FACTORS AFFECTING THE PROFITABILITY PERFORMANCE OF UZBEKISTAN BANKING SYSTEM

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Abstract. *Banks play the significant role in the economic development of any country, therefore, analyzing bank performance is more important. This study tried to evaluate the profitability performance of banks operating in Uzbekistan for the period of 2017 to 2024. This study uses Return on Assets (ROA) and Return on Equity (ROE) as the dependent variables to evaluate bank's performance. The independent variables, used in this research, are to be classified into two categories as bank-specific and macroeconomic determinants of bank profitability. Bank specific variables are Size of the bank, Liquidity, Asset Quality, Capital Adequacy and Credit Rist. Macroeconomic determinant is Inflation. Data analyzed with the help of descriptive statistics, correlation analysis and regression analysis. Overall, this study found that, some predictors show promising relationships with the dependent variable, further analysis and consideration of additional factors may be necessary to fully understand the model's explanatory power and robustness.*

Introduction.

The banking system is crucial for facilitating financial intermediation, promoting economic growth, and ensuring financial stability in modern economies. Douglas, J. L. (2008) studied the banking system plays an important role in nation building. Therefore, performance of the banking system is crucial because it directly impacts economic stability, growth, and development by facilitating efficient allocation of capital, promoting financial inclusion. The performance of banking system dependent upon many factors such as bank related, industry related, economy related and related to many other specific events and incidents. Banking sector experienced lot of changes after 2015, in the form of revolution in the internet, smartphones, changes in the technology Act, increase in the online payment, development of alternative financing, Fintech etc. In this context, this article is to extend earlier work on the determinants of performance of Uzbekistan banks and examine the effect of bank-specific and macroeconomic determinants of bank profitability performance.

REVIEW OF LITERATURE

Azlarova, A. (2023) investigated features of the development of the banking system of the republic of Uzbekistan and found that Uzbekistan banking system demonstrates stability and growth, supported by strategic measures aimed at liberalizing the economy and enhancing competitiveness since 2017. Positive trends include significant asset accumulation, substantial increases in loans granted, and favorable assessments by international rating agencies, reflecting a promising trajectory for the sector. Brahmaiah, B. (2018) studied the factors influencing profitability of banks in India by collecting samples from 89 banks operating in India for the period 2005 to 2015. Return on Assets (ROA) and the Return on Equity (ROE) as proxy for measurement of banks' profitability. San, O. T., & Heng, T. B. (2013) analyzed factors affecting the profitability of Malaysian commercial banks and results shows that all bank-specific determinants affect bank profitability significantly in the anticipated way. However, no evidence is found in support of the macroeconomic variables have an

impact on profitability. Clair, R. W. S. (2004) conducted a study on macroeconomic determinants of banking financial performance and resilience in Singapore using data since 1990. Ulashovich, B. Z., & Ilhomovich, S. E. (2022) investigated the performance of commercial banks in Uzbekistan during 2016 to 2020 and found that the performance (ROA) of commercial banks of Uzbekistan mainly effected by loans to deposit ratio and total loans to total assets ratio. There has been a numerous studies conducted in this field across various countries, but a limited number of research conducted in Uzbekistan, particularly in post-2017. Therefore, this study aims to investigate factors influencing performance of banking.

DATA AND METHODOLOGY

Descriptive quantitative research used in this study with secondary data analysis. The data collected from the official website The Central Bank of the Republic of Uzbekistan from 2017 to 2024 for 8 years. The most common variables used to measure the performance of banks are the profitability ratios. This study uses Return on Assets (ROA) and Return on Equity (ROE) as the dependent variables to evaluate bank's performance.

