Financial Statistical Journal (2023) Volume 6 Issue 2
doi: 10.24294/fsj.v6i2.5752

ORIGINAL RESEARCH ARTICLE

Relationship between firm return and stock price volatility of listed commercial banks in Dar Es Salaam stock exchange

James Daniel Chindengwike

Finance, Accounting and Economics Department, Faculty of Commerce and Business Studies, St. John's University of Tanzania, Dodoma 41101, Tanzania; chindengwikejames@gmail.com

ABSTRACT

This study evaluated the relationship between firm return and stock price volatility of listed commercial banks in Dar es Salaam Stock Exchange (DSE). A quantitative research design was utilized in the examination. The research utilized company year observations spanning from 2011 to 2020, sourced from Seven (7) banks. The secondary data came from listed commercial banks' annual reports. In this investigation, panel data regression was employed. Based on the results of the panel regressions. The study's results also showed that the volatility of commercial banks' share prices was somewhat impacted negatively by corporate return. Additionally, the study suggests that commercial banks increase their earnings per share in order to stabilize the price volatility of commercial banks listed on the DSE.

Keywords: firm return; stock price; volatility; DSE

ARTICLE INFO

Received: 10 April 2024
Accepted: 9 May 2024
Available online: 18 June 2024

1. Introduction

For investors, decision-makers, and business people, the relationship between firm return and stock price volatility is crucial[1]. Stock price fluctuations are typically caused by microeconomic drivers, or elements like company return, which are the primary indicators of a firm's financial soundness[2]. By combining funds from many depositors, the securities market provides listed companies on stock exchanges with consistent funding, enabling them to expand and providing investors with further opportunities for speculation[3]. According to several studies, Adhikary[4] the capital market plays a crucial role in an economy as it provides financial institutions with access to additional capital and offers speculative opportunities to both foreign and domestic corporations as well as individual investors. These investors typically aim to maximise their wealth and profits over time. Capital markets is very crucial to supports the economic growth of nations. Many factors, such as company-specific factors, economic factors, and opportunities presented by government policies, are believed to have an impact on stock[4]. As a result, investors and other players in the stock market comprehend how these factors affect share price changes[5]. A multitude of factors, including company risk, return, and Earnings Per Share (EPS), affect share price variations. Microeconomic variables are internal parts of a larger system that includes business risk, Earning per Share (EPS), and corporate return. It is commonly anticipated that three key microeconomic indicators company risk, return, and profits per share (EPS) will be able to predict market volatility in the future[6].

The Dar es Salaam stock market has expanded rapidly since it was founded in 1996. It opened for business in 1998. The most of companies who have listed on securities exchange has opportunities to raise the company return[7]. However, the market capitalization of the DSE is still relatively tiny in comparison other industrialized markets[8].

Al-Kandari and Abul[9] further state that the capital market is undervalued because it cannot sustain a major increase that has a substantial impact on share prices. Tanzania and other poor countries do not have many new advancements in the principles of microeconomics. Throughout the economic spectrum, changes in microeconomic variables have a variety of effects[9,10]. Changes in microeconomic variables can have a significant impact on stock market values because depositors can expect a different return when they capitalise on shares[11]. In order to determine the relationship between microeconomic variables specifically, company risk, firm return, Earning per Share (EPS), and stock price. Anandasayanan and Subramaniam[11] utilised the Autogressive Distributed Lag Model (ADLM). The study's conclusions point to a causal relationship that is bidirectional between changes in stock price and firm risk. Additionally, they discovered that there is an erratic causal relationship that links variations in corporate return to stock prices, with stock prices being the target of firm return. The DSE-listed commercial banks' average share price is 42.1%, which is not very good. Athanasoglou et al.[12] use standard deviation as a microeconomic metric to detect firm risk in their assessment of the factors influencing changes in stock prices on the Karachi Stock Exchange. The study discovered an adverse association between stock price swings and corporate return as well as a positive correlation between stock price movements and firm risk. They also discovered that, despite a minor correlation, there was a high one between stock prices and microeconomic variables and company return[12,13].

