



## Effects of Macroeconomic Variables On Performance of Listed Firms at Dar es Salaam Stock Exchange, Tanzania

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### **Abstract**

**Purpose:** This article analysed the effect of macroeconomic variables on 21 DSE-listed firms from 2006 to 2021 due to past inconclusive results from other research across the globe.

**Methodology:** Mixed-sequential explanatory research design was used. Secondary panel data were collected from DSE while qualitative data was collected via semi structured interviews. Random effect model and thematic analysis were utilized for data analysis.

**Findings:** The study found that GDP, inflation, and money supply had significant positive coefficients, while interest rates and exchange rates had significant negative coefficients, indicating that macroeconomic conditions have a substantial effect on firm performance.

**Practical implications:** The findings suggest that firms should proactively manage macroeconomic conditions to remain competitive and sustainable

**Originality/Value:** The study's uniqueness lies in its use of qualitative data to support quantitative findings and its examination of the link between macroeconomic conditions and listed firm performance in Tanzania, where little similar research has been conducted.

## **Introduction**

Variations in macroeconomic variables have an influence on the optimal performance of publicly traded companies. These elements are external to the organization and are beyond the control of management. Politico-environmental variables, suppliers, government regulations, and competitors all play an influence (Issah & Antwi, 2017). Multiple external factors influence the earnings growth of a corporation (Obeng-Krampah, 2018). Despite the existence of the aforementioned variables, many researchers regard the exchange rate, government expenditures, unemployment, population, interest rate, inflation rate, money supply, and Gross Domestic Product (GDP) to be the most crucial and well-established factors (World Bank Report, 2019; Haider et al., 2018; Issah & Antwi, 2017; Ngowi, 2015). When assessing the importance of disclosing to the government, stock exchange, listed firms, and investors the impact of macroeconomic factors on the performance of listed firms, it is vital to keep in mind that these variables are not independent (Epaphra & Salema, 2018).

The relationship between macroeconomic conditions and the performance of publicly traded enterprises has been the subject of numerous studies, although experts have obtained contradictory findings. Using data from Jordan, Zeitun et al. (2007) proved that the cost of debt is influenced by macroeconomic variables such as the exchange rate, since a high exchange rate leads to an increase in interest rates, which in turn affects other sectors. Rehman (2016) of Pakistan investigated seven macroeconomic indicators and discovered that inflation rate was favorably correlated with firm performance, whereas exchange rate, money supply, and other factors were adversely correlated with the performance of listed enterprises.

Dewi et al. (2019) in Indonesia found that the country's inflation rate decreased the earnings of publicly traded companies. In Iran, Alibabae and Khanmohammadi (2016) found that while inflation and interest rates had a negative impact on company performance, the exchange rate had a beneficial impact. According to Tuncay and Cengiz (2017), the Turkish experience reveals a favorable association between company performance (profitability) and GDP. Gatsimbazi et al. (2018) discovered that the performance of listed enterprises was inversely connected with GDP,

exchange rate, and inflation rate (2018). According to the findings of Ismail et al. (2018), GDP and interest rates positively impact the performance of Malaysian firms. In an African context, the effect of macroeconomic conditions on corporate performance has also been explored. Gatsi et al. (2013) investigated firm performance in Ghana and discovered that fluctuations in the country's currency rate, interest rate, and inflation rate were positively connected with firm performance. Omodero and Mlanga (2019) found a negative correlation between company performance, interest rates, and currency exchange rates in Nigeria. In their 2015 analysis, Simiyu and Ngile discovered a negative association between publicly traded enterprises in Kenya and GDP growth. In contrast, Kolapo et al. (2018) found a positive correlation between GDP and money supply and firm performance in the Nigerian economy, whereas earlier study proved the opposite. There is a paucity of study on how changes in Tanzania's macroeconomic environment affect the performance of publicly traded enterprises. For instance, Epaphra and Salema (2018) and Gwahula (2018) analyzed stock prices and stock market performance, but their evaluations of the factors (inflation rate, GDP, money supply, and exchange rate) revealed contradictory results.