Table 1 - Variables Measurement Selected for the Model

Category	Variables	Measures	Notation	Source Citation
Performance	Return on assets (ROA)	Net Profit/Total Assets	ROA	Gul, S., Irshad, F., & Zaman, K. (2011).
Performance	Return on equity (ROE)	Net Profit/Equity	ROE	Gul, S., Irshad, F., & Zaman, K. (2011).
Size	Assets (billion UZS)	Natural (Normal) Logarithm of Total Asset of the Bank	SIZE	Saeed, M. S. (2014).
Liquidity	High-Quality Liquid Assets (HQLA)	High Quality Liquid Assets (HQLA) / Total assets	HQLA	Ihrig, J. E., Vojtech, C. M., & Weinbach, G. C. (2019).
Asset Quality	Non-Performing Loan (NPL)	Non-Performing Loan/Total Loan	NPL	Akter, R., & Roy, J. K. (2017).
Capital Adequacy	Capital adequacy ratio	Capital/Risk-Weighted Assets	CAR	Hirindu Kawshala, K. (2017).
Credit Rist	Loan to Deposit Ratio	Loan/Deposit	LTD	Nugraha, N. M at al, (2021).
Inflation	Inflation	Inflation (Y-o-Y) (%)	INFL	Jaouad, E., & Lahsen, O. (2018).

Source: Cited in above table

The independent variables, used in this research, are to be classified into two categories as bank-specific and macroeconomic determinants of bank profitability. Bank specific variables are Size of the bank, Liquidity, Asset Quality, Capital Adequacy and Credit Rist. macroeconomic determinant is Inflation. Table 1 shows the category, variables selected for the study, measures to calculate variables, notation used in the analysis and sources of articles for the selection of variables.

DATA ANALYSIS

Data analysis involves summarizing the data sets with summary statistics, identifying the association between independent variables using correlation analysis, finally regression analysis used to model the relationship between the dependent and independent variables.

Descriptive Statistics

The data collected from the secondary sources was analyzed using Microsoft Excel. The data was analyzed using descriptive statistics including mean, median, standard deviation, minimum and maximum values which is presented in table 2. These variables provide insights into the financial performance, liquidity, risk management, inflation, GDP and other variables selected for the study. Analyzing and understanding these variables can help researchers and policymakers identify the current state and trends. Overall, this table serves as a valuable resource for understanding the statistical distribution and characteristics of the variables under consideration.

The average Return on Assets (ROA) is 2.08%, with a median of 2.1% and a standard deviation of 0.40%, indicating relatively stable performance across the years. The Return on Equity (ROE) with a means value of 13.98%, with a median of 15.2% and a standard deviation of 4.03%, suggesting that there is variability in ROE across the dataset. The range between the minimum (6.1%) and maximum (17.95%) values indicates a considerable spread in ROE, reflecting diverse levels of profitability among the banks.

Table 2 – Summary Statistics of Dependent and Independent Variables

Variables	Mean	Median	SD	Minimum	Maximum
Return on assets (ROA) (%)	2.08	2.1	0.40	1.3	2.6
Return on equity (ROE) (%)	13.98	15.2	4.03	6.1	17.95
Assets (billion UZS)	344725	319424	197043.58	84075	652157
High-Quality Liquid Assets (HQLA) (%)	16.46	16.3	4.85	9.4	22.7
Loan to Deposit Ratio (%)	2.03	2.02	0.34	1.41	2.41
Capital adequacy ratio (%)	17.97	17.65	2.62	14.7	23.5
Non-Performing Loan (NPL)	2.52	1.95	1.43	1.2	5.2
Inflation (Y-o-Y) (%)	12.4	11.9	3.64	8.6	20.1

Source: Authors calculation using MS Excel

The total assets displayed an average of 344725 billion Uzbekistan som (UZS), with a median of 319424 billion UZS and a standard deviation of 197043.58 billion UZS, indicating significant variability in asset sizes among the entities. The range between the minimum (84075 billion UZS) and maximum (652157 billion UZS) values shows the wide range of asset scales, suggesting diverse scales of operation within the dataset.

