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**THE NEXUS BETWEEN FINANCIAL MARKETS AND ECONOMIC
GROWTH IN FRONTIER ECONOMIES
A Case Study of Kenya**

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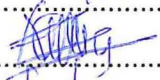
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List of abbreviations

IMF – International Monetary Fund

USD – United States Dollar

BRICS – Brazil, Russia, India, China, and South Africa

KNBS – Kenya National Bureau of Statistics

NASDAQ - National Association of Securities Dealers Automated Quotations

CPI – Consumer Price Index

GNI – Gross National Income

NSE – Nairobi Securities Exchange

GDP – Gross Domestic Product

Bln – Billion

Tln – Trillion

Operational definition of terms

Derivatives – Financial instruments whose value depends on an underlying asset.

Futures – Financial instruments that obligate the investor to buy or sell an asset at a pre-agreed future date and price.

Auction Markets – These are markets whose mode of operation involves market participants declaring their offer prices and the highest buy (bid) price and sell (ask) price takes the day.

Dealer Markets - These are markets whose mode of operation involves investors approaching dealers who quote the prices (bid and ask) at which they are willing to buy securities.



ABSTRACT

The stock market has potential to turn a country's fortunes. With proper organization and robust structures, the market can channel a county's savings and investments to deserving companies which would in turn, help develop the economy. Understanding how the stock market influences economic growth is important in formulating policies that would help make it more attractive to investors and more efficient in its allocation of resources. This paper undertakes to establish the quantitative effect of the stock market on economic growth and determine whether there is a long-term relationship between the two. A linear ordinary least squares model is used to achieve the first objective while the Johansen cointegrating test is used to achieve the second. The paper then offers recommendations, based on the findings, and provides possible areas of further research.

CHAPTER 1: INTRODUCTION

1.1. Background to the study

The stock markets go as far back into history as the 17th century. They were set out as places where investors could trade their stock and holdings in companies. Essentially, they were marketplaces for owners of companies. Through the evolution of time, they later became platforms from which companies could raise capital through the public by issuing a commensurate stock or holding of the company. They have also morphed to accommodate other forms of financial instruments which include bonds (treasury and corporate), derivatives, futures and abolition of foreign exchange controls, which allowed international capital to flow into the countries through Foreign Direct Investments (Hafer and Hein, 2011).

Globally, the stock market plays a vital role in the economy. The size of these markets, as traced to their market capitalizations, is an indication of the role they play. The biggest stock markets in the world led, by the New York Stock Exchange (NYSE), had large market capitalizations in dollar value as of 2020. According to INdexMundi, the elaborate database for stock markets and other indexes, NYSE had a market capitalization of USD 30,436,300,000,000, the Shanghai Stock Exchange in China was at USD 6,324,880,000,000 while the Tokyo Stock Exchange in Japan was at USD 5,296,810,000,000.

In his book, Singh (1995), suggested that a well-functioning stock market ought to affect economic development through three channels: the savings rate, the quantity of investments and the quality of investments. With this, the performance of stock markets has over time, become the barometer of economic performance. Investors and analysts use the stock markets to inform their confidence in economies that they are looking to invest in.

This reliance on stock markets stems from the roles that the stock markets have previously played in past global financial crises. The 2001 mini crisis, for example, resulted from rapid decline in value of the technology stocks in the NASDAQ dealer market. The more renowned 2008 financial crisis, started with the collapse of the Mortgage-Backed Securities market in the United States (Schwartz, 2013).

Kenya only has one stock market (the Nairobi Securities Exchange). It is classified as a frontier market. These are markets in less established economies compared to

those in first world economies. They are usually found in high-risk-low-income countries, that is, countries that, according to the world bank, have a GNI of as low as USD 1,045 to as high as USD 12,476. According to its website, the NSE has 66 listed companies a market capitalization of USD 24,379,700,000. It is mostly foreign dominated, with foreign investors making up 60 percent of investments (Kestrel Capital).

The Kenyan economy is one of the fastest growing economies in the world. It forms part of the frontier economies which contribute the greatest percentage of the global economic growth. According to the IMF, frontier economies have averaged a growth of 5.5 percent over the last two decades (1999 – 2019), compared to a global average of 3.8 percent over the same period.