Arbitrage Pricing Theory, by implementing the law of one price and doing away with arbitrage, the concept aids in asset valuation. According to Ross's 1976 APT (Arbitrage Pricing Theory), a variety of microeconomic factors influence asset values. Nonetheless, the CAPM (Capital Asset Pricing Model) is predicated on the idea that a single, important microeconomic factor determines the value of stocks. As a substitute for the CAPM, the arbitrage pricing theory was developed. The drawback of the CAPM is that it solely takes market return into account when calculating investment returns. Fama (1970) questions whether the flaws with the models represent issues with the concept or with its application. Because the CAPM is not applicable empirically, it is flawed. The method includes numerous underlying assumptions that are wildly improbable and mostly depends on subjective sound judgement[14–17].

Since APT is predicated on ascertaining an asset's true intrinsic worth, arbitrage is not feasible in an efficient market. APT is a special and exceptional method that aids in asset pricing[18]. It attempts to account for other factors, such as microeconomic data, that influence securities prices but are not visible to the market. This theory shows how a variety of factors, including a microeconomic variable that serves as the foundation for the research, may affect stock price. Closing a theoretical gap in the theory, the study aims to identify the critical microeconomic elements influencing stock price. The theory's inability to clarify which elements have a greater bearing on stock price determination is one of its weaknesses.

Stock price volatility in the capital market is crucial for both developed and developing countries to preserve economic stability[19]. Borg[20] asserts that the financial market is an essential instrument for showcasing accomplishments and acting as a barometer of the nation's financial desirability. It also provides strategies for putting monetary policy into action. Listed commercial banks tend to overvalue their stock price, which is a good indicator of the overall soundness of the company's finances. The stock price increases with the company's expectations[20]. Speculative investors increase their capital. Although many factors can manipulate stock price volatility, such as microeconomic variables that tend to fluctuate regularly but do not immediately translate into share price changes, the efficiency market theory is ineffective in the long run when it comes to the stock prices of the companies listed on the DSE. Due to the sharp fluctuations in microeconomic indicators that have little effect on the share prices of registered enterprises, there is dispute on whether the

current share price fairly represents the underlying value of the company and its financial stability[21,22].

2. Literature review

On the other hand, Chi-chi and Ogomegbunam[23] discovered a favorable correlation between share price volatility and firm return. Based on the study, the company should priorities corporate return in order to stabilize the stock's movement. Chi-chi and Ogomegbunam[23] investigated the connection between stock market prices and corporate return using 40 companies listed on the Nairobi Stock Exchange (NSE). Regression using conventional least squares was performed to estimate the connection. There was no relationship between changes in stock prices and business return, according to the data. Chronopoulos et al.[24] carried out a comparable analysis using data spanning from 2006 to 2010 to look into the relationship between stock price movement and corporate return for companies listed on the NSE. Through the application of basic regression, Thiong-o ascertained that there is a positive association between the two variables. It was found that this connection was not strong. Cooper and Schindler[25] there is a positive relationship between changes in stock price and firm return.

Datta and Al Mahmud[26] looked into the connection between share price movement at the NSE between 1993 and 1999 and business return in Kenya. The results of the analysis indicate that there is a one-way correlation between the change in share price and Kenya's corporate return. Demsetz[27] looked at the connection between stock prices and a number of financial metrics in a different study, including return, company risk, and earning per share in Kenya. The study discovered a positive relationship between share prices and corporate return. However, the findings of the two studies are no longer relevant due to the NSE's significant developments over time, including the installation of the Central Depository System and the automation of stock transactions.

