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Effects of Selected Macroeconomic Variables on Market Capitalization of Nairobi, Kenya

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Abstract:

This study examined the effects of selected macroeconomic variables on the market capitalization of the Nairobi Securities Exchange in Kenya during the period 2010- 2022, based on the Arbitrage Pricing Theory (APT) using quarterly data. The autoregressive distributed lag model technique was applied to test how market capitalization was affected by the macroeconomic variables. Gross domestic product, money supply, and inflation were stationary at the level while interest rate, market capitalization, and exchange rate became stationary at first difference. From the empirical results, no co-integration between market capitalization and exchange rate, money supply, interest rates, Gross domestic product, and inflation was found by use of bounds test. Money supply and inflation had a weak influence on market capitalization; interest rate, Gross Domestic Product, and first lag of the exchange rate were positive and affected market capitalization, while the exchange rate at the current level affected market capitalization negatively. It was concluded that macroeconomic variables affect market capitalization. The study recommends that the government need to put up relevant policies that increase gross domestic product. Policymakers need to consider macroeconomic variables during policy formulation on market capitalization.

Keywords: *Inflation, interest rate, exchange rate, market capitalization*

1. Introduction and Background of the study

Market capitalization is the total stock market value of the number of shares traded multiplied by their market share prices (Al-Afeef, 2020; Pavone, 2019). It is an essential element for investors as it helps them determine the best investment options that are feasible and viable in the future and the value of a company. Therefore, it determines the returns on investments and influences the development and growth of an economy in both developing and developed nations (John, 2019).

In addition, market capitalization measures the financial soundness of listed companies and the efficiency of the stock market. The stock market facilitates the trading of securities. It enables listed companies to pool funds from investors. In the process, companies raise capital through listing of shares or floating more shares to expand their operations (Mohammed, 2011). The Stock market also promotes the development and growth of an economy by boosting savings and investments and ensuring resources are well allocated (Yartey & Komla, 2007).

The market capitalization of developing nations has grown over time. This is remarkable as more firms or companies can diversify their overall risk and get new capital risk. The process is enabled through various innovations in the banking sector, technology, and the internationalization of capital-procuring markets (Pavone, 2019). Besides playing a major role in an economy, capital markets can prevent any developing country from overdependence on foreign borrowing (foreign debts), volatility of capital flows and provision of important financial risk locally through the mobilization of savings to essential sectors of an economy such as infrastructure, housing and climate (Soumaré et al., 2021). However, the stock markets are yet to fully mature compared to those in developed economies. This can be due to various challenges faced by less developed countries in achieving necessary preconditions for efficient operations of stock markets.

These preconditions include efficient market structures, stable macroeconomic variables, and health banking sectors. The markets are mainly composed of bond markets and stock exchange markets, with big firms and the government being the main issuers of stocks and bonds, respectively (Soumaré et al., 2021). In addition, very few stocks are traded, which accounts for the total market capitalization besides the shares offered. There is also inadequate information, insufficient regulations, and a lack of transparency in the stock markets (Mjomba, 2017), which lowers the market capitalization of developing nations.

However, investing in the stock market in both developing and developed nations can be rewarding as well as very risky. Potential investors attempt to analyze stock price trends to predict future trends in stock market prices (John,

2019). To make optimal choices, investors study the trends of market capitalization of the respective firms by further observing the changes in macroeconomic variables affecting market capitalization (Igoni, Ogiri & Orlu, 2020). Stability in these macroeconomic variables reduces volatility in the market prices of shares, thus reducing fluctuations in market capitalization.

Kenya has only 60 firms listed at NSE compared to the Johannesburg stock exchange in South Africa, which has 264 firms and a market capitalization of \$1.05 trillion, the Nigeria Stock Exchange, which has 177 firms and a market capitalization of \$56.57 billion, and the Egyptian stock market, which has 240 firms and a market capitalization of \$41.35 billion as of September 2022 (World Bank 2022).

1.1. Problem Statement

Vision 2030 aims to ensure stability in macroeconomic variables, maintain sustainable public debt, and maintain competitive exchange rates and low and stable inflation and interest rates to boost the Kenyan economy. In addition, under the medium-term plans, the vision 2030 is targeted to provide a financial sector that is competitive and vibrant. Further, the Capital market medium-term plans (MTPII 2013-2017 and MTPIII 2018- 2022) main objectives were to mobilize savings to achieve a 25-28 percent, and 18-23 percent ratio of saving to gross domestic product, respectively (Republic of Kenya, 2017 and Republic of Kenya, 2022).