The greatest contributor to the economic growth in Kenya is agriculture, which according to the Kenya National Bureau of Statistics, contributed 35 percent of total GDP in 2018. The financial services sector has however been growing in recent years, with the number of stockbrokers doubling from 22 in 2001 to 44 in 2018. The balance sheets of Kenyan banks have also grown in recent years due to mergers with local banks and acquisitions within the region.

From the foregoing, it is clear that stock markets play a crucial role, both positively and negatively and as such, attention needs to be paid to their role in economic growth

1.2. Problem statement

The role of the financial sector in promoting economic growth cannot be underestimated (Ikikii and Nzomoi, 2013). Despite this, frontier economies have gone largely unexplored. To the best of this paper's knowledge, studies on the stock market in Kenya have been few and far between. The studies done do not explicitly focus on the stock markets but instead, focus on the banking sector and microfinance institutions.

The challenge this paper intends to tackle is to harmonize this disparity and exclusively focus on first, a frontier economy and second, on the stock market and the influence it exerts on economic growth.

1.3. Research Objectives

- i. To establish, from analysis, the quantitative effect of the stock market on economic growth.
- ii. To evaluate the long-term relationship between the NSE and economic growth

1.4. Research questions

- i. In what direction and by how much, does the stock market affect economic growth?
- ii. What is the long-term relationship between the stock market and economic growth?

1.5. Significance

Keeping in mind that stock market returns are considered a leading indicator, that is, a factor that changes before the economy begins to move in a particular direction, this study would be helpful to economic policy makers who can use the data on stock markets to make forecasts on the economy's direction and take up corrective/stimulative measures, as necessary. Investors, both local and international could also use the study to make guided decisions on when and how to invest.

CHAPTER 2: LITERATURE REVIEW

2.1. Theoretical literature review

Singh (1995) offered that, in principle, a well-functioning stock market ought to affect economic development through three channels: the savings rate, the quantity of investments and the quality of investments.

This paper intends to focus on the savings rate channel. According to Singh, the stock market offers an opportunity for diversion of the part of the disposable income that is in excess of expenses (savings). In the instance where these savings (now transformed into investments) are made in an Initial Public Offering (IPO), the funds directly go to the company. They are then used for revenue-boosting activities, which include purchase of capital assets (machinery, land, etc) or even expansion of operations.

In the instance of a secondary market investment, it is usually to relieve another of their investment and the funds received are then expensed within the economy. In both instances therefore, investment in the stock market influences GDP growth.

Atje, R. and Jovanovic, B. (1993) also posit that “an exogenous improvement in the financial structure would cause a permanent increase in the rate of growth.” This suggests that improvement in aspects that ease the speed and rate of investment, only further improve the influence of the stock market on GDP growth.

2.2. Empirical Literature Review

The link between growth and stock market for developed economies has been greatly researched (Ikikii and Nzomoi, 2013). Despite the varying conclusions, there have been a lot of studies to determine the linkage between economic growth and stock market in the developed markets across various jurisdictions.

Ikikii and Nzomoi (2013), suggested that in the expected positive correlation between stock market development and economic growth, the strongest link is expected from economic growth to stock market development, suggesting that stock market development follows economic growth.

Carlin and Mayer (2003) demonstrated the presence of a strong relationship between economic growth and the structure of a country's (advanced OECD countries)

financial system. Matos (2003), using the Granger Causality Test, established a bidirectional relationship between stock market development and economic growth in Brazil.

In India, Deb and Mukherjee (2008) found a strong causal flow to economic growth stemming from stock market development. Research by Agrawala and Tuteja (2007) concurred with this, establishing a stable long run equilibrium relationship. In Russia, Garcia and Liu (1999) demonstrate that stock market development positively enhances economic growth.

Vazakidis and Adawopoulos (2009) examined the relationship between stock market development and economic growth and found a positive relation. A study conducted by Osaseri et al. (2019) concluded that stock market development exerts significant impact on economic growth of BRICS¹.

There have however been studies that have contradicted these findings. Andrezo and Lima (2012), conclude that there is discord over the direction of causality between stock market development and economic growth in Russia. Duan (2012) did not find any evidence of causality between stock market development and economic growth in China.