The relationship between macroeconomic conditions and firm performance is complex, as demonstrated by the inconsistent results from previous research. Inflation, interest rates, currency exchange rates, and GDP are some of the macroeconomic factors that can significantly impact a firm's finances, which are outside the control of management. Such impact arise due to the fact that the firms operate within the vicinity of such macroeconomic conditions and they have no way to escape or manipulate them but rather they can only cope or stand to be wiped out. As such It is crucial for firms to understand the context-specific influence of these factors and adjust their strategies accordingly. Policymakers and business leaders must comprehend the connection between macroeconomic factors and corporate performance to make informed decisions that promote a healthy economy. Additionally, further research is needed to provide further elaboration into the inconsistencies and develop suitable macroeconomic policies

Consequently, the primary objective of this article was to investigate the macroeconomic determinants influencing the performance of DSE-listed enterprises. By comparing firm performance to macroeconomic variables such as interest rate, exchange rate, inflation rate, money supply, and GDP, the purpose was achieved. This lead to testing the subsequent hypothesis: The performance of Dar es Salaam Stock Exchange-listed companies is affected by macroeconomic conditions.

### **Theoretical Underpinnings of Paper**

The research was guided by Open Systems Theory (Bertalanffy, 1969), which states that "organizations operate in an open context in which their activities are significantly affected by macroeconomic forces in the environment." The organization has no control over the macroeconomic forces in their entirety. Firms must contend with macroeconomic forces such as the interest rate, currency rate, money supply, inflation rate, and GDP.

This idea demonstrates that an organization cannot succeed on its own and must instead rely on the macro economy. Firms must both adapt to their environment and capitalize on the risks associated with interactions (Owolabi, 2017; Laszlo & Krippner, 1998; Buckley, 1967). Bertalanffy (1969) asserts that managers of enterprises must be cognizant of their surroundings and how it influences corporate performance. In essence, we might argue that a firm's ability to respond and adapt to an ever-changing environment is contingent on its macroeconomic environment.

The firm's problems stem from the fact that it will always play a reactive role with regard to the fluctuations in macroeconomic variables; it has no control over inflation or exchange rates, and the only option it has when such variables shift is to respond to the changes with complex solutions that are within the vicinity of its existing resources, which can ultimately have a negative impact on firm performance. Theoretically, organizations will have a competitive edge if their organizational structure is well-aligned with their external environment. This is due to the fact that external/macroeconomic forces may always influence their performance.

### Research Methodology

This report is based on a study employing a mixed research approach with an explanatory sequential layout. This strategy includes tools for qualitative and quantitative data collection, analysis, and interpretation (Creswell & Plano Clark, 2011). The concept of multiple approaches was chosen since it yields more dependable and valid findings than a single method (Bentahar & Cameron, 2015). Using a combined research technique, however, makes it easy to verify data from both methods (Creswell, 2013). Using this strategy, a researcher collects both quantitative and qualitative data. In the second step of data collection, the researcher collects qualitative data after acquiring quantitative data for validation. The quantitative data gathered during the initial phase of data collection are related to the qualitative data collected during subsequent phases. (Bryman & Bell, 2015).

### Model Specification and Data Analysis

Multiple linear regression was performed in order to undertake an analysis of the data. Several studies (Dewi et al., 2019; Issah & Antwi, 2017; Alibabae & Khanmohammadi, 2016) have utilized panel data and multiple linear regression to examine the relationship between macroeconomic variables and the performance of enterprises. Due to the continuous nature of the dependent variable, multiple regression was a suitable statistical technique for this inquiry. Equation (i) displays the model that was employed in this study.

$$ROA_{it} = \beta_0 + \beta_1 GDP_{it} + \beta_2 IR_{it} + \beta_3 IFR_{it} + \beta_4 MS_{it} + \beta_5 EXR_{it} + \beta_6 FS_{it} + \beta_7 FA_{it} + \beta_8 GDIVER_{it} + FD_i + TD_t + \varepsilon_{it} \dots \dots \dots (i)$$

ROA is the dependent variable,  $\beta_0$  is the constant,  $\beta_1$  to  $\beta_7$  are the estimated coefficients of GDP, interest rate, inflation rate, money supply, exchange rate, business size, firm age, and geographical diversity.  $FD_i$  is a firm dummy that represent the unique influence of a time invariant firm specific factors, whereas  $TD_t$  is a time dummy that represents the unique influence of a time variant factors, and  $\varepsilon$  is an error term that is intended to be white noise, where i and t are respective firm and time units. The

researcher conducted additional regression analyses to determine if the results were compatible with the foundational model. The DSE's Main Investment Market (MIM) and Enterprises Growth Market (EGM) windows were utilized for the research. In the investigations, three estimates 1 and 2, were used for each window.