However, the market has performed below this target, achieving 12.5 per cent in 2012, 11 percent between 2015 and 2017, and about 10 percent between 2018 and 2021 (World Bank, 2022). This poor performance on the capital market in the face of volatility in the macroeconomic variables has a major influence on market capitalization. Market capitalization declined from 60 percent in 2014 to 21.25 percent in 2020, later reversed by a 10 percent increase in 2021 from 2020. Market capitalization decreased massively between 2015 and 2020, the worst being in 2018. A loss worth Ks. 419.75 billion compared to 2017, represented a 16 percent decline. Therefore, the stock market has failed to contribute significantly to Kenya's economic growth, according to MTPII 2013-2017 and MTPIII 2018-2022 targets.

Macroeconomic variables affect capital market development by influencing the performance of companies, which causes fluctuations in share price, which is taken into account in market capitalization estimation. Mixed findings from researchers on macroeconomic variables and market capitalization were noted from previous studies that were carried out in Kenya. Locally, researchers such as Omondi and Olweny (2011), Kirui et al. (2014), Ouma and Miriu (2014), Mwangi (2015), Mjomba (2017), and Wangwa (2021) findings were inconsistent on the exchange rate, interest rate, and inflation. Therefore, this study focused on interest rate, exchange rate and inflation because of the inconsistent findings. In addition, they play an important role in determining the worthiness of all listed firms. The study will seek to answer the query: what is the effect of selected macroeconomic variables on market capitalization of NSE, Kenya?

1.2. Research Questions

The study aimed to answer the following questions:

- What is the effect of the exchange rate on the market capitalization of the Nairobi Securities Exchange?
- What is the effect of interest rates on the market capitalization of the Nairobi Securities Exchange?
- What is the effect of inflation on the market capitalization of the Nairobi Securities Exchange?

1.3. Research Objectives

The main goal of the research was to examine the effects of selected macroeconomic variables on the market capitalization of the Nairobi Securities Exchange. This research also focused on meeting the following specific objectives:

- To determine the effect of interest rates on the market capitalization of the Nairobi Securities Exchange.
- To find out the effect of inflation on the market capitalization of the Nairobi Securities Exchange.
- To investigate the effect of the exchange rate on the market capitalization of the Nairobi Securities Exchange

2. Literature Review

2.1. Theoretical Literature Review

Economic theory postulates that macroeconomic variables such as GDP, exchange rate, inflation, public debt and interest rates, and other variables constitute valuable determinants of the stock market performance. However, several theories from different schools of thought explain the stock market performance. Prominent among the theories is Arbitrage pricing theory (APT), developed by Ross in 1976, a general model that allows use of many factors in affecting market capitalization (Ross, 1976). The model was based on the equilibrium in the stock market for risky returns on investments. It was tested by Roll, Chen and Ross in the year 1986 (Chen et al., 1986). APT was formulated from Capital asset pricing model. The APT model assumes no arbitrage in well-functioning securities markets and is also an equilibrium model compared to the capital asset pricing model, which only considers one exogenous factor. APT is more robust, with no assumptions on the distribution of returns, individual utility function, and equilibrium returns in the market depending on various factors, thus making it a better model for determining the effects of selected macroeconomic variables on market capitalization.

2.2. Empirical Literature

Kirui et al. (2014) investigated the effects of foreign exchange, inflation, gross domestic product, and interest rate on NSE returns. Quarterly data was used from 2000-2012. Engle Granger's two-step method was employed and regressed.

The researchers found that foreign exchange was negative but significant, whereas interest, inflation, and gross domestic product were insignificant in affecting market stock returns. Mwangi (2015) used monthly data between 2006- 2014 in Kenya using Vector Error Correction Model (VECM) and found that inflation and interest rate negatively affected NSE returns, while the balance of payment, money supply, and foreign exchange effects were less significant. Asri (2017) conducted research on variables that influence stock prices in Indonesia using annual from 2014 – 2015 On 101 firms. The study concluded that inflation and exchange rate were insignificant and had a negative effect on the company's performance. Market value added was insignificant but had a positive effect, while market capitalization was significant and affected the performance of a firm positively.