Ruyong (1999) noted that in the period 1994-1998, China's stock market did not have an effect on its economy, a conclusion that was concurred by Wang (2002), positing that there is no obvious correlation between the two variables. Further research studies such as that done by Burdekin and Redfern (2009) have attributed the causes of these "no correlation" findings to market inefficiency, illiquidity and segmentation of the Chinese equity market.

In frontier economies, studies on the relationship between financial development and economic growth are few and far between. Many of the studies done have placed more emphasis on the banking sector and viewed it as the only organized sector (Brown and Nyeche, 2016). Kirui et al. (2014) sought to demonstrate how macroeconomic variables, that is, real GDP, exchange rate, treasury bill rate, money supply and inflation affect stock market return. A similar study was conducted by

¹

Barasa (2014) using inflation rate, money supply and real GDP as the endogenous variables.

This study intends to bring home, studies that have been done in developed markets. To do this, the study approaches this using the same technique as that used by Osaseri and Osamwonyi (2019) in their evaluation of stock market development on economic growth of BRICS.

2.3. Summary of Literature review

The empirical literature review for stock markets across different economies appears to support the theoretical underpinnings suggested by Singh (1995). The stock market, from the literature review, exerts influence on economic growth. In all the empirical literature, the influence is positive. There have however been studies that have shown a bidirectional relationship (Calin & Mayer, 2003). This appears to contradict what Singh (1995) proposed.

2.4. Research gap

The empirical literature review reveals that there have been very little studies done on the frontier stock markets and their impact on economic growth and more specifically, then Kenyan stock market. This presents a research gap, to establish such effect.

CHAPTER 3: METHODOLOGY

3.1. Introduction

The main objective of the paper is to establish the influence of the stock market on economic growth in Kenya. The paper limits itself to data collection, data analysis and interpretation, thereby taking a positivist approach.

3.2. Research Design

The paper employs an experimental research design. This is suitable for establishing the cause-effect relationships among the variables, while identifying, the independent and dependent variable.

3.3. Theoretical Foundation

The model presented in the study stems from the theory of a well-functioning stock market through the savings channel, as presented by Singh (1995). The influence of the stock market is represented by the proxy for market performance, that is, the NSE 20 Index.

3.4. Model Specification

Based on the aforementioned objective, this paper employs the use of a time series model, which will be useful in generating coefficients that help establish the quantitative effect of the stock market on economic growth in Kenya. The model expected to be derived is as:

(1)

Where:

Loading... is the real gross domestic product growth rate.

Loading... is the real interest rate.

Loading... is the inflation rate.

Loading... is the change in foreign direct investment.

3.4.1. Dependent Variable

Real GDP growth rate represents Economic performance. More specifically, real GDP excludes the effect of inflation through its use of a base year currency value.

Use of real GDP will show the actual transmission of resources from the stock market to the economy.

3.4.2. Independent Variable

The independent variable is the market index, NSE 20. As more money is directed towards the stock market, demand for stocks increases. This increase in demand, through the forces of demand and supply, causes an increase in the price of the index.

Conversely, a movement in capital out of the market would cause an oversupply of stock and as such, a decrease in the price of the index. The index therefore captures the general movement of capital in and out of the market and consequently makes a suitable variable to evaluate the influence of the stock market on economic growth.

3.4.3. Control Variables

To isolate the effects of the stock markets on Economic growth, this paper uses control variables. The control variables used in this regression are:

Lagged Real GDP growth Rate: this captures the effect of previous rates of growth on current rate of growth.

Real Interest Rate: this is interest rate that is charged excluding any inflation effects.

Inflation Rate: as estimated by change in CPI.

Foreign Direct Investment: this is the amount of capital that flows into a country. For stationarity, the paper uses change in foreign direct investment.

3.5. Data Collection and Sources

The data used in this paper was obtained from multiple sources. Real GDP growth rate and inflation rate data was obtained from the Kenya National Bureau of Statistics and was manually extracted from the quarterly reports. The NSE 20 Index data was sourced from the Nairobi Securities Exchange Website. Interest rate data was obtained from the Central Bank of Kenya Website, while foreign direct investment data was sourced from the world bank. Data extracted from these sources can be relied on as they are authorities and regulators.

