

Covid-19 Pandemic and African Stock Market Returns

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Abstract: The impact of the Covid-19 pandemic on stock market returns in five selected African countries: Nigeria, Ghana, Kenya, South Africa, and Mauritius is examined. With monthly data from 2017 to 2023, a bi-variate analysis within the autoregressive distributed lag (ARDL) framework is employed to examine the short- and long-run dynamics. Significant variations in the pandemic's effects across the sample countries are revealed. There was significant positive long-run impact in the case of Nigeria and Mauritius, but negative in the case of South Africa, while Kenya and Ghana showed no significant long-run effects. There were mixed short-run impacts, with immediate effects in some countries and delayed responses in others. Generally, the pandemic negatively influenced stock market returns across African countries, due to heightened financial asset risks and increased economic policy uncertainty. The outcome of the study underscores the need for enhanced stock market resilience by balancing short- and long-term instruments, ensuring early warning mechanisms, and internalizing financial system regulation. Efforts to strengthen Africa's financial systems, as well as adopting tailored policy responses can mitigate the adverse effects of shocks and ensure market stability.

Keywords: Covid-19, Economic policy, Stock market returns, Asset risks, market capitalisation.

JEL Classification: G15, G01, E44, I15.

Introduction

The Covid-19 pandemic has significantly impacted the global economy, including the real and financial sectors. Negative effects of the pandemic resulted from the stringent control measures implemented globally (Alsafi, Sohrabi, & Nicola, 2020). For example, the Nigerian Exchange Limited (NGX) All-Share Index declined by

14.60% in the first quarter of 2020 (Gasser & Khatat, 2020). Africa was the least continent affected by the virus, as the continent demonstrated a relatively better response to the pandemic both in terms of public health and economic policy (Mouhamadou, Boly, Oumar, Ndèye, Khadim, Emmanuel, Valéry, & Adama, 2021). As Huang, Tang, Chen & Chen (2022) noted, the direct financial downturn resulting from the pandemic was intensified by global economic uncertainty. The uniqueness of the Covid-19 pandemic for economic and financial activities is that it occurred in waves with varying devastating effects. The first wave began with selected countries, beginning from China in late 2019, and spreading to the first quarter of 2020. The second wave, characterised by Covid-19 variants, unfolded on February 10, 2021, followed by the third wave featuring the Delta variant on May 11, 2021, and the fourth wave with the Omicron variant on November 26, 2021 (Sheeram, 2020; Zoungrana, Toe, & Toe, 2021).

Despite the significant impact of the Covid-19 pandemic on the stock markets of African countries, in-depth studies are still needed to explore the many gaps in knowledge. While there is a growing body of literature on the impact of Covid-19 on the global economy and financial markets, African studies are limited. Therefore, more studies are needed to address African experiences (Aravind & Manojkrishnan, 2020; Liub, Manzoor, Wang, Zhang & Manzoor, 2020). The main objective of the study is to examine the impact of the Covid-19 pandemic on stock market returns in selected African countries. In particular, the study seeks to evaluate both the short-run and long run impacts of the pandemic by focusing on country-level variations in African stock market returns. This study adopts a filtering technique by selecting five countries based on the size of their stock exchanges and their gross domestic products. The countries are Nigeria, Kenya, Ghana, South Africa, and Mauritius.

Literature Review

The stock market is a crucial economic institution that contributes to long run economic growth and overall welfare of citizens, especially stock market returns (Robert, 2021; Anjana, 2023). Market capitalisation is also a proxy for the stock market (Adewoyin, 2004; Aydemir & Demirhan, 2009). Given that the stock market is often volatile and responsive to external factors, including macroeconomic and non-economic forces, economic burden arising from the Covid-19 could have been easily transferable to the stock market (Alfaro, Greenland and Schott, 2020). In particular, Al-Awadhi, Al-Saifi, Al-Awadhi and Alhamadi (2020) noted that the

Pandemic's social distancing requirements led to a net decline in economic activity, and supply chain disruptions. Also, Bankole, Omoyeni, Oyebode & Akintunde, (2020) found that lockdown measures in many countries resulted in significant deterioration in security market performance. Moshi Erick (2023) examined the effects of Covid-19 on market liquidity, particularly investigating the causal relationship between the daily growth of reported cases and market liquidity in selected African countries. The research employed a regression approach to analyse data from African Stock Markets. The AMIHUDD liquidity ratio was utilised to gauge the market depth of liquidity. The results showed that the daily growth of reported Covid-19 cases negatively impacted market liquidity in Egypt, Nigeria, and Zimbabwe. In contrast, Morocco experienced a positive impact on market liquidity in the face of daily reported cases. For Botswana, Ghana, Tunisia, Zambia, Uganda, and Kenya, there was no significant influence on market liquidity.