Gathogo (2017) studied how macroeconomic variables affected Kenyan Market cap and used data from 2010-2015 on sixty-five firms. Analysis of Variance was adopted and found that inflation affected all sectors' market capitalization negatively except the investment sector. The exchange rate positively affected market capitalization of the Industrial allied and Agricultural sectors, while services, commercial, and finance were negatively affected. Interest rates positively affected all sectors' market capitalization except investment and fuel prices. Whereas Mjomba (2017), used annual data between 1980 and 2014 on 96 respondents. OLS regression model was employed and found that foreign exchange was positive and significant, interest rate and public debt affected market capitalization negatively, while inflation rate had less effect. Ramlan & Hashim (2018) used annual data from 2005–2015 in Malaysia, adopted regression analysis, and found that inflation and foreign exchange were negative but significant in affecting market capitalization, and gross domestic product had positive but insignificantly related to market capitalization.

John (2019) adopted Ordinary Least Square on annual data in Nigeria from 1981-2016 and found that interest rate was negative but significant, money supply was positive and significant, whereas inflation and foreign exchange were less significant. Macroeconomic variables were related to market cap in the long from co-integration test, while Igoni et al. (2020) used data from 1985–2014 in Nigeria, employed Error Correction Models and Johansen Co-integration, and found that GDP and inflation were related to market capitalization in the long run, inflation was negative, gross domestic product was positive while exchange rate, interest rate and external reserves were less related with market capitalization. Karaduman (2020) used data from 2009-2018 in emerging markets. A generalized method of moments was used, and secondary data from 2009–2018 for 31 markets was collected from the World Bank. The researcher found that institution factors and exchange rates were positive and significantly related to market capitalization; the financial development index was positive but insignificant in affecting market capitalization.

3. Research Methodology

3.1. Research Design

This study evaluated how selected macroeconomic variables affected the market capitalization of the Nairobi Securities Exchange. A descriptive research design was adopted due to its utilization, and it outlines the accurate profile of events and situations the way they are (Mtuweta, 2019). Quarterly time series data was collected on foreign exchange, GDP, inflation, public debt, money supply, and interest rate from January 2010 to March 2022. ARDL bound test for co-integration was applied

3.2. Model Specification

This study was based on Arbitrage Pricing theory. Macroeconomic variables were related to market capitalization, as expressed below:

$$MAC = f(PDT, INR, EXCHR, INFR, GPT, MSP) \dots\dots\dots (1)$$

Specifying equation (1) in a general linearity model:

$$MAC_t = \lambda_0 + \lambda_1 PDT_t + \lambda_2 INR_t + \lambda_3 EXCHR_t + \lambda_4 INFR_t + \lambda_5 GPT_t + \lambda_6 MSP_t + \varepsilon_t \dots\dots\dots (2)$$

MAC_t - market capitalization, λ_0 - intercept, $\lambda_1, \lambda_2, \lambda_3$ and λ_4 - coefficients, PDT_t - public debt, INR_t - interest rate, $EXCHR_t$ - exchange rate, $INFR_t$ - inflation rate, GPT_t - gross domestic product, MSP_t - money supply ε_t - error term

Applying the ARDL bound test for co-integration to equation (2) and introducing the logarithm transformation of all variables except interest rate and gross domestic product because they are in percentage. Logarithm improves the linearity of the model and provides efficient results (John, 2019; Khan & Khalid, 2017). The following equation is obtained:

$$D. \log MAC_t = \lambda_0 + \lambda_{1i} \log MAC_{t-1} + \lambda_{2i} \log PDT_{t-1} + \lambda_{3i} \log INR_{t-1} + \lambda_{4i} \log EXCHR_{t-1} + \lambda_{5i} \log INFR_{t-1} + \lambda_{6i} \log GPT_{t-1} + \lambda_{7i} \log MSP_{t-1} + \sum_{i=1}^n \Psi_{1i} D. \log MAC_{t-1} + \sum_{i=1}^n \Psi_{2i} D. \log PDT_{t-1} + \sum_{i=1}^n \Psi_{3i} D. \log INR_{t-1} + \sum_{i=1}^n \Psi_{4i} D. \log EXCHR_{t-1} + \sum_{i=1}^n \Psi_{5i} D. \log INFR_{t-1} + \sum_{i=1}^n \Psi_{6i} D. \log GPT_{t-1} + \sum_{i=1}^n \Psi_{7i} D. \log MSP_{t-1} + \varepsilon_t \dots\dots\dots (3)$$