3.6. Data Analysis

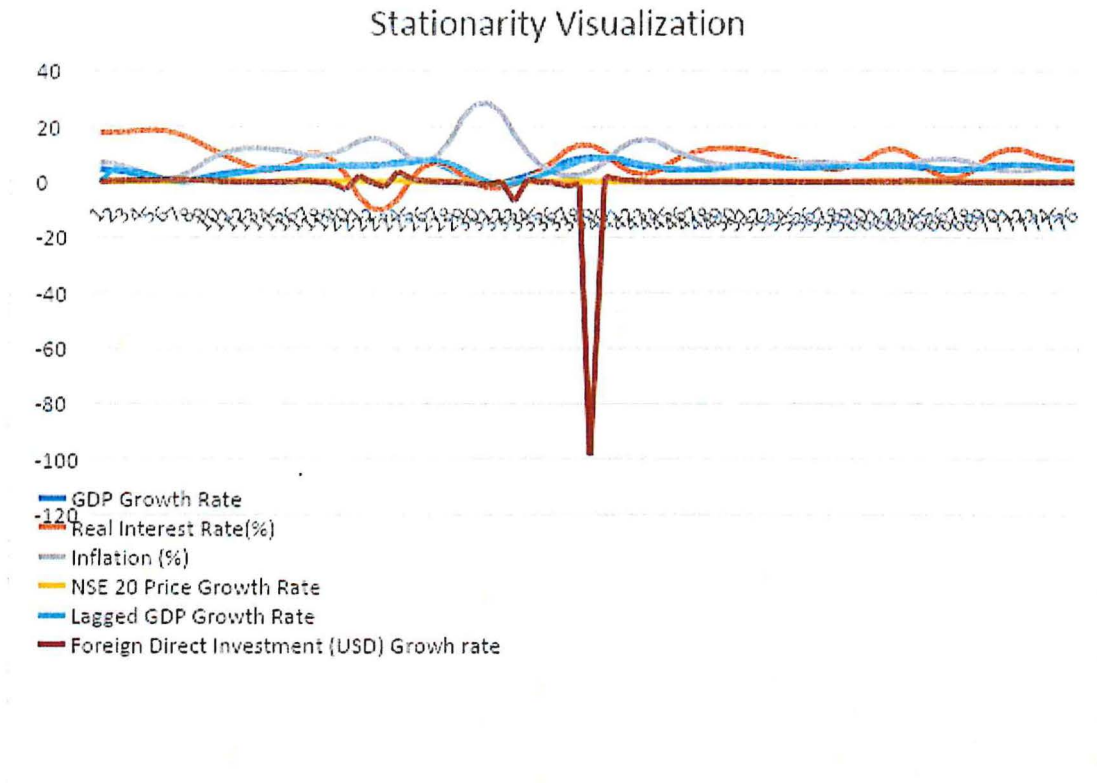
To conduct a time series analysis, the data ought to be stationary. The paper conducts stationarity test on all the variables using the Augmented Dickey Fuller method. The paper then conducts an analysis to obtain the descriptive statistics on individual variables. To meet the objective of establishing the quantitative effect of the stock market on economic growth, the paper then performs an OLS regression using Stata.

To meet the objective of determining the long run relationship between the dependent variable (real GDP growth rate) and the independent variable (NSE 20 Index), the paper performs a Johansen Cointegration test on Stata.

CHAPTER 4: EMPIRICAL FINDINGS

4.1. Stationarity

To ensure tractability, the data collected was subjected to stationarity test. Figure 1 shows a visual representation of the data. We used the Augmented Dickey Fuller test to test for stationarity. All the variables passed the 95 percent confidence interval (save for the dependent variable which passed the 90 percent confidence interval).



4.1.1. Data Trend

There is a jump in the level of inflation between q4 2007 and q2 2009. This was caused by the 2008 financial crisis that started in the mortgage-backed securities market in the United States. This crisis was also responsible for the dip in real GDP growth rate between the same period. There is a significant dip in the amount of foreign direct investment in q3 2010. This was due to the delayed impact of the global financial crisis and stringent minimum requirements imposed on financial institutions across the globe (Mohapatra and Ratha, 2010).

4.2. Correlation and Auto-Correlation

Correlation and Autocorrelation tests were conducted in two-fold. First, was the more common excel test of correlation, which tests the correlation between individual variables and the results are described in table below.