The relationship between stock market prices and corporate returns as well as the factors influencing the stock market values of multinational firms have been the subject of several studies. First, Diamond and Raghuram[28] looked into the connection between 55 businesses registered on the Karachi Stock Exchange and their listing status and their stock market performance. The Ordinary Least Square (OLS) regression approach was utilised in the study's analysis to determine the company's success based on profitability, earnings per share, and return on equity (ROE). The investigation's conclusions show that there was a positive correlation between market stock prices and every business performance parameter that was looked at. However, although using OLS, the study disregarded the problems of multi-collinearity and heteroscedasticity, which could have a detrimental effect on the estimations. The goal of the current inquiry is to locate and deal with these anomalies. In a 2015 study, Sharif et al. used metrics such share price volatility earned and company return to investigate the effects of 41 companies listed on the stock price variations of the Bahrain Stock Exchange on corporate performance. The study discovered a favourable association between ROE and stock market prices.

3. Research methodology

In order to provide numerical answers to the research objectives, the study used a quantitative research approach, gathering and analysing data on share prices and microeconomic variables. An explanatory or causal research technique was used in this study. The primary goal of the study was to ascertain the nature and strength of cause-and-effect correlations, or more precisely, how certain changes to microeconomic variables affected share price volatility. To do this, the study used a causal research design. The Dar es Salaam Stock Exchange, which only trades the stocks of Tanzanian listed companies, was the subject of this study. There are 27 listed companies on the market at the moment, covering a variety of industries and economic sectors. There are eight listed commercial banks in the banking sector, which is the subject of this study. All listed banks as well as businesses in the finance and investment sectors, including CRDB, DCB, KCB, MCB, MKCB, MUCOBA, and NMB, made up the study's population. The banking, finance, and investment sectors were selected for the

study because they facilitate the transfer of resources from units with surpluses to those with deficits for investments and offer a range of financial services that are essential to the growth of the economy. Purposeful sampling was used in this study, wherein the researcher uses their own discretion to choose study units for the sample that most closely match the investigation's goals.

Secondary data, specifically time series quarterly data with 280 observations gathered between 2011 and 2020, were used in this study. Since the selected commercial banks DCB, NMB, and CRDB, respectively were listed in 2008 and 2009, a ten-year period was selected. Data from 2011 can therefore be utilised consistently and for comparison. details about the Dar es Salaam Stock Exchange's stock valuations.

Model specification

A fixed effect model is used to evaluate the influence of independent factors on the dependent variable in the event that a random effect is present. **Table 1** shows the measurement of variables and unit of analysis and recommended sources.

$$Y = a + \beta 1 CI_{it} + \beta 2 FR_{it} + \varepsilon_{it} \quad (1)$$

whereby:

- Y = Stock price;
- $CI_{it} = Cost\ of\ Investiment$; $FR_{it} = Firm\ Return$;
- a = a constant, the value of Stock price when the independent variables are at zero;
- $\beta 1 - \beta 3$ = Coefficients of Parameters;
- ε_{it} = error term.

Table 1. Measurement of variables.

Variables	Indicator	Reference
Share price volatility	Standard deviation of share price	[9]
Firm return	Cost of Investment = Net income/Cost of investment × 100	[9]

4. Results and discussion

4.1. Descriptive statistics of the variables

In an effort to determine the mean, standard deviation, minimum, and maximum for the period under study, ratios for both dependent and independent variables were gathered from the financial statements of the chosen institutions. The natural logarithm technique was used to normalise the ratios in order to lessen the extreme differences. The mean value of 13.9113, the maximum value of 15.79, the minimum value of 11.51, and the standard deviation of 1.23348 for the chosen banks show that the bank sizes showed stability between 2010 and 2020, according to the descriptive statistics. Because only the top 10 banks in terms of asset worth were included in the study, the results fall within the predicted range.

The corporate return, which varied only slightly from the mean (4.2775) by 4.01% and 4.59%. The firm return condition of the chosen institutions did not alter during the course of the inquiry, as indicated by the standard deviation of 0.10478.

Over the course of a decade, the natural logarithm of profits per share for the selected banks showed that they were generally consistent; the mean was 1.7818, with a standard deviation of 0.71413, a maximum of 3.12, a minimum of −0.36, and a high of 3.12. Based on the data shown in **Table 2**.