Based on the study questions, an interview guide was prepared for qualitative analysis. In order to make sense of and utilize the acquired data, theme analysis was applied to the data analysis process. The process of thematic analysis involves identifying, analyzing, and presenting a comprehensive account of the collected and identified topics (Braun & Clarke, 2006). Previous research on the macroeconomic variables that influence firm performance yielded five pre-established themes. The topics covered exchange rate, interest rate, inflation rate, money supply and GDP.

### **Data Type and Sources**

For qualitative data collection, semi-structured interviews were used. It is thought that the strategy is adaptable and compatible with numerous data-analysis techniques. Using this method, the researcher conducted interviews with a subset of participants and allowed them to respond freely to the interview questions (Bryman, 2016). Secondary panel data on the dependent variable were obtained from the audited annual financial reports of DSE-listed companies (firm performance in terms of Return on Assets). Similarly, panel data for macroeconomic variables like GDP, inflation rate, interest rate, currency rate, and money supply were gathered from the National Bureau of Statistics (NBS) and the Bank of Tanzania's annual reports (BOT). Since they provided for realistic and generalizable results, panel data for all locally listed enterprises were utilized from 2006 to 2021 (Baltagi, 2005). Panel data were used because they may combine cross-sectional and time series dimensions, eliminate measurement challenges caused by omitted and unobservable variables, and produce more trustworthy and generalizable conclusions than cross-sectional and time series data alone (Biorn, 2017; Woodridge, 2002). In terms of chronology, the study data began in 2006, when DSE began electronically storing data. Moreover, the Tanzania Company Act of 2002 became effective in 2006, and the bulk of listed businesses began to comply with the Act's provisions in that year. The majority of publicly traded

corporations implemented International Financial Reporting Standards (IFRSs) for financial report production in 2006. Consequently, data collection happened between January and December for each of the years studied.

### **Sampling and Sample Size**

Nine respondents, including two regulators(R) named R1 and R2 and one broker (B) sampled purposively and named B1, participated in semi-structured interviews. In addition, data was collected from six listed firms (F) acquired from two clusters, namely four from the MIM window out of sixteen firms (called F1, F2, F3, and F4), and two from the EGM window out of five listed firms that were available during the data collection period (named F5 and F6). Due to the considerable information, experience, and skills that the sampled respondents have regarding the issue of the study, a diverse group was sampled to provide key informants. In conducting interviews, ethical problems and methods that protected the anonymity, privacy, and dignity of interviewees were taken into account (Bryman, 2016).

The researcher selected firms to participate in the study using a census-like method in which all locally listed businesses were considered for inclusion. This is because there were just a few of companies listed on the DSE, and deleting some of them would lower the quantity of observations, so calling into doubt the veracity of the conclusions. Therefore, the sampling frame includes all 21 local enterprises that were trading on the DSE at the end of 2021.

### **Quantification of Variables**

Several financial indicators, including Return on Assets (ROA), Return on Equity (ROE), Return on Sales (ROS), and Sales Growth (SG), have been used to analyze firm's performance (Tangen, 2003). In this study, the ratio of ROA to firm performance served as the dependent variable. This is due to the fact that ROA is the most commonly used financial ratio to evaluate performance, since it measures the ability of corporate managers to use firm assets to generate profits for the organization (Liargovas and Skandalis, 2010). Other academics have utilized ROA as a way for measuring firm performance (Issah and Antwi, 2017; Kanwal and Nadeem, 2013). Equation (ii) contains the utilized ROA formula

$$ROA = \frac{\text{profit before tax}}{\text{Total Assets}} \dots\dots\dots (ii)$$

According to the World Bank Report (2019) and Ngowi (2015), the macroeconomic variables that have the greatest influence on company performance are the exchange rate, the GDP, the interest rate, the inflation rate, and the money supply. In this study, these variables, as well as firm size, age, and business diversification, served as control variables. Table 1 depicts the variables and their projected values.

