry in the euro area, net interest revenue will still account for more than 60% of total banking income in 2021. (IMF, 2021).

Table 4. Impact of diversification, COVID-19 pandemic, banks characteristics and economic indicators on performance of banks in Pakistan

Dependent Variable: Performance				
	(1)	(2)	(3)	(4)
Perf. _{t-1}	2.561*** (0.032)	2.954*** (0.002)	1.474*** (0.014)	0.321*** (0.001)
Div	2.737*** (0.001)			
Covid		0.136*** (0.031)		
Infections			0.754** (0.098)	
GDP				0.708*** (0.001)
Assets	0.160** (0.001)	0.355*** (0.000)	0.155*** (0.002)	0.647*** (0.002)
Loans	2.46** (0.001)	0.535** (0.002)	0.452** (0.002)	0.159*** (0.001)
Inflation	-1.052** (0.001)	0.685*** (0.002)	2.658** (0.002)	0.968*** (0.040)
Size	-0.546 (0.001)	-0.661 (0.001)	3.256*** (0.002)	0.496 (0.002)
Constant	5.165 (0.001)	3.569 (0.001)	5.667 (0.047)	2.854 (0.042)
R Square	0.455	0.500	0.425	0.359
Number of Observations	233	230	229	225

** and *** represents the significance level at 5% and 1% .

The health of a country's economy has a significant impact on performance of banks. As expected, the banks did better in 2020 in year with good GDP growth. However, it doesn't appear

that the level of inflation rates had an effect on bank profitability during the epidemic year. Bank profits were destroyed by the pandemic's worsening effects, and as illnesses rose, governments tightened regulations, which reduced economic activity. The negative value of the Infections coefficient indicates the same scenario.

Table 5 shows that the Covid dummy variable and infections interaction with diversification have a positive effect on banks' profits. The significant relation of interaction variables clearly accepts the second hypothesis that pandemic has strengthened the relation of diversification and performance of banks. It is quite expected that the economic conditions with the pandemic have a negative coefficient. However, because the public relief programs were designed with the severity of the pandemic in mind, they may have contributed to this direction of the relationship. Since an increase in sicknesses was followed by an increase in absenteeism, unemployment, and a transitory fall in economic activity, a similar line of thinking may be used to explain the idea of economic activity.

Table 5 Impact of diversification, COVID-19 pandemic on performance of banks in Pakistan

Dependent Variable: Performance				
	(5)	(6)	(7)	(8)
Perf. _{t-1}	0.821*** (0.001)	1.565*** (0.001)	1.785*** (0.032)	0.264*** (0.002)
Div	0.249*** (0.002)			
Div*Covid		0.149*** (0.061)		
Div*Infections			0.248** (0.002)	
Covid*Infections				0.324*** (0.001)
Assets	0.154** (0.002)	0.248*** (0.001)	0.326*** (0.024)	0.174*** (0.041)
Loans	2.56** (0.001)	0.536** (0.005)	0.726** (0.002)	0.362*** (0.001)
Infl	-1.052** (0.001)	0.321*** (0.001)	2.681** (0.002)	0.328*** (0.040)
GDP	0.645 (0.001)	0.154 (0.001)	3.68*** (0.002)	0.214 (0.002)
Constant	4.115 (0.002)	2.701 (0.001)	1.611 (0.045)	2.354 (0.024)
R Square	0.457	0.421	0.525	0.568
Number of Observations	230	231	231	231

** and ***represents the significance level at 5% and 1% .

Due to these circumstances, both corporate and individual debtors saw an increase in insolvency, necessitating the adoption of special measures by banks, such as credit holidays, modifications to the payment schedule and debt reductions. From the perspective of the banks, the default of the borrowers led to a decline in loans increase in write off provisions, and a subsequent decline in profitability.

Hypothesis 2 which states that pandemic strengthened the relation of income diversification and profitability cannot be rejected based on the results of the interactions of diversification with pandemic variables in table 5. The results demonstrate that higher-income diversification has a stronger favorable impact on bank profitability as the prevalence of diseases in a country increases. It follows that it would seem that a crisis such as the pandemic's spread or a decline in economic activity would make the fact that bank earnings are less dependent on the proceeds from conventional lending operations more significant (Fang, Y. 2011). The nation's public support funds added to the advantages of bank income diversification on bank profitability.