Where: λ_0 - a constant, λ_1 to λ_7 are long-run coefficients, D. difference at level one, Ψ_1 to Ψ_7 are short-run coefficients. Equation 3 captures both the short-run and long-run coefficients, while equation 4 represents a short-run model equation:

$$D. \log MAC_t = \Psi_0 + \sum_{i=1}^n \Psi_{1i} D. \log MAC_{t-1} + \sum_{i=1}^n \Psi_{2i} D. \log PDT_{t-1} + \sum_{i=1}^n \Psi_{3i} D. \log INR_{t-1} + \sum_{i=1}^n \Psi_{4i} D. \log EXCHR_{t-1} + \sum_{i=1}^n \Psi_{5i} D. \log INFR_{t-1} + \sum_{i=1}^n \Psi_{6i} D. \log GPT_{t-1} + \sum_{i=1}^n \Psi_{7i} D. \log MSP_{t-1} + \varepsilon_t \dots\dots\dots (4)$$

The ARDL model has the best features, which makes it the best technique for this study. These features are suitable regardless of the variables being of I(0) or I(1) or both, appropriate for small sample sizes as compared to Johansen and Engle-Granger estimation techniques, and all variables are treated as endogenous (Khalid & Khan, 2017). Econometric problems, such as unit roots among variables, may arise while carrying out bound tests. The presence of unit

root is solved by differencing the affected variables, but the variables lose long-run information in the differenced variables.

3.3. Definition and Measurement of Variables

Variable	Definition
Market capitalization	The market value of all firms listed on NSE is a product of share price and the total number of shares traded. It is measured as a ratio of market capitalization to gross domestic product.
Interest rate	Interest rate is the 91-day Treasury bills rate, measured in average quarterly percentages.
Inflation	Inflation is the change in the general price level, measured as a ratio of current inflation to previous inflation.
Public debt	Total external and domestic borrowing by the government. It is measured in average Kenyan shilling.
Exchange rate	The exchange rate is the rate at which domestic currency is exchanged with a foreign currency and is measured in average quarterly Kenyan shilling/USD.
Gross domestic product	It is measured as a percentage change in the total market value of all goods and services produced at market price.
Money supply	Absolute change in broad money supply M2, which comprises M1 and quasi-money. It is measured in average money Kenyan shilling.

Table 1: Definition and Measurement of Variables

3.4. Target Population and Data Sources

This research study focused on all firms/ companies listed on NSE, Kenya from 2010 to 2022. Secondary quarterly time series data was collected from Capital Markets Authority and Central Bank of Kenya.

3.5. Time Series Properties, Diagnostic and Stability Tests

Time series properties, such as the unit root test, were tested before estimating the model. The Augmented Dickey Fuller test was used to check for the presence of unit roots to avoid spurious results. Diagnostic tests, such as serial autocorrelation, multicollinearity, normality, model misspecification, heteroscedasticity, and stability, were done after regression.

4. Results and Discussion of Findings

4.1. Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Market Capitalization	49	1927416.6	571606.37	883300	2795443.3
Public Debt	49	3809386.6	2215432.2	1138810.1	8335474.6
MONEY SUPPLY	49	2187603.5	763319.33	938002.67	3434642.5
GDP	49	4.845	2.483	-4.1	11
Inflation	49	8.193	3.302	3.33	19.19
Interest rate	49	6.852	3.172	1.823	19.353
Exchange rate	49	96.126	10.08	76.49	113.787

Table 2: Descriptive Statistics

Descriptive Statistics captures the mean, median, maximum value, minimum value and standard deviation of a data set. From table 2, market capitalization ranged between Ks 883300 million and Ks 2795443 million, with a mean of Ks 1927416.6 million. It had a standard deviation of 571606.37 million. The exchange rate had Ks 96.13 as the mean, maximum and minimum values of Ks 113.79 and Ks 76.49, respectively and a standard deviation of Ks 10.08. The mean interest rate was 6.85 per cent, with a standard deviation of 3.17 per cent. It registered a maximum value of 19.35 per cent, while 1.82 per cent was the minimum value. The inflation rate ranged between 3.33 and 19.19 per cent, with a mean of 8.19 per cent; its standard deviation was 3.30 per cent. Gross Domestic Product had a mean of 4.84 per cent, with a standard deviation of 2.48 per cent; a low value was -4.1 per cent, while the highest value was 11 per cent. Money supply

ranged between Ks. 938002.7 million and Ks 3434643 million, with a mean of Ks 2187603 million. It had a standard deviation of Ks 763319.3 million.