The analysis of High-Quality Liquid Assets (HQLA) reveals an average percentage of 16.46%, with a median of 16.3% and a standard deviation of 4.85%, indicating a moderate level of variability in liquidity management among the banks. The loan to deposit ratio shows a mean ratio of 2.03%, with a median of 2.02% and a standard deviation of 0.34%, suggesting relatively consistent lending practices across the selected years. The capital adequacy ratio demonstrates an average ratio of 17.97%, with a median of 17.65% and a standard deviation of 2.62%, indicating healthy capitalization among the banks across the selected years. The non-performing loan ratio exhibits an average ratio of 2.52%, with a median of 1.95% and a standard deviation of 1.43%, suggesting varying levels of credit risk within the dataset, with some entities experiencing higher proportions of non-performing loans. Finally, the analysis of inflation (Y-o-Y) indicates an average yearly inflation rate of 12.4%,

with a median of 11.9% and a standard deviation of 3.64%, suggesting moderate variability in inflationary pressures over the observed period.

After presenting summary statistics, correlation matrix was provided to understand strength of the association between the independent and dependent variables. When two or more variables in a multiple regression model have a strong linear relationship, multicollinearity is said to exist.

Correlation Matrix

A correlation matrix is a square matrix showing the correlation coefficients between variables. Correlation matrices is used to find situations where two or more variables are highly correlated with each other. This situation is called multicollinearity.

Table 3 – Correlation Matrix between Independent Variables

	CAR	SIZE	HQLA	LTD	NPL	INFL
CAR	1					
SIZE	0.27	1				
HQLA	-0.30	-0.32	1			
LTD	0.45	0.38	-0.85	1		
NPL	-0.01	0.76	0.03	0.03	1	
INFL	0.41	-0.32	0.18	0.12	-0.50	1

Source: Authors calculation using MS Excel

According to Tabachick and Fidell (2007) occurs multicollinearity, when the correlation between the explanatory factors is more than 0.90. The six independent variables were tested for multicollinearity. The correlation matrix table shows there is no multicollinearity among the selected dependent variables since the correlation is ranging from 0.76 to -0.85.

Multivariate Linear Regression

A multivariate linear regression model was used in the study to examine how the selected factors affected banks' performance. The study model is as follows:

Model I – $\text{ROA} = \beta 0 + \beta 1\text{CAR} + \beta 2\text{SIZE} + \beta 3\text{HQLA} + \beta 4\text{LTD} + \beta 5\text{NPL} + \beta 6\text{INFL}$

Model II - $\text{ROE} = \beta 0 + \beta 1\text{CAR} + \beta 2\text{SIZE} + \beta 3\text{HQLA} + \beta 4\text{LTD} + \beta 5\text{NPL} + \beta 6\text{INFL}$

Model I presented in table 4 below with ROA as dependent variable. The R squared value of 0.9881 suggests a strong positive correlation between the predictors and the dependent variable, indicating that the model explains approximately 98.81% of the variability in the dependent variable. The adjusted R-squared value of 0.9171 indicates that approximately 91.71% of the variance in the dependent variable is explained by the independent variables included in the model, adjusting for the number of predictors.

Table 4 - Regression Statistics – ROA Dependent Variable

Regression Statistics	
Multiple R	0.9941
R Square	0.9882
Adjusted R Square	0.9171
Standard Error	0.1163

Observations	8

Predictors	Coefficients	Standard Error	t Stat	P-value
Intercept	-6.4207	1.6766	-3.8295	0.1626
CAR	0.0146	0.0219	0.6664	0.6258
SIZE	2.2359	0.2917	7.6652	0.0826*
HQLA	-0.0247	0.0250	-0.9890	0.5035
LTD	-1.0343	0.3338	-3.0984	0.1987
NPL	-0.4365	0.0658	-6.6331	0.0953*
INFL	-0.0291	0.0221	-1.3146	0.4140

Source: Authors calculation using MS Excel

In this regression analysis, the coefficients term indicates the expected value of the dependent variable when all predictor variables are zero. Among the predictor variables, Size of the bank (SIZE) stands out with a coefficient of 2.2359 suggesting that larger entities tend to have higher profit in terms of ROA, though its p-value of 0.0826 suggests marginal statistical significance (at 10%). On the other hand, Non-Performing Loan (NPL) demonstrates a negative coefficient of -0.4365 with a significant p-value of 0.0953, implies that higher levels of non-performing loans are creating lower values of the profit as expected.