**Table 1: Description of variables and their expected signs**

Variables	Measurement	Type of variable	Expected sign
<b>Return on Asset (ROA)</b>	Profit before tax/ Total Assets	Dependent	
<b>Gross Domestic Product (GDP)</b>	Final output of goods and services.	Independent	(+/-)
<b>Interest Rate (IR)</b>	Interest rate during the year computed by Bank of Tanzania (BOT)	Independent	(+/-)
<b>Inflation Rate (IFR)</b>	Consumer Price Index (CPI) annual percentage changes.	Independent	(+/-)
<b>Money Supply (MS)</b>	Volume of Tanzania Shillings in the economy	Independent	(+/-)
<b>Exchange rate (EXR)</b>	Exchange rate during a year between USD and TZS	Independent	(+/-)
<b>Firm Size (FS)</b>	Natural logarithm of total assets in the period	Control	(+/-)
<b>Firm Age (FA)</b>	Number of years since incorporated till the period of study	Control	(+/-)
<b>Geographical diversification (GDiver)</b>	1 for some diversification; 0 for none	Control	(+)

**Diagnostic Tests**

The null hypotheses of normality, multicollinearity, heteroscedasticity, and autocorrelation were examined using diagnostic tests. These tests were conducted before the regression analysis to determine whether or not the data satisfied the requirements for the regression analysis. (Kennedy, 2008; Bryman & Cramer, 2001).

**Normality**

In determining normalcy, skewness and kurtosis are calculated (Gujarati, 2004). Normally distributed data are said to have a skewness of 0 with an acceptable range of -1.0 to +1.0 a and a kurtosis range of -3.0 to 3.0 a. (Rehman, 2016). As depicted in Table



5, the results of this study indicated that the skewness of ROA was within the acceptable range of skewness (-0.72) and that the kurtosis value was also within the acceptable range (2.74), favoring normality and other variables falling within the acceptable range for skewness and kurtosis respectively.

### Multicollinearity Test

Using a Pearson correlation matrix, the multicollinearity hypothesis was examined. When the correlation coefficients between variables are either 0.90 or 0.90, multicollinearity is presumed to occur. (Field, 2013). When two variables are highly correlated, multicollinearity axioms are violated. Since both variables measure the same effect, one must be deleted to reduce redundancy. Table 2 displays the Pearson correlation matrix for the variables under investigation.

**Table 2: Pearson Correlation matrix for independent and dependent variables**

Variables	ROA	Gross domestic product	Interest rate	Inflation rate	Money supply	Exchange rate	Geographical diversification	Firm size	Firm age
ROA	1								
Gross domestic product	-0.0978	1							
Interest rate	0.189	-0.2567	1						
Inflation rate	0.113	0.1416	-0.0918	1					
Money supply	0.0937	-0.0836	0.2985	0.4882	1				
Exchange rate	-0.2784	0.317	-0.6404	-0.5591	-0.4821	1			
Geographical diversification	0.2525	-0.0693	0.1469	0.0333	0.0964	-0.1674	1		
Firm size	0.2387	-0.0111	-0.0582	0.1538	-0.0455	-0.0701	-0.1147	1	
Firm age	0.2835	-0.0234	0.0106	-0.0457	0.032	0.0073	0.5606	0.0063	1

Since there was no reason to be concerned about multicollinearity between the variables in Table 2, all of them were preserved. This was demonstrated by correlation coefficients that were within the allowed range (+0.9 or -0.9). Moreover, Variance Inflation Factors (VIFs) were utilized to assess multicollinearity. As seen in Table 3, multicollinearity was not an issue, as the VIF values were less than 10. This result is supported by Gikombo and Mbugua (2018). According to them, VIF must exceed 10 if there is a multicollinearity concern.

**Table 3: Variance Inflation Factor (VIF)**

Variable	Exchange rate	Inflation rate	Interest rate	Firm age	Geographical diversification	Money supply	Gross domestic product	Firm size
VIF	6.95	4.84	4.25	1.9	1.85	1.65	1.53	1.1
1/VIF	0.143895	0.206514	0.235124	0.525438	0.540542	0.607497	0.651822	0.908423

### Heteroscedasticity Test

In addition, heteroscedasticity was evaluated by searching for residuals with constant variance. The Breach-Pagan/Cook-Weisberg test was used to determine whether or not this assumption was valid. According to Biorn, the heteroscedasticity assumption is met when the p-value is greater than 0.05. (2017). the chi2-statistic p-value for ROA (3.68), which was 0.0652, exceeded the significance level of 0.05. Therefore, the null hypothesis was correct, and ROA did not have an issue with heteroscedasticity.

### Autocorrelation test

In addition, autocorrelation was investigated. The autocorrelation assumption is satisfied when the values of identical variables do not vary in the same way across time (Pallant, 2010). This demonstrates that historical values cannot be used to predict the future. Using the Wooldridge (2002) test, this assumption's validity was determined. If the p-value is more than 0.05, the hypothesis is valid. In this investigation, the p-value of the F-statistic (0.182) was 0.6739, which exceeded the significance threshold of 0.05 for ROA. Therefore, the validity of the null hypothesis was confirmed. As a result, ROA experienced no issues with first-order autocorrelation.