4.2. Correlation Matrix

Variables	(1) Log Mac	(2) Log Inflation	(3) Log Exchange	(4) Log Money Supply	(5) Log Public Debt	(6) GDP Change	(7) Interest Rate
(1) log mac	1.000						
(2) log inflation	0.164	1.000					
(3) log exchange	0.523	-0.066	1.000				
(4) log money	0.072	-0.054	-0.232	1.000			
(5) log public debt	0.604	-0.060	0.937	-0.172	1.000		
(6) GDP Change	0.057	-0.065	-0.009	-0.109	-0.023	1.000	
(7) Interest rate	-0.452	-0.422	-0.200	-0.071	-0.311	-0.001	1.000

Table 3: Matrix of Correlations

All variables except public debt and the exchange rate had a co-efficient of less than 0.8, indicating no presence of severe correlation among the variables of the study. Thus, there was a minimum multicollinearity problem, as shown in table 3. Public debt and exchange rate had a co-efficient of 0.937, which is greater than 0.8. Therefore, it was dropped, while the exchange rate was not dropped because it was among the specific objectives of this study.

4.3. Unit Roots Test

Variable	ADF Statistics	1%	5%	10%	Decision
Interest rate	-2.550	-4.168	-3.508	-3.185	Has a unit root
Log of Inflation rate	-3.897	-4.168	-3.508	-3.185	Stationary at 5% and 10%
Log of Exchange rate	-2.649	-4.168	-3.508	-3.185	Has a unit root
Gross Domestic Product	-7.563	-4.168	-3.508	-3.185	Stationary
Log of market capitalization	-1.477	-4.168	-3.508	-3.185	Has a unit root
Log of money supply	-6.340	-4.168	-3.508	-3.185	Stationary
At First Difference, with Trend and Constant					
Log of market capitalization	-5.265	-4.178	-3.512	-3.187	Stationary
Interest rate	-5.213	-4.178	-3.512	-3.187	Stationary
Log of exchange rate	-5.610	-4.178	-3.512	-3.187	Stationary

Table 4: Results on Unit Roots at Level, with Trend and Constant

Augmented Dickey Fuller test was used and the results are presented in table 4 above. Inflation, GDP and money supply were stationary at the level while market capitalization, interest rate and exchange rate became stationary at the first difference at a 5% level of significance.

4.4. Integration

The results of co-integration using the ARDL Bounds test are shown in table 5 below.

Dependent Variables	F-statistics	Conclusion
Log of market capitalization	2.082 at (1) 3.79, (0) 2.62	No co-integration
Log of inflation	6.852	Co-integration present
INR	3.205	Inconclusive
Log of exchange rate	1.876	No co-integration
G.D.P	6.368	Co-integration present
Log of Money supply	8.361	Co-integration present

Table 5: Bounds Test Results

The F-statistics between market capitalization and its independent variables is 2.082 less than the F-statistic at (0) of 2.62, indicating no co-integration present, as shown by table 5 above; therefore, a short-run equation was estimated using equation 4.

4.5. ARDL Results

The results of ARDL are presented in table 6 below.

Logmac	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
L-1	.94	.063	14.84	0	.812	1.068	***
Loginf	.086	.067	1.28	.208	-.05	.223	
Logex	-.793	.427	-1.86	.072	-1.658	.073	*
L-1	.867	.413	2.10	.043	.03	1.704	**
Logos	.017	.012	1.38	.176	-.008	.041	
ChangeofGDP	.013	.007	2.03	.049	0	.027	**
INR	-.003	.006	-0.51	.61	-.016	.009	
L-1	-.001	.008	-0.12	.903	-.018	.016	
L-2	.015	.006	2.54	.016	.003	.027	**
Constant	-.583	.764	-0.76	.45	-2.132	.965	
Mean dependent var		-0.004	SD dependent var			0.225	
R-squared		0.925	Number of obs			47	
F-test		50.571	Prob > F			0.000	
Akaike crit. (AIC)		-109.383	Bayesian crit. (BIC)			-90.882	