All variables had minimal correlation to each other. However, the independent variable (GDP Growth rate) and its lagged version, had a high correlation. Despite this, the two variables did not have a perfect correlation.

The second autocorrelation test was conducted on Stata. This was done by regressing the residuals of equation (1) against lagged versions of itself. The results indicated minimal autocorrelation, with a coefficient of 0.4.

	<i>GDP Growth Rate</i>	<i>Real Interest Rate (percentage)</i>	<i>Inflation (percentage)</i>	<i>NSE 20 Price Growth Rate</i>	<i>Lagged GDP Growth Rate</i>	<i>Foreign Direct Investment (USD) Growth rate</i>
<i>GDP Growth Rate</i>	1					
<i>Real Interest Rate(percentage)</i>	-0.05956	1				
<i>Inflation (percentage)</i>	-0.35633	-0.6983	1			
<i>NSE 20 Price Growth Rate</i>	0.140994	-0.01229	-0.11315	1		
<i>Lagged GDP Growth Rate</i>	0.900254	-0.08788	-0.21762	-0.00254	1	
<i>Foreign Direct Investment (USD) Growth rate</i>	-0.20179	-0.09386	0.07989	-0.03488	-0.17516	1

4.3. Regression

Upon regressing the dependent variable against the independent variable and control variables, the results were as shown below.

```
. reg GDPGrowthRate RealInterestRate Inflation NSE20PriceGrowthRate LaggedGDPGrowthRate ForeignDirectInvestmentUSD
```

Source	SS	df	MS			
Model	292.743207	5	58.5486415	Number of obs =	76	
Residual	42.3814816	70	.605449737	F(5, 70) =	96.70	
Total	335.124689	75	4.46832919	Prob > F =	0.0000	
				R-squared =	0.8735	
				Adj R-squared =	0.8645	
				Root MSE =	.77811	

	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
<i>RealInterestRate</i>	-.0722188	.0220952	-3.27	0.002	-.1162863	-.0281513
<i>Inflation</i>	-.1197448	.0252341	-4.75	0.000	-.1700727	-.0694169
<i>NSE20PriceGrowthRate</i>	2.121711	.8897586	2.38	0.020	.3471432	3.896279
<i>LaggedGDPGrowthRate</i>	.7776986	.0458176	16.97	0.000	.6863184	.8690789
<i>ForeignDirectInvestmentUSD</i>	-.0096619	.008095	-1.19	0.237	-.0258069	.0064831
<i>_cons</i>	2.70714	.5043124	5.37	0.000	1.701321	3.71296

power of the model or increased autocorrelation and thus the decision to exclude them from the model.

4.5.2. evaluating the long-term relationship between the NSE and economic growth

The results of the Johansen cointegration test show that the null hypothesis, of existence of 1 and 2 cointegrating relationships is rejected. This shows that there exists n- long term relationship between the stock market and economic growth.

CHAPER 5: SUMMARY AND CONCLUSION

5.1. Introduction

This paper set to establish the quantitative effect of the stock market on economic growth and to evaluate the long-term relationship between the NSE and economic growth. The first objective was achieved through a regression of the dependent variable (real GDP growth rate) against the independent variable (NSE 20 Index). The analysis made use of the OLS linear regression. The second objective was reached by carrying out a Johansen cointegration test on the variables, using lags informed by AIC and HQIC.

5.2. Conclusion

From the foregoing, despite the little work done on frontier markets, it appears that the stock markets do play a significant role in expansion of the economy. This is shown by the statistically significant coefficient.

5.3. Recommendation

More work, with regards to improving access to the stock market (NSE) and allowing more participation by local and foreign individuals and companies needs to be considered. Improving these structures boosts the capital flows within the stock market, which helps boost the economy.

The vibrance of the stock market, through listing of more companies should be considered. Having more companies offers a variety of investment choices and thus, more capital inflows.

5.4. Areas of further research

This paper appreciates that its scope was limited to one frontier economy and does not attempt to replicate this model in other frontier economies. As a guidance to future research, more work would need to be done with regard to comparing these

findings with those of other frontier markets. Further, the causal relationship between the stock market and economic growth for frontier economies ought to be investigated.

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