Table 2. Descriptive statistics.

	N	Minimum	Maximum	Mean	Std. Deviation

Firm Return	280	2.18	4.52	2.6847	0.29751
Share Price Volatility	280	−4.61	1.56	0.6165	0.88925

4.2. Correlation analysis

Correlation analysis was conducted to determine the extent to which independent variable (Firm return) are correlated with dependent variable (share price volatility). Results obtained are presented in **Table 3** below.

Based on the data shown in **Table 3**, it appears that there is a negative correlation (r = −0.513) between business risk and return. This implies that when bank firm risk increases, a bank's corporate return decreases. Furthermore, a negative correlation was demonstrated between share price volatility (−0.038) and return (−0.296). This implies that share price volatility and business return both decrease.

The link study's results also showed that firm return and share price volatility have a positive correlation (0.177).

Table 3. Correlation analysis.

		Company risk	**Company return**	**Earnings per share**	**Share price volatility**
Company return	Pearson Correlation	−0.513**	1	-	-
	Sig. (2-tailed)	0.000	-	-	-
Share price volatility	Pearson Correlation	−0.038	0.041	0.056	1
	Sig. (2-tailed)	0.752	0.738	0.646	-

Additionally, the data showed that, although having a negative correlation with share price volatility (0.056) and company return (0.030), has a positive correlation with both. Consequently, return and share price volatility decreases.

4.2.1. Multicollinearity test

When there is a strong degree of correlation between the independent variables, multicollinearity arises, potentially compromising the validity of the model's regression analysis results and impairing their precision. Dietrich and Wanzenried[29], a scenario exhibiting multicollinearity is one in which the explanatory variables have a roughly linear relationship. The degree to which the three independent variable Company Return, are sufficiently correlated to distort the outcomes was assessed using the Variance Inflation Factor (VIF).

The Variance Inflation Factor (VIF) proved the validity of the regression results. A *VIF* of less than 10 suggests a lack of multicollinearity[30]. On the other hand, if the *VIF* value is greater than 10, it can indicate a collinearity problem. Further research is needed to solve this issue, and factors that show significant correlation or multicollinearity should be removed or replaced with other variables to ensure reliable results. **Table 4** shows the outcomes of the test to see if the independent variables were multicollinear.

As can be seen in **Table 4**, business return per share all have *VIF* values below 10. The its return was 1.368, and were 1.135. Since the *VIF* values of each independent variable were less than 10, multiple regression analyses integrating all three independent variables were performed.

Table 4. Multicollinearity statistics.

Variable	**Collinearity Statistics**	
	Tolerance	***VIF***
Company Risk	0.693	1.444
Company Return	0.731	1.368

4.2.2. Test for autocorrelation

One of the foundations of panel data regression is autocorrelation, which is always used before panel regression research since panel data regression spans a number of years and this issue typically arises in data with a high number of years (long panel data).

The Wooldridge autocorrelation test was used to verify the panel regression assumption that there was no autocorrelation. **Table 5** presents the results. In this test, there are usually two hypotheses: The alternative hypothesis contends that autocorrelation exists in the model, in contrast to the null hypothesis, which asserts that it does not. Because, as **Table 5** demonstrates, the *P*-value is greater than 0.05. This implies that the assumption of no autocorrelation in panel regression is true.

Table 5. Serial autocorrelation test.

Wooldridge test for autocorrelation in panel data
H0: No first-order autocorrelation
$F(1, 5) = 0.892$
$Prob > F = 0.462$

4.2.3. Unit root/Stationarity

It is sometimes advised to do a panel unit root test prior to using panel regression in order to prevent erroneous regression, particularly when the time panel data spans more than five years. The panel unit root utilised test findings, which indicate whether or not the data are stationary, are displayed in **Table 6**.

Table 6. Panel unit root tests for the variables at level.

Variable	**Statistic**	***p*-value**
Share price volatility		
Unadjusted *t*	−6.329	0.000
Adjusted *t**	−4.023	-
Firm return		
Unadjusted *t*	−8.227	-
Adjusted *t**	−6.789	0.000

It tests the following hypothesis:

- Ho: Panels contain unit roots;
- Ha: Panels are stationary.