Table 6: ARDL Results
 *** $p < .01$, ** $p < .05$, * $p < .1$

Table 6 shows the R-squared = 0.9248 and the adjusted R-squared = 0.9065 at a 5 per cent level of significance. This implied that 90.65 per cent of the variations in market capitalization are explained by the exogenous variables included in the study, while 9.35 per cent of the variations are explained by the variables not included in the study. The coefficient for the first lag of market capitalization and exchange rate was statistically significant. Gross domestic product's coefficient was statistically significant, while the coefficients for inflation and money supply were insignificant. The second lag coefficient for interest rate was significant at a 5 per cent level of significance. Interest rate affects market capitalization.

At a 5 per cent level of significance, the interest rate coefficient is .015 and statistically significant. Therefore, a one per cent change in interest rate would lead to a 0.015 % increase in market capitalization. Inflation has less effect on market capitalization. The inflation coefficient was .0864546 and was insignificant. The exchange rate influenced market capitalization. The exchange rate coefficients were significant at both 5 per cent and 10 per cent levels of significance. Therefore, a one per cent change in the exchange rate would lead to a 0.793 per cent decrease in market capitalization. Money supply and Gross Domestic Product were the other variables used in this study. GDP influenced market capitalization. Its coefficient was positive and significant, implying that a percentage change in GDP increases market capitalization by 0.013 per cent. Money supply has less effect on market capitalization; its coefficient was positive and insignificant at a 5 per cent level of significance.

4.6. Diagnostic Tests

The results of diagnostic tests, such as serial autocorrelation, normality, model misspecification, heteroscedasticity, and stability, were determined after regression and presented in table 7.

Test	Probability	chi2
LM test for autocorrelation	0.5921	0.287
Shapiro Wilk test	0.2016	0.836
Breusch-Pagan(heteroscedasticity)	0.3378	0.92
Ramsey reset test	0.0746	2.52

Table 7: Diagnostic Test Results

Table 7 shows that the LM test for autocorrelation indicates that the autocorrelation problem was not present at a 5 per cent level of significance; Shapiro Wilk test results suggested that data had a normal distribution and thus failed to reject the null hypothesis that data has a normal distribution. The Breusch-Pagan(heteroskedasticity) showed no heteroskedasticity, the error term was homoscedastic, and the Ramsey reset test indicated no key variable was omitted; hence, the model was well specified.

4.7. Model Stability Test

The stability test result was carried out using Cumulative Sum of Squares of recursive residuals (CUSUM squared) at a 5% level of significance, and the results are presented in figure 1.

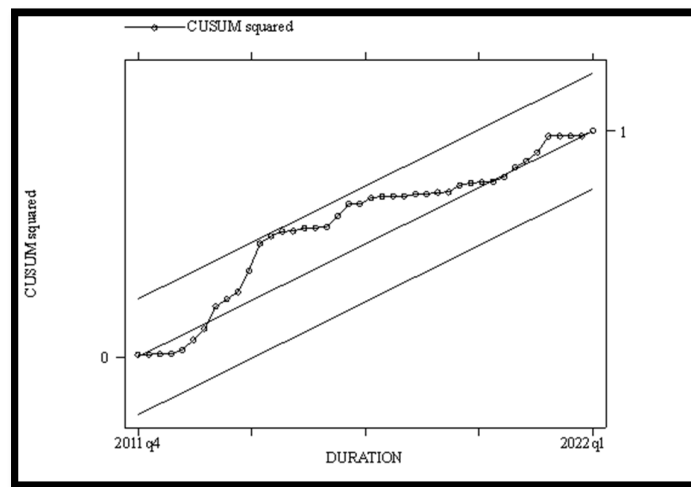


Figure 1: Cumulative Sum of Squared Plot

CUSUM squared plots remained within the 5 per cent critical bound, implying that the coefficients are stable and the estimated model was stable.