### Hausman test

The Hausman Specification Test was utilized to pick between the Random Effect (RE) model and the Fixed Effect (FE) model during data analysis. The RE model implies the group's average score is randomly selected from the population, whereas the FE model believes the group's average score is fixed. Table 4 details the outcomes of the Hausman Specification.

**Table 4: Hausman test for RE model**

Return on assets (ROA)	chi <sup>2</sup> (8)	2.43
	Prob >chi <sup>2</sup>	0.9320

The difference between Prob>chi2 and the alpha level threshold of 0.05 is 0.9321, which is greater than the significance level of 0.05, as shown in Table 4. This suggests that the null hypothesis (Ho) was true and that coefficient differences were not consistent. This demonstrates that each company's faults were distinct, ad hoc, and unrelated to its performance. Therefore, it was found that the random effect model was adequate for our investigation.

## Findings and Discussion

### Descriptive statistics on macroeconomic variables and performance of firms

The purpose of the study was to examine the effect of macroeconomic conditions on the performance of publicly traded companies. Both dependent and independent variables were examined. To provide a thorough overview of the variables, a descriptive analysis was performed, which included the computation of means, standard deviations, minimum and maximum values. Table 5 contains descriptive data for the dependent variable (ROA), the independent factors (GDP, interest rate, inflation rate, money supply, and exchange rate), and the control variables (firm size, firm age, and geographic diversity).

Variable	Obs	Mean	Std. Dev.	Min	Max	Skewness	Kurtosis
Return on assets	265	12.19731	25.02674	-163.77	69.26	-0.726871	2.747115
Gross domestic product	265	3.189736	0.704925	1.29	4.34	-0.284443	2.526854
Interest rate	265	6.7963	0.990476	5.46	8.92	0.7701361	2.535756
Inflation rate	265	8.615022	3.424684	5.17	16	0.8193806	2.456753
Money supply	265	22.52612	1.187263	20.09	24.87	-0.3344404	2.851284
Exchange rate	265	1789.491	394.4972	1196.31	2288.2	-0.0265989	1.451589
Firm size	265	7.696089	1.105455	4.674724	10.13887	-0.2197617	2.084392
Firm age	265	23.56828	17.16032	0	69	0.9909744	2.024824
Geographical diversification	265	0.5594714	0.4975477	0	1	-0.2395863	1.057402

**Table 5: Descriptive results on independent and dependent variables**

The average value of the dependent variable (ROA) in Table 5 was 12.20, which was less than its standard deviation of 25.03. This demonstrates the large range of ROA values, with the lowest number being -163.77 and the highest value being 69.26. The mean value of GDP was \$3.19 more than its standard deviation of \$0.70, and it ranged from \$1.29 to \$4.34 based on the results of the independent variables. The average interest rate was \$6.80, with a standard deviation of 0.99. The lowest and highest

figures were 5.46 and 8.92, respectively. The Inflation Rate (IFR) had a standard deviation of 3.42, with minimum and maximum values of 5.17 and 16, respectively. The standard deviation of Money Supply (MS) was 1.19 and the mean value was 22.53. The minimum value was 20.09, while the maximum value was 24.87. The standard deviation of Exchange Rate (EXR) exceeded its mean of 1789.49. Minimum possible value was 1196.31, and maximum possible value was 2288.2. The averages for Firm Size (FS) and Firm Age (FA) were 7.80 and 23.6 years, whereas the average for Geographical Diversity (GD) was 0.50. (FA).

**Regression analysis results on macroeconomic variables and firm performance**

The researcher conducted a regression analysis utilizing the Random Effect model as a reference point to estimate the impact of macroeconomic conditions on the performance of DSE-listed enterprises. Three estimations, labelled 1, 2, and 3, were conducted to determine the reliability of the model's results. To see if the findings remained unchanged, control variables were subtracted from each estimation. Table 6 provides a summary of the results of the analyses.