The results of the panel unit root that was used to prevent erroneous regression are displayed in **Table 6**. The results displayed in **Table 6** demonstrate that no variable in the study is non-stationary since all of the variables utilised in the analysis had *p*-values larger than the 5 percent significant level.

4.2.4. Hausman test for random effect

To determine whether there is a random effect in panel data, the lagrangian multiplier test for random effect should be run before utilising a pooled ordinary least square regression, fixed effect, or random effect model. A fixed effect model or a random effect model is used to evaluate the influence of independent factors on the dependent variable in the event that a random effect is present.

Breusch and Pagan's Lagrangian multiplier test results for random effects are shown in **Table 7**. The LM test whether there is no variance across entities. This indicates that the units do not differ significantly (i.e., no panel effect). Based on the findings in **Table 7**, the null hypothesis was rejected and the alternative hypothesis was accepted since the *P*-value (0.000) was less than 0.05. (i.e., there is panel effect). For bank listed at Dar es salaam stock market exchange (DSE), panel models (fixed effect or random effect) are more useful than ordinal

(pooled) regression analysis for examining the effect of firm return on share price volatility.

Table 7. Breusch and Pagan Lagrangian multiplier test for random effects.

Estimated results	**Var**	**SD**
Share price volatility		
E	0.791	0.889
U	0.500	0.707
Var(*u*) = 0	1.251	1.501
Test	*chibar2*(*01*) = 253.820	
	Prob > *chibar2* = 0.000	

Table 8 shows the results of the Hausman test used to decide between the fixed and random effect models is appropriate to determine the of firm Return on share price volatility. Since the Hausman test always observes endogeneity present the in the panel regression analysis. **Table 8** depicts that the *p*-value for the test (*p*-value = 0.672) > 0.05, this implies that the model did not have an endogeneity effect. Therefore, the random effect model is appropriate to determine the of firm return on-share price volatility.

Table 8. Hausman specification test.

Variable	**Coefficient**		**Difference**	**standard error**
	B	**B**	**b-B**	**sqrt(diag(V_b-V_B))**
	Fixed	**random**	**-**	**S.E.**
Firm Return	−0.615	−0.581	−0.034	0.204
Chi-square test value	3.18	-	-	-
P-value	0.672	-	-	-

4.3. Random effect model

The model also generated beta coefficients that explain how changes in the independent variable (firm return influence the dependent variable (share price volatility). The data are shown in **Table 9** below.

Table 9. Show the results of Random effect model.

Share Price Volatility	***Coef.***	***St.Err.***	***t*-value**	***p*-value**	**95% Conf**	**Interval**	**Sig**
Firm return	−0.581	1.239	−0.470	0.639	−3.010	1.849	-
Constant	10.924	5.566	1.960	0.050	0.015	21.833	**
Mean dependent var	0.616		SD dependent var		0.889		
Overall r-squared	0.256		Number of obs		70.000		
Chi-square	65.963		*Prob* > *chi2*		0.000		
R-squared within	0.299		R-squared between		0.157		

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

4.4. Firm return and share price volatility

The second research purpose of the study was to ascertain how corporate return affected the volatility of share prices of Tanzanian commercial banks. The study's findings show that the volatility of the share prices of the selected banks is negatively impacted by corporate return. Company returns and share price volatility have a negative but insignificant correlation, with a coefficient of −0.581 and a *p*-value of 0.639, suggesting a negative but insignificant relationship. This further demonstrated how, in times of excess corporate return, commercial banks limit their customers' access to the range of investment opportunities. These findings contradict research by Edwards et al.[31], Frederick.[32] which discovered a positive correlation between

business performance and the volatility of share prices of commercial banks. However, the results contradict Groves [33], findings, which found a negative correlation between share price volatility and business performance. Conversely, the capacity of small- and medium-sized banks in the Kilimanjaro region to grow sustainably was significantly hampered by business return[34].