5. Conclusion

This study investigated how selected macroeconomic variables affected the market capitalization of NSE, Kenya, from the year 2010 to 2022 and was based on the Arbitrage pricing theory. Based on the empirical results, interest rate, gross domestic product and the first leg of the exchange rate were positively related to the market capitalization of NSE, while the exchange rate at the current level was negatively related. Therefore, it is concluded that gross domestic product, interest rate and exchange rate affect market capitalization. Thus, a one per cent increase in GDP or interest rate increases market capitalization. A one per cent increase in exchange decreases market capitalization. In addition, inflation and money supply are less important in affecting the market capitalization of the Nairobi Securities Exchange, Kenya.

6. Recommendations

The following were recommended based on the empirical results:

- The Central Bank of Kenya needs to increase interest rates to attract investors to the stock market. This can be done by decreasing interest rates on bonds in the bond market and increasing interest rates in the stock market.
- The government needs to have a policy that encourages an increase in the output of services and goods since growth in GDP leads to an increase in market capitalization.
- The real economy sectors, such as Tourism and Agriculture, need to have relevant economic growth strategies and policies that encourage production because the real economy contributes a larger percentage to the total gross domestic product.

7. References

- i. Al-Afeef, M. A. M. (2020). Factors Affecting Market Capitalization: A Practical Study Ase 1978-2019. *Journal of Financial Studies*, 9(03), 6.
- ii. Asri, M. (2017). The Influence of Inflation, Exchange Rate, Market Value Added, and Market Capitalization Value on Stock Price. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.2995908>
- iii. Badullahewage, S. U. (2018). The Effects of Macroeconomic Factors on the Performance of the Stock Market in Sri Lanka. *International Journal of Innovation and Economic Development*, 3(6), 33-41. <https://doi.org/10.18775/ijied.1849-7551-7020.2015.36.2002>
- iv. Capital Market Authority. (2014). *Capital Market Master Plan 2014-2023*. Nairobi: Government Printer.
- v. Capital Market Authority. (2015). *Capital Market Statistical Bulletin*. Nairobi: Government Printer.
- vi. Capital Market Authority. (2019). *Capital Market Statistical Bulletin*. Nairobi: Government Printer.
- vii. Capital Market Authority. (2021). *Capital Market Statistical Bulletin*. Nairobi: Government Printer.
- viii. Capital Market Authority. (2022). *Capital Market Statistical Bulletin*. Nairobi: Government Printer.
- ix. Chen, N.-F., Roll, R., & Ross, S. A. (1986). Economic Forces and the Stock Market. *The Journal of Business*, 59(3), 383. <https://doi.org/10.1086/296344>
- x. Choi, S., Smith, B. D., & Boyd, J. H. (1996). Inflation, Financial Markets, and Capital Formation.
- xi. Cox, J. C., & Ross, S. A. (1976). A Survey of Some New Results in Financial Options Pricing Theory. *The Journal of Finance*, 31(2), 383-402. <https://doi.org/10.1111/j.1540-6261.1976.tb01893.x>
- xii. Dickey, D. A., & Fuller, W. A. (1979). Distribution of the Estimators for Autoregressive Time Series with a Unit Root. *Journal of the American Statistical Association*, 74(366a), 427-431. <https://doi.org/10.1080/01621459.1979.10482531>