**Table 6: Baseline model on macroeconomic variables affecting firm performance**

Variables	ROA		
	1	2	3
Gross domestic product (GDP)	21.1888*** (8.180)	19.8419** (8.158)	16.5484** (8.184)
Interest Rate (IR)	-24.2172* (13.642)	-25.4481* (13.670)	-23.7600* (13.560)
Inflation Rate (IFR)	5.3376*** (1.929)	5.6335** (2.392)	5.0629*** (1.926)
Money Supply (MS)	11.5413* (7.009)	9.4025* (5.681)	9.7485* (5.732)
Exchange Rate (EXR)	-0.0649** (0.028)	-0.0607** (0.028)	-0.0614** (0.028)
Firm size (FS)		2.9965** (1.395)	3.1074** (1.391)
Firm age (FA)	0.4118* (0.242)		
Geographical diversification (GDIVER)	33.9133** (14.839)	31.4181** (13.172)	
Firm dummy	Yes	Yes	Yes
Firm dummy	Yes	Yes	Yes
Constant	0.0000 (0.000)	0.0000 (0.000)	0.0000 (0.000)
Observations	265	265	265

Standard errors in parentheses Key: \* Significant at 10%, \*\* significant at 5%, \*\*\* significant at 1%

Table 6 provides a summary of the baseline model findings (RE) when ROA was the dependent variable. The baseline model was executed with three estimations to verify the consistency of the reported results. GDP, IFR, and MS had positive coefficients, whereas IR and EXR had negative coefficients across all three estimations. In contrast, all calculations revealed that all control variables (FA, FS, and GDIVER) had positive coefficients.

Regarding Gross Domestic Product (GDP), Table 6's findings demonstrated a positive effect between GDP and firm performance. This was observed in each of the model's three estimations. This implies that a growth in GDP promotes an increase in firm profitability and attracts an influx of investors to the capital markets, which positively impacts the performance of listed firms. These findings are consistent with those of Tuncay & Cengiz (2017) and Ismail et al. (2018), but they contradict those of Gatsimbazi et al. (2018), who discovered that GDP had a negative effect on company performance. Despite the fact that reality demonstrates that GDP affects firm performance, changes in circumstances and economic policies can lead to contradictory results. The findings confirm the Open systems theory, which contends that because a company operates in an open environment, its operations and performance are likely to be affected by macroeconomic variables that are beyond the control of management.

The findings verify the claims of key informants who asserted that when a country's GDP rises, it draws improved performance of enterprises via an increase in investors who bring more income to firms as well as an increase in consumption among the population. For instance, a key informant stated,

*"Improvement in GDP signifies improvement in country output, the capacity to consume, and, consequently, more revenue for the corporation"* (Broker Representative, December 2021).

The findings given in Table 6 indicate that interest rate (IR) has a substantial negative connection with company performance. In all three estimates of the baseline model, the outcomes were consistent. The findings suggest that as interest rates rise, investors gravitate toward fixed-interest investments (treasury bills and bonds) in the

context of capital markets (share). In addition, an increase in the interest rate raises the cost of borrowing for businesses, which reduces their profit margins and, ultimately, their performance. These results are consistent with those of other researchers (Alibabae & Khanmohammadi, 2016; Ismail et al., 2015). On the other hand, the results contradict the findings of Ismail et al. (2018) and Gatsi et al. (2013), who demonstrated that interest rate had a considerable beneficial effect on business performance. This discrepancy may be attributable to varying economic policies in the nations where study was conducted.

Similar to these findings, a number of interviews with various key informants revealed that the rise and fall of IR has both positive and negative effects on the firm's performance, in the sense that when interest rates rise, it encourages investors to switch to fixed investments, which reduces the firms' liquidity. In addition, an increase in IR on borrowing raises corporate borrowing costs, causing firms to use a portion of their profits to repay bankers, so reducing their performance. In support of this, a senior official from a publicly traded company was quoted as saying,

*"The higher the interest rate, the higher the cost of borrowing, which can have a detrimental impact on a company's growth and consequently its performance"* (Firm representative, December, 2021).

According to the findings presented in Table 6, IFR had a favorable and statistically significant influence on business performance. The results were consistent across all three estimations of the baseline model. The data suggest that inflation expectations increase money supply. Consequently, as inflation is anticipated, an increase in prices would also boost earnings, leading firms to pay more dividends and thereby increasing the price of shares, which will result in an overall improvement in firm performance. The findings are congruent with those of Al-Homaidi et al. (2019) and Rehman (2016), but discordant with those of Dewi et al. (2019), Gatsimbazi et al. (2018), and Alibabae & Khanmohammadi (2016), who reported a negative connection. These results corroborate the Open Systems Theory's thesis that IFR, a component of the macroeconomic environment around the company, has both positive and negative

effects on firm performance. The direction of IFR determines whether the effect is positive or negative.