However, Hadad[35], no evidence of a relationship between corporate return and the share price volatility of Nepalese commercial banks in his investigation of the country's commercial banks. Moreover, the Indian study conducted by Hill et al.[36], found no correlation between the performance of a firm and the volatility of its share prices. This suggested that Indian commercial banks might concentrate on raising share price volatility while maintaining ROI.

Based on available data, there appears to be a favorable correlation between the volatility of bank share prices and bank corporate performance. Similar findings were found by Hsiao[37], who concluded that corporate return is one of the primary internal factors that specifically influence the volatility of Tanzanian commercial banks' share prices. However, a study conducted in Pakistan by Jareño et al.[38] found that share price volatility is strongly and favourably impacted by firm return. However, Jha and Hui[39] study conducted in Sri Lanka discovered that the country's corporate return has a major influence on the share price volatility of the nation's banks. Furthermore, a study conducted in Nigeria by Jilenga and Luanda[40] discovered a significant correlation between share price volatility and corporate return.

In contrast to other indicators like corporate risk and earnings per share, it turned revealed to have a significant impact on the volatility of share prices of Tanzanian commercial banks. Similar to this, John[41] found a positive correlation between firm risk and return after examining the impact of micro factors on the share price volatility of regional commercial banks in Sri Lanka. Furthermore, a study conducted in Rwanda by Kadioglu et al.[42], discovered a significant correlation (*P*-value of less than 0.05) between the volatility of bank share prices in Kigali and the requirements for earning per share. Again, because liquidity risk management has a greater impact on the provision of high-quality services in Tanzanian commercial banks, Kawshala and Panditharathna[43], research on the relationship between firm risk management and the volatility of these banks' share prices found that company return has a statistically significant impact on these banks' share prices. However, corporate risk is one of the most significant internal variables affecting the performance of Tanzanian commercial banks, according to a study on the factors influencing commercial banks carried out in[44].

There was no link found between the outcomes of research aim two and CAPM. Effective management practices convey a bank's value to the market, according to this theory. This suggests that a bank will be more likely to raise money and increase its participation in the company if it makes prudent internal management[45]. Thus, earnings per share is one aspect of good management that could influence the volatility of share prices. The study's conclusions, however, indicate that corporate risk has little effect on the profitability of commercial banks. Contrary to what CAPM claims, the study's findings show that earning per share, a wise management choice made by the bank, affects the institution's overall profitability. This investigation has demonstrated that this is untrue.

5. Conclusion and recommendation

However, the firm return is said to have a statistically little impact on Tanzanian commercial bank share price volatility. This suggested that businesses keep turning a profit even after returning investors' capital. Therefore, the volatility of the share prices of commercial banks is unaffected by their firm return. The commercial bank might lower share price volatility by raising its firm return, according to the analysis. Based on the information presented above, this study concludes as follows: Suggestions for enhancing the stability of share price volatility in Tanzania's banking sector. The research suggests that share price volatility be

increased in view of international banking laws. The study's findings also indicated that, from 2011 to 2020, firm return had a notable and negative impact on Tanzania's commercial banks' share price volatility.

This investigation's scope was restricted to the 2011–2020 ten-year timeframe. As a result, the study's conclusions might only be relevant within this period. In order to have broader coverage, the study recommends that future researchers extend the study's scope to include more than ten years.

Conflict of interest

The author declares no conflict of interest.