Conclusions

Recently, banks have increased the portion of non-interest income in the total revenues owing to the severe financial crisis during the COVID-19. Furthermore, onerous restrictions on economic activity during the pandemic, increasing default rate of small businesses, and low interest rate have motivated the banks to discover new avenues of income. The data shows that during the COVID-19 outbreak, a rise in the non-interest revenue proportion of total income greatly increased the profitability of Pakistani banks and this reliance was increased as the pandemic's detrimental effects are becoming more obvious.

These findings could prompt financial regulators to create regulatory policies emphasizing the necessity for greater income diversification to preserve the bank stability during the crisis times and for banks to broaden the scope of non-interest generating services they offer in order to adequately prepare for macroeconomic shocks.

As this study is one of the few to examine the impact of non-interest revenue on profitability of banks during a COVID-19 pandemic, its findings fill a research gap on the operations of the Pakistani banking sector. Understanding this connection is crucial for financial stability as it consequently has effects that go beyond the present pandemic. The findings may be used by academics, market participants, and financial regulators in Pakistan to track bank behavior during the financial crisis.

This study carries many limitations mainly due to data unavailability. The details of non-interest income were not available for many banks therefore, the income from fees, commissions and financial operations, could not be calculated and used in analysis. The interaction between income diversification and bank profitability in the context of the severe pandemic crisis may also be better understood if quarterly data, as opposed to annual data, are used.

This study has discovered some emerging areas for future research to examine the effect of Russia and Ukraine war on the link between income diversification and bank profitability during the between Russia and Ukraine. The results of this study can be tested using the data from other parts of world.

References

- Abedifar, P., Molyneux, P., & Tarazi, A. (2018). Non-interest income and bank lending. *Journal of Banking & Finance*, 87(C), 411–426. doi: 10.1016/j.jbankfin.2017.11.003.
- Berger, A., Bonime, S., Covitz, D., & Hancock, D. (2000). Why are bank profits so persistent? The roles of product market competition, informational opacity, and regional/macroeconomic shocks. *Journal of Banking and Finance*, 24, 1203– 1235. doi: 10.1016/S0378-4266(99)00124-7.
- Borri, N., & di Giorgio, G. (2021). Systemic risk and the COVID challenge in the European banking sector. *Journal of Banking & Finance*, 106073. doi: 10.1016/j.jbankfin.2021.106073.

- Busch, R., & Kick, T. (2009). Income diversification in the German banking industry. *SSRN Electronic Journal*, February. doi: 10.2139/ssrn.1342282.
- Calmes, C., & Theoret, R. (2020). Portfolio analysis of big US banks' performance: the fee business lines factor. *Journal of Banking Regulation*, 22, 112–132. doi: 10.1057/s41261-020-00131-3.
- Campa, J., & Kedia, S. (2002). Explaining the diversification discount. *Journal of Finance*, 57(4), 1731–1762. doi: 10.1111/1540-6261.00476.
- Capraru, B., Ilnatov, I., & Pintilie, N. (2020). Competition and diversification in the European banking sector. *Research in International Business and Finance*, 51, 100963. doi: 10.1016/j.ribaf.2018.09.014.
- Catalan, F., di Pietro, F., & Ponce, A. (2021). Post-COVID-19 SME financing constraints and the credit guarantee scheme solution in Spain. *Journal of Banking Regulation*, 22, 250–260. doi: 10.1057/s41261-021-00143-7.
- Dang, V., & Nguyen, H. (2022). Bank profitability under uncertainty. *Quarterly Review of Economics and Finance*, 83, 119–134. doi: 10.1016/j.qref.2021.12.001.
- Demsetz, R., & Strahan, P. (1997). Diversification, size, and risk at bank holding companies. *Journal of Money, Credit and Banking*, 29(3), 300–313. doi: 10.2307/2953695
- DeYoung, R., & Torna, G. (2013). Nontraditional banking activities and bank failures during the financial crisis. *Journal of Financial Intermediation*, 22(3), 397–421. doi: 10.1016/j.jfi.2013.01.001.
- Drucker, S., & Puri, M. (2005). On the benefits of concurrent lending and underwriting. *Journal of Finance*, 60(6), 2763–2799. doi: 10.1111/j.1540-6261.2005.00816.x.
- Eichengreen, B., & Gibson, H. D. (2001). Greek banking at the dawn of the new millennium. *CEPR Discussion Paper*, 2791.
- Elsas, R., Hackethal, A., & Holzhäuser, M. (2010). The anatomy of bank diversification. *Journal of Banking & Finance*, 34(6), 1274–1287. doi: 10.1016/j.jbankfin.2009.11.024.
- Fang, Y., Hasan, I., & Marton, K. (2011). Institutional development and its impact on the performance effect of bank diversification: evidence from transition economies. *Emerging Markets Finance and Trade*, 47(4), 5–22. doi: 10.2307/41343430.
- Goddard, J., Molyneux, P., & Wilson, J. (2004). The profitability of European banks: a cross-sectional and dynamic panel analysis. *Manchester School*, 72, 363–381. doi: 10.1111/j.1467-9957.2004.00397.x.
- Goetz, M., Laeven, L., & Levine, R. (2013). Identifying the valuation effects and agency costs of corporate diversification: evidence from the geographic diversification of U.S. Banks. *Review of Financial Studies*, 26(7), 1787–1823. doi: 10.1093/rfs/hht021
- Huang, G. (2018). Non-interest income, diversification and bank performance based on Chinese banking with GMM/DPD technique. *Theory and Practice of Finance and Economics*, 39(2), 9–15.
- IMF (2021). *World economic outlook 2021*. International Monetary Fund: Washington DC, USA,
- Kanga, D., Murinde, V., & Soumaréc, I. (2020). Capital, risk and profitability of WAEMU banks: does bank ownership matter? *Journal of Banking and Finance*, 114, 1–22. doi: 10.1016/j.jbankfin.2020.105814.
- Laeven, L., & Levine, R. (2007). Is there a diversification discount in financial conglomerates? *Journal of Financial Economics*, 85(2) 331–367. doi: 10.1016