As a means of validating these findings, interview sessions with several key informants indicated the same trends, namely that inflation rate damaged the performance of enterprises since it pushed up high expenses quicker than firms could pass them on to customers. This could have a detrimental effect on company earnings. In addition, Table 6's findings regarding money supply reveal that money supply had a favorable effect on business performance, and the results were consistent across all three estimations. The results indicate that an increase in money supply has cascading consequences on the economy. As the money supply grows, it produces a rise in the demand for money and the expansion of economic activity, as well as an increase in cash flows that leads to a rise in stock values. In a similar manner, economic expansion coming from increasing stock money growth causes firms to expand their operations, resulting in larger sales and profitability, and subsequently a higher dividend payout, which is indicative of improved firm performance. The outcomes concur with those reported by Haider et al (2018).

The results of Exchange Rate (EXR) as shown in Table 6 suggest that EXR rate had a significant negative effect on firm performance, and this pattern was observed in all three estimations conducted with the baseline model. The findings suggest that currency stability has a bigger impact on business performance in the sense that it attracts international capital market investors. And vice versa, the greater the influx of foreign investors, the more stable the currency. Similarly, the higher the EXR, the weaker the performance of local enterprises engaged in international trade. These results parallel those of Rehman (2016), Gatsimbazi et al. (2018), and Zeitun et al (2007). In contrast, Alibabae & Khanmohammadi (2016) and Ismail et al. (2015) discovered a favorable association between exchange rate and company performance. The results of interviews with key informants revealed the same patterns. As an example, one of them was cited as saying:

"The exchange rate influences the market performance of a company. Taking into account that our market is open to international investment, a stable exchange rate may attract investors since it protects them from exchange loss, resulting in a rise in the share price of the company and an increase in its return on assets" (Senior Officer, December 2021).

### **Hypothesis testing results on effect of macroeconomic variables on firm performance**

In testing the hypothesis for this study, the researcher's own hypothesis was evaluated. According to the null hypothesis, macroeconomic variables have no effect on the performance of firms listed on the Dar es Salaam Stock Exchange. The effect of macroeconomic factors (GDP, IR, IFR, EXR, and MS) on firm performance can be inferred from the fact that all five investigated variables had a substantial effect on firm performance. The results led to the rejection of the null hypothesis and the validation of the alternative hypothesis. Thus, it can be concluded that macroeconomic variables impact the performance of DSE-listed firms.

**Table 7: Summary of results of measured variables**

<b>Variable</b>	<b>Results</b>	<b>Remarks</b>
GDP	At 0.05	Statistically significant
IR	At 0.1	Statistically significant
IFR	At 0.01	Statistically significant
MS	At 0.1	Statistically significant
EXR	At 0.05	Statistically significant

### **1.4.4 Robustness check for the effect of macroeconomic variables on firm performance**

To assess the robustness and consistency of the results obtained from the baseline model employing the random effect model, the researcher conducted additional study using the two windows accessible at DSE. The MIM window, which had sixteen firms, and the EGM window, which had five firms, are the windows (DSE, 2018). In this analysis, the researcher employed variables identical to those in Table 6's baseline model. ROA was used as the dependent variable as a proxy for firm performance, whereas GDP, IR, IFR, MS, and EXR were employed as treatment variables. In addition,



business size, age, and geographical diversity served as control factors. The results of this analysis are shown in Table 8.

**Table 8: Analysis by Window**

Variables	ROA	ROA	ROA	ROA
	1	2	1	2
	MIM	MIM	EGM	EGM
Gross Domestic Product (GDP)	22.5682** (9.863)	22.5536** (10.006)	10.7867** (5.078)	12.5789** (6.137)
Interest Rate (IR)	-30.8909* (16.668)	-30.9156* (16.981)	-25.4481* (13.67)	-26.6604* (13.786)
Inflation Rate (IFR)	5.8171** (2.347)	5.7879** (2.385)	5.8584*** (2.105)	5.5836*** (2.061)
Money Supply (MS)	11.7510* (6.655)	11.1992* (6.727)	9.3973* (5.552)	9.3935* (5.496)
Exchange Rate (EXR)	-0.0737** (0.034)	-0.0743** (0.035)	-0.0578** (0.025)	-0.0547** (0.025)
Firm Size (FS)		3.5751** (1.648)	2.9965** (1.395)	
Firm Age (FA)	5.0954** (1.427)			5.8051*** (1.032)
Geographical diversification (GDIVER)	18.9190** (8.000)		16.7177** (8.027)	
Time Dummy	Yes	Yes	Yes	Yes
Firm Dummy	Yes	Yes	No	No
Constant	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
Observations	206	206	59	59

Standard errors in parentheses Key: \* Significant at 10%, \*\* significant at 5%, \*\*\* significant at 1%

Table 8 presents two estimations for each window based on the findings of the robustness test. The results indicate that there was consistency between the results reported in the baseline model and those in the robustness check based on the two windows presented previously. In this sense, the acquired results are convincing in their robustness and consistency. Thus, the null hypothesis was rejected further.