Both Capital Adequacy Ratio (CAR) and High-Quality Liquid Assets (HQLA) show relatively small coefficients and high p-values, indicating that the relationships between these variables and the dependent variable (ROA) may not be statistically significant in this model. Loan to Deposit Ratio (LTD) shows a negative coefficient of -1.0343, suggesting that an increase in the loan to deposit ratio is associated to a negative change in the ROA but not statistically significant. There is a negative relation between credit risk and performance of the bank. Inflation (INFL) demonstrates a negative coefficient of -0.0291. This suggests that an increase in inflation is associated with a negative change in the performance. However, the p-value of 0.4140 suggests that the relationship between inflation and the dependent variable may not be statistically significant in this model.

Model II presented in table 5 below with ROE as dependent variable. The R-squared value of 0.9966 indicates that approximately 99.66% of the variance in the dependent variable is explained by the independent variables, demonstrating an exceptional level of explanatory power. Additionally, the adjusted R-squared value of 0.9759 suggests that approximately 97.59% of the variance in this model.

Table 5 - Regression Statistics – ROE Dependent Variable

Regression Statistics	
Multiple R	0.9983
R Square	0.9966
Adjusted R Square	0.9759
Standard Error	0.6272

Observations	8

Predictors	Coefficients	Standard Error	t Stat	P-value
Intercept	44.8485	9.0445	4.9587	0.1267
CAR	0.0911	0.1183	0.7696	0.5824
SIZE	2.6328	1.5735	1.6732	0.3429
HQLA	-0.9433	0.1347	-7.0017	0.0903*
LTD	-16.6033	1.8007	-9.2205	0.0688*
NPL	-1.7913	0.3550	-5.0462	0.1245
INFL	0.5545	0.1192	4.6497	0.1349

Source: Authors calculation using MS Excel

Capital Adequacy Ratio (CAR) coefficient of 0.0911 suggests that an increase in the capital adequacy ratio is create a positive change in the ROE, but the result is not statistically significant with a higher p-value of 0.5824. Size of the bank (SIZE) with a coefficient of 2.6328, larger banks tend to have higher values of the ROE, but the result is not statistically significant as the p-value is 0.3429.

The ratio of HQLA to total assets with a coefficient of -0.9433 indicates that an increase in the ratio leads to a negative change in the ROE, the result is statistically significant at 10% (p-value = 0.0903). Loan to deposit ratio (Credit Risk) with a coefficient of -16.6033 suggests that an increase in the loan to deposit ratio is leads to substantial negative change in the dependent variable-ROE and the result is significant at 10% as the p-value is 0.0688. Non-Performing Loan (NPL) shows a negative association with ROE and which is not statistically significant (p-value = 0.1245). On the contrary, Inflation (INFL) the coefficient is positive of 0.5545 which shows positively related with changes in ROE but the p-value is 0.1349 resulted in not statistically significant. The result from Model I and Moel II significantly matches with the finding published by Durguti, E. A., Krasniqi, E. H., & Krasniqi, D. (2020), Al-Abedallat, A. Z. (2017, Dawood, U. (2014), Bojare, K., & Romanova, I. (2017), Shanko, T., Timbula, M. A., & Mengesha, T. (2019), Abate, T. W., & Mesfin, E. A. (2019), and Lohano, K., & Kashif, M. (2019).

CONCLUSION

This study aims to examine the main factors that can affect Uzbekistan banks performance during the period 2017 -2024. This study used two model (Return on Asset and Return on Equity) to analyses the data. The data analysis shows a mixed result. Overall, while some predictors show promising relationships with the dependent variable, further analysis and consideration of additional factors may be necessary to fully understand the model's explanatory power and robustness. The findings of this study regarding the determinants of banks' profitability performance would be useful to policymakers, researchers, investors etc. Based on the findings of this study, the policymakers can design short-term, as well as long-term strategies for improving the performance of the banks. The future studies could be benefited with use of more dependent variables and time frame. Regarding the independent variables, more variables could be incorporated to explain bank performance such as credit risk, service quality, productivity, efficiency and customer satisfaction.

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