- /j.jfineco.2005.06.001.
- Li, X, Feng, H., Zhao, S., & Carter, D. (2021). The effect of revenue diversification on bank profitability and risk during the COVID-19 pandemic. *Finance Research Letters*, 43, 101957. doi: 10.1016/j.frl.2021.101957.
- Mergaerts, F., & Vennet, R.V. (2016). Business models and bank performance: a long-term perspective. *Journal of Financial Stability*, 22(C), 57–75. doi: 10.116/j.jfs.2015.12.002.
- Rajan, R., Servaes, H., & Zingales, L. (2000). The cost of diversity: the diversification discount and inefficient investment. *Journal of Finance*, 55(1), 35–80. doi: 10.1111/0022-1082.00200.
- S&P's Global Ratings (2020). *Banks in emerging markets. Countries, three COVID-19 shocks*. Standard & Poor's Financial Services LLC. Retrieved from <https://www.spglobal.com/ratings/en/research/pdf-articles/2020-05-26-banks-in-emerging-markets-15-countries-three-covid-19-shocks> (21.1.2021).
- Saunders, A., Schmid, M., & Walter, I. (2020). Strategic scope and bank performance. *Journal of Financial Stability*, 46, 100715. doi: 10.1016/j.jfs.2019.10.0715.
- State Bank of Pakistan (2021). *Mid year performance of banking sector Y21*. Online accessed at: <https://www.sbp.org.pk/publications/HPR/H1CY21.pdf>
- Simoens, M., & Vennet, R.V. (2021). Does diversification protect European banks' market valuations in a pandemic? *Finance Research Letters*, 44, 102093. doi: 10.1016/j.frl.2021.102093.
- Stiroh, K., & Rumble, A. (2006). The dark side of diversification: the case of US financial holding companies. *Journal of Banking & Finance*, 30(8), 2131–2161. doi: 10.1016/j.jbankfin.2005.04.030.
- Wang, C., & Lin, Y. (2021). Income diversification and bank risk in Asia Pacific North American *Journal of Economics and Finance*, 57, 101448. doi: 10.1016/j.najef.2021.101448.
- White, H. (1980). A heteroskedasticity-consistent covariance matrix estimator and a direct test for heteroskedasticity. *Econometrica*, 48(4), 817–838. doi: 10.2307/1912934.
- Wooldridge, J. M. (2012). *Introductory econometrics: a modern approach*. Boston: Cengage Learning.
- World Bank (2021), *The World Bank Group's Response to the COVID-19 (coronavirus) Pandemic*, Reports database, USA
- World Health Organization (2022). *Global COVID-19 database*. Online accessed at <https://covid19.who.int/region/emro/country/pk/>