**Conclusions and Recommendations**

**Conclusions**

This paper sought to examine the effects of macroeconomic variables on firm performance in Tanzania. The study found that all macroeconomic variables affected

performance of the sampled listed firms. The findings imply that, despite the fact that these factors are out of the firms' management control, there is a need for firms to have a clear understanding of the behaviour of these factors. This is because such factors surround and effect the business in either positive or negative ways. Thus, understanding these variables will enable firms to think ahead, formulate and implement better and mitigating strategies. Firms that have learnt to accommodate their surrounding business environment operate optimally, encourage the firms to innovate and increase productivity, maximize the level of shareholders, and this ultimately leads to firm's better performance. Therefore, managers and other related stakeholders need to know that there is a direct relationship between macroeconomic variables and performance of listed firms because more money in the economy; facilitated by money supply, interest rate, inflation rate, GDP, and exchange rate; leads to more public participation in the equity market which enhances an increase in firm performance.

### **Recommendations**

In line with the findings obtained and the above conclusions, the following recommendations are given. Since GDP has a positive effect on firm performance, it is recommended that the government; through the Ministry of Finance and Planning, Bank of Tanzania and other regulatory bodies; should ensure that they create friendly policies, regulations and environment that will increase productivity of individual firms in the country. Such increase will foster GDP growth and hence promote firm performance. Interest rate was observed to have a negative but significant effect on firm performance. This implies that the higher the interest rate, the lower the firm performance. In this regard, it is recommended to the Central Bank (BoT) to ensure that interest rate is not high as higher rates may be exploitative and may not stimulate growth of specific firm performance. Similarly, firm managers are urged to consider interest rates in making borrowing decisions lest tremendous losses occur to their firms.

The government, through the Ministry of Finance and Planning and BOT, should ensure that inflation rate is under control so that it brings positive impact on firm operations and performance. Arresting inflation rate in the country will have positive contribution to individual firms and to the country's economy. This could be arrested by enacting policies and strategies that control money supply in the economy.

Exchange rate was observed to have a negative effect on firm performance. Thus, it is recommended to the Bank of Tanzania (BoT) to ensure that the country's currency is stable. This means that the exchange rate will be stable as well. In this regard, the country will help firms which have maximum power of securing resources from foreign markets. Similarly, a stable exchange rate will attract foreign investors in the capital market thereby influencing firm performance. Management boards of listed firms are urged to take serious initiatives to study and forecast the behaviour of macroeconomic variables that surround their firms. By so doing, the managers will design effective strategies to evade these factors thereby maximizing their firms' performance.

Lastly we recommend that higher learning institutions should put more emphasis in designing curricular that will equip the future firm managers with adequate knowledge of the macroeconomic variables since the immensely complicated functioning of the modern economy can be better understood with the help of studying macroeconomics. With such studies firm managers will gain better knowledge of how the economy as a whole works and how the level of national revenue and employment is determined by the amount of aggregate demand and aggregate supply and then they can think and ponder on the various ways it might affect their businesses and how to employ such variables to their advantage. By gaining a deep understanding of the elements that have a role in the expansion of a nation's economy and analysing the means by which the most expansion can be accomplished and maintained firm managers might sharpen the competitive edge and enhance firm performance. But all that can only be perfectly done with a proper theoretical base which can be obtained from higher learning institutions. This study was limited as it focused on Dar es Salaam Stock Exchange-listed companies only thus making the generalization of the results

impractical. Apart from that the study did not investigate the impact of other potential variables such as political instability, market competition, or technological advancements, which may also affect firm performance. Management of Firms are urged to be proactive in handling the impact of macroeconomic conditions in order to remain competitive and sustainable in the long run. They should also pay close attention to the domestic economic context in which they operate, as the influence of macroeconomic factors on firm performance can be context-specific

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