Zoungrana, Daouda & Mamadou (2023) examined the impact of the Covid-19 outbreak on the stock returns of companies listed on the West African Economic and Monetary Union's (WAEMU) stock market. Two specific event dates, namely January 23, 2020, and March 2, 2020, were considered for analysis. A GARCH model was utilised to account for temporal volatility. The empirical findings indicate that the event on January 23, 2020 (the first case of mortality due to Covid-19 in China) had a minimal effect on the WAEMU stock market. Bagh, Khan, Fenyves and Olah. (2023) studied the asymmetric impact of investor sentiments on stock returns and herding behaviour of S&P 500 markets pre- and post-Covid-19 using daily data for the periods of May 15, 2000 (Pre Covid) through February 20, 2020, and from February 20 through May 13, 2022 (Post Covid). They found that herding behaviour was significantly harmed during the post-Covid-19 period. Linh & Toan (2023) examined the effects of the Covid-19 epidemic on stock market returns in Vietnam. According to the estimation results, the stock market responded poorly in both the short and long terms. Mokoena & Nomlala (2022) investigated the relationship between Covid-19 and South African financial stock markets. The results show that the Covid-19 pandemic triggered high and longer-lasting financial volatility in the markets.

In the same vein, Duc & Hong (2022) examined the effect of the Covid-19 pandemic on various stock markets around the world by applying the Generalized Method of Moments (GMM) technique. Specifically, the study investigated the relationship between monthly growth in newly reported Covid-19 cases and

monthly market transaction value growth in 46 stock markets around the world from December 2019 to January 2021. The findings revealed that the pandemic positively affected the trading value of the stock markets. Also using a panel data framework, Arya & Singh (2022) investigated the dynamic relationship among the stock markets of South Asian Association of Regional Cooperation (SAARC) countries during the pandemic. Daily time-series data of four SAARC countries, India, Bangladesh, Pakistan, and Sri Lanka, from February 13, 2013, to March 31, 2021. The study confirms that the Covid-19 contagion adversely influenced their stock returns.

Moreover, Aziz *et al.* (2022) explored the impact of the Covid-19 pandemic on the connectedness of stock indexes in the group of developed and emerging economies known as the ASEAN+3. The study showed that the Covid-19 pandemic had a more significant impact on the return and volatilities of ASEAN+3 stock markets than previous economic turmoil, such as the 2008 global financial crisis and the 2009–2012 European debt crisis. Yang, Li, & Jiang (2021) examine the impact of the Covid-19 pandemic on seven emerging stock markets by focusing on the value effect. The results show that there are significant differences in the value premia before and during the Pandemic. Raifu (2021) examined the effects of the Covid-19 Pandemic on Stock Market Performance in Africa. The OLS results indicate that stock market returns in countries like Botswana, Kenya, Tanzania, Tunisia, and Uganda react negatively and significantly to the daily growth in Covid-19 confirmed cases. Takyi & Bentum-Ennin (2020) evaluate and quantify the short-term impact of the coronavirus disease of 2019 (Covid-19) on stock market performance in thirteen (13) African countries, using daily stock market data spanning from October 1, 2019 to June 30, 2020. The results showed that stock market performances in Africa have significantly reduced during and after the occurrence of Covid-19, usually between -2.7% and -21%.