References

1. Abba GO, Okwa E, Soje B, Aikpitanyi LN. Determinants of Capital Adequacy Ratio of Deposit Money Banks in Nigeria. Journal of Accounting & Marketing. 2018; 07(02). doi: 10.4172/2168-9601.1000271
2. Abbas F, Ali S, Ahmad M. Does economic growth affect the relationship between banks' capital, liquidity and profitability: empirical evidence from emerging economies. Journal of Economic and Administrative Sciences. 2021; 39(2): 366-381. doi: 10.1108/jeas-03-2021-0056
3. Abdullah M, Parvez K, Ayreen S. Bank Specific, Industry Specific and Macroeconomic Determinants of Commercial Bank Profitability: A Case of Bangladesh. Dhaka. Business World Journal. 2014; 4(3).
4. Adhikary S. Financial Performance of Microfinance Institutions and Outreach to the Poor in South Asia [Master's thesis]. Aristotle University of Thessaloniki; 2014.
5. Al Salamat W, Momani MQM, Batayneh K. Firm-specific, microeconomic factors and stock price risk for Jordanian banks. Banks and Bank Systems. 2021; 16(3): 166-172.
6. Alemu S. Determinants of Commercial Banks Profitability in Ethiopian Commercial Banks [Master's thesis]. Addis Ababa University; 2015.
7. Ali MA, Shuib MS, Nor AM. Protection of Bank's Wealth: How is Islamic Banks's Financial Performance Affected by Asset Quality and Operational Efficiency. Universal Journal of Accounting and Finance. 2021; 9(4): 745-756. doi: 10.13189/ujaf.2021.090420
8. Ali M, Puah CH. The internal determinants of bank profitability and stability. Management Research Review. 2019; 42(1): 49-67. doi: 10.1108/mrr-04-2017-0103
9. Al-Kandari AM, Abul SJ. The Impact of Macroeconomic Variables on Stock Prices in Kuwait. International Journal of Business and Management. 2019; 14(6): 99. doi: 10.5539/ijbm.v14n6p99
10. Amoah JO, Ibrahim M, Madugu AH. Income diversification and profitability of banks: evidence from Ghana's banking sector. African Review of Economics and Finance. 2019; 11(2): 293-315.
11. Anandasayanan S, Subramaniam T. Liquidity Management and Profitability: A Perspective of Sri Lankan Licenced Commercial Banks. International Journal of Economics, Commerce and Management. 2020; 8(3).
12. Athanasoglou PP, Brissimis SN, Delis MD. Bank-specific, industry-specific and macroeconomic determinants of bank profitability. Journal of International Financial Markets, Institutions and Money. 2008; 18(2): 121-136. doi: 10.1016/j.intfin.2006.07.001
13. Ayanda AM, Christopher EI, Mudashiru MA. Determinants of banks' profitability in developing economy in Nigerian banking industry. Interdisciplinary Journal of Contemporary Research in Business. 2013; 4(1): 55-181.
14. Ayele AW, Gabreyohannes E, Tesfay YY. Macroeconomic Determinants of Volatility for the Gold Price in Ethiopia: The Application of GARCH and EWMA Volatility Models. Global Business Review. 2017; 18(2): 308-326. doi: 10.1177/0972150916668601
15. Ayele HN. Determinants of Bank Profitability: An Empirical Study on Ethiopian Private Commercial Banks [Master's thesis]. Addis Ababa University; 2012.
16. Bagh T, Razzaq S, Azad T, et al. The Causative Impact of Liquidity Management on Profitability of Banks in Pakistan: An Empirical Investigation. International Journal of Academic Research in Economics and Management Sciences. 2017; 6(3). doi: 10.6007/ijarems/v6-i3/3151
17. Bank of Tanzania. Risk based supervision framework. Bank of Tanzania; 2007.
18. Basha VJ, Tejesh HR. The Determinants of Bank Profitability: Empirical Evidence from India. IUP Journal of Bank Management. 2021; 20(3): 27-49.
19. Bastomi M, Salim U, Aisjah S. The Role of Corporate Governance and Risk Management on Banking Financial Performance in Indonesia. Jurnal Keuangan dan Perbankan. 2017; 21(4). doi: 10.26905/jkdp.v21i4.1285
20. Borg. Population Distribution. Journal of Development. 2007; 12-24.
21. Çekrezia A. Factors affecting performance of commercial banks in Albania. The European Proceedings of Social & Behavioral Sciences. 2015.
22. Chandrashekar R. Microeconomic variables and stock prices in emerging economies: A panel analysis. Theoretical and Applied Economics. 2018; XXV(3): 91-100.
23. Chi-chi OA, Ogomegbunam OA. Relationship between Micro-Economic Variables and Budget Deficit.