- xiii. Farooq, F., Anwar, S., & Chaudhry, I. S. (2016). Impact of Interest Rate Differentials on Market Capitalization in Pakistan: An Empirical Analysis.
- xiv. Fredrick, W. O. (2021). Macroeconomic Variables and Performance of Stock Prices of Companies Listed at Nairobi Securities Exchange, Kenya.
- xv. Igoni, S., Henry Ogiri, I., & Orlu, L. (2020). Perceived Macroeconomic Factors and Stock Market Capitalization: Experience from the Nigerian Economy Perspective. *Asian Journal of Economics and Empirical Research*, 7(1), 105–114. <https://doi.org/10.20448/journal.501.2020.71.105.114>
- xvi. Karaduman, Ç. (2020). The Effect of Key Macroeconomic Variables on Market Capitalization in Selected Emerging Markets: Post 2007-08 Crisis Era. *Biltürk Journal of Economics and Related Studies*. <https://doi.org/10.47103/bilturk.768362>
- xvii. Kirui, E., Wawire, H. W., & Onono, P. (2014). Macroeconomic Variables Volatility and Stock Market Returns: A Case of Nairobi Securities Exchange, Kenya. *International Journal of Economics and Finance*; Vol 6 No. 8; 2014.
- xxviii. Kippra. (2013). Kenya Economic Report: Creating an Enabling Environment for Stimulating Investment for Competitive and Sustainable Counties, Nairobi: Kenya.
- xix. Kippra. (2018). Kenya Economic Report: Boosting Investments for Delivery of the Kenya Vision 2030, Nairobi: Kenya.
- xx. Kippra. (2019). Kenya Economic Report: Resource Mobilization for Sustainable Development of Kenya.
- xxi. Khalid, W., & Khan, S. (2017). Effects of Macroeconomic Variables on the Stock Market Volatility: The Pakistan Experience. *International Journal of Econometrics and Financial Management*, 5(2), 42–59. <https://doi.org/10.12691/ijefm-5-2-4>
- xxii. Kwon, C. S., & Shin, T. S. (1999). Co-integration and causality between macroeconomic variables and stock market returns. *Global Finance Journal*, 10(1), 71–81. [https://doi.org/10.1016/S1044-0283\(99\)00006-X](https://doi.org/10.1016/S1044-0283(99)00006-X)
- xxiii. Mjomba, M. (2017). The Effects of Macroeconomic Variables on the Market Capitalization of Listed Companies in Kenya. *International Journal of Finance and Accounting*, 2(1), 58. <https://doi.org/10.47604/ijfa.259>
- xxiv. Mwangi, K. E. (2015). The Effects of Macroeconomic Factors on The Nairobi Security Exchange Stock Returns.
- xxv. Olweny, T., & Omondi, K. (2011). The Effect of Macro-Economic Factors on Stock Return Volatility in the Nairobi Stock Exchange, Kenya.
- xxvi. Ouma, W. N. (2014). The Impact of Macroeconomic Variables on Stock Market Returns in Kenya.
- xxvii. Pavone, P. (2019). Market Capitalization and Financial Variables: Evidence from Italian Listed Companies. *International Journal of Academic Research in Business and Social Sciences*, 9(3), Pages 1356–1371. <https://doi.org/10.6007/IJARBS/v9-i3/5802>
- xxviii. Pesaran, M. H., Shin, Y., & Smith, R. J. (2001). Bounds testing approaches to the analysis of level relationships. *Journal of Applied Econometrics*, 16(3), 289–326. <https://doi.org/10.1002/jae.616>
- xxix. Ramlan, H., & Hashim, S. L. (2018). The Relationship between Macroeconomic Variables and Stock Market Capitalization in Malaysia.
- xxx. Republic of Kenya. (2007). Kenya Vision 2030: A Globally Competitive and Prosperous Kenya.
- xxxi. Republic of Kenya. (2017). Key Highlights of the Third Medium Term Plan (2018–2022): Transforming Lives; Advancing Socio-Economic Development through the Big Four.
- xxxii. Republic of Kenya. (2022). Vision 2030: Economic and Macro Pillar. [Vision 2030.go.ke/economic-pillar/63](https://www.vision2030.go.ke/economic-pillar/63)
- xxxiii. Republic of Kenya. (2022). Economic survey: The Popular Version.
- xxxiv. Republic of Kenya. (2021). Economic survey.
- xxxv. Ross, S. A. (1976). The arbitrage theory of capital asset pricing. *Journal of Economic Theory*, 13(3), 341–360. [https://doi.org/10.1016/0022-0531\(76\)90046-6](https://doi.org/10.1016/0022-0531(76)90046-6)
- xxxvi. Shahbaz, M., Rehman, I. U., & Afza, T. (2016). Macroeconomic determinants of stock market capitalization in an emerging market: Fresh evidence from co-integration with unknown structural breaks. *Macroeconomics and Finance in Emerging Market Economies*, 9(1), 75–99. <https://doi.org/10.1080/17520843.2015.1053820>
- xxxvii. Sharpe, W. F. (1964). Capital asset prices: a theory of market equilibrium under conditions of risk*. *The Journal of Finance*, 19(3), 425–442. <https://doi.org/10.1111/j.1540-6261.1964.tb02865.x>
- xxxviii. Soumaré, I., Kanga, D., Tyson, J., & Raga, S. (2021). Capital market development in sub-Saharan Africa: Progress, challenges, and innovations.
- xxxix. Yartey, C. A., & Komla, C. (2007). Stock Market Development in Sub-Saharan Africa: Critical Issues and Challenges.
- xl. World Bank. (2022). International Financial Markets Statistics.