International Journal of Management Sciences. 2013; 1(10): 416-426.
24. Chronopoulos DK, Liu H, McMillan FJ, et al. The dynamics of US bank profitability. The European Journal of Finance. 2013; 21(5): 426-443. doi: 10.1080/1351847x.2013.838184
25. Cooper D, Schindler P. Business research methods. McGraw-Hill; 2003.
26. Datta CK, Al Mahmud A. Impact of capital adequacy on profitability under Basel II Accord: Evidence from commercial banks of Bangladesh. European Journal of Business and management. 2018; 10(8): 48-58.
27. Demsetz H. Industry Structure, Market Rivalry, and Public Policy. The Journal of Law and Economics. 1973; 16(1): 1-9. doi: 10.1086/466752
28. Diamond DW, Raghuram A. A Theory of Bank Capital. The Journal of Finance. 2012; 52(6): 12-23.
29. Dietrich A, Wanzenried G. Determinants of bank profitability before and during the crisis: Evidence from Switzerland. Journal of International Financial Markets, Institutions and Money. 2011; 21(3): 307-327. doi: 10.1016/j.intfin.2010.11.002
30. Eden S. Determinants of Financial Reporting Quality: Evidence from Ethiopian private banks. Addis Ababa University; 2017.
31. Edwards S, Allen AJ, Shaik S. Market structure conduct performance (SCP) hypothesis revisited using stochastic frontier efficiency analysis. Journal of the Transportation Research Forum. 2006; 48(55121).
32. Frederick NK. Factors Affecting Performance of Domestic Commercial Banks in Uganda. International Business Research Conference; 2015.
33. Groves R. Survey Methodology. SAGE Publications; 2004.
34. Gujarati DN, Porter DC, Gunasekar S. Basic econometrics. Tata McGraw-Hill Education; 2012.
35. Hadad F. Financial performance of Rural Banks in Naara Rural Bank Ghana. European Journal of Banking and Finance. 2013; 11(3): 41-50.
36. Hill RC, Griffiths WE, Lim GC. Principles of econometrics. John Wiley & Sons; 2018.
37. Hsiao C. Panel data analysis—advantages and challenges. TEST. 2007; 16(1): 1-22. doi: 10.1007/s11749-007-0046-x
38. Jareño F, Escribano A, Cuenca A. Microeconomic variables and stock markets: An international study. Applied Econometrics and International Development. 2019; 19(1): 43-57.
39. Jha S, Hui X. A Comparison of Financial Performance of Commercial Banks in Nepal. African Journal of Business Management. 2014; 6(25): 7601-11.
40. Jilenga MT, Luanda P. Factors influencing profitability of commercial banks in Tanzania: A case study of CRDB Bank Plc. Economics. 2021; 8(1): 61-69.
41. John EI. Effect of Microeconomic Variables on Stock Market Performance in Nigeria. Journal of Economics, Management and Trade. 2019; 1-14.
42. Kadioglu E, Telceken N, Ocal N. Effect of the Asset Quality on the Bank Profitability. International Journal of Economics and Finance. 2017; 9(7): 60. doi: 10.5539/ijef.v9n7p60
43. Kawshala H, Panditharathna K. The Factors Effecting on Bank Profitability. International Journal of Scientific and Research Publications. 2017; 7(2).
44. Kessy ER, Mayala NM, Taya AL. Assessment of Assets Quality and Liquidity on Sustainable Growth Rate of Small and Medium Banks in Kilimanjaro, Tanzania. International Journal of Contemporary Applied Researches. 2021; 8(8): 72-86.
45. Kosmidou K. The determinants of banks' profits in Greece during the period of EU financial integration. Managerial Finance. 2008; 34(3): 146-159. doi: 10.1108/03074350810848036