For instance, Rowland, Chia, & Liew (2023) studied the effect of non-pharmaceutical government intervention on stock market return and volatility using daily Malaysian equity data from January 28, 2020, to May 31, 2022. The government's response to the deadly virus through the Stringency index showed a positive direct effect on both stock market returns and volatility, as well as an indirect negative effect on stock market returns. Similarly, Chiang (2022) examined the impact of changes in economic policy uncertainty (EPU) and Covid-19 shock on stock returns.. The study showed a negative relationship between the stock return and a country's EPU. Apergis, Mustafa, & Malik (2022) also found that both the Covid-19 pandemic and

the associated vaccination programme had significant effects on the stock market in Canada. In the same vein, Chang, Feng, & Zheng (2021) investigate the effect of the government's responses to fighting the Covid-19 pandemic on the returns in the stock market index using panel data from 20 countries. The results indicate that the overall government response, containment and health, and stringency indices have significantly positive effect on stock market returns. Huynh, Dao, & Nguyen (2021) explored the impact of Covid-19 on financial markets. Their findings suggest that the daily growth of Covid-19 confirmed cases had considerable adverse effects on stock returns and positive impacts on investment risks across markets.

Research Methods

Longitudinal research design was adopted for this study, as well as case study of the stock market for individual countries. The population of this study is the entire twenty-nine (29) stock exchanges in Africa. The screening sieving technique was adopted to select five countries based on the size of their stock exchanges and that of their gross domestic products. The countries thus selected are Nigeria, Kenya, Ghana, South Africa, and Mauritius. About 70% of the market capitalisation of stock markets in Africa is found in Nigeria, Ghana, South Africa, Kenya, and Mauritius (Ernst & Young, 2023). The data for Covid-19 were sourced from the World Health Organization (WHO). The data covers the period of January 2017 to June 2023. The choice of the period was to provide enough degrees of freedom to cover the pre-pandemic and the pandemic period. According to Stock & Watson (2019), the study of events must include at least two sets of periods involving the period before and during the event or the period during and after the event. This study focuses on the depth and dimension of the Covid-19 pandemic on the stock returns of selected African stock markets. The model specified is adapted from the study of Arya and Singh (2022) and Linh and Toan (2023). This is a bi-variate model that relates COVID-19 to the stock market as follows:

$$SMR_i = (Covid-19_i) \quad (1)$$

Where SMR is stock market returns, Covid-19 is the effect of the Pandemic, which is measured by the number of cases recorded within a period, and i represent the given country. The cases are used because the reactive social and health policies adopted among African countries during the Covid-19 pandemic period were largely based on the movements in reported cases among the countries (World Bank, 2022). The model is specified as:

$$SMR_{it} = \beta_0 + \beta_i Covid - 19_{it} + u_{it} \quad (2)$$

Where t represents the time period (month).

The autoregressive distributed lags (ARDL) framework is specified as:

$$\Delta SMR_t = \beta_0 + \phi SMR_{t-1} + \beta_1 Covid - 19_{t-1} + \sum_{i=1}^{p-1} \varphi_i \Delta Covid - 19_{t-i} + \delta ECM_{t-1} + \xi_t \quad (3)$$

In the model, β and ϕ are coefficients for the long-run estimates, while φ shows the short-run coefficients, and δ represents the coefficient of the error correction term, which is expected to be a negative fraction. In estimating the ARDL relationship, the lag length is determined using the Akaike Information Criterion (AIC) and the Schwarz Information Criterion (SIC). The study examines the dynamic (short-run and long-run) effects of the Covid-19 pandemic on the returns of stock markets in Africa. This method has the advantage of being able to handle the dynamic relationships even in the presence of variables with different orders of integration. The measurement and operationalisation of variables are presented in table 1.

Table 1: Variable, Measurements and Sources

S/N	Variable	Type of Variable	Measurement	Source
1.	Stock market return	Dependent	Stock Market Stock market returns are measured by the total return approach, which is calculated as follows: Total Return = (Ending Price - Beginning Price + Dividends) / Beginning Price multiply by 100 (%)	Investing.com
2.	COVID-19 infected cases	Independent variable	Number of COVID-19 infected cases as reported monthly in each of the selected countries.	World Health Organization (WHO) database and the Nigerian Center for Disease Control (NCDC) database.

Source: Difference sources consulted as itemised in the last column.

Analysis and Discussion

In Table 2 the summary statistics of stock market returns for the periods before and after the pandemic are presented. It is shown that for Kenya, the average stock market returns were higher in the period before the pandemic than in the period

after the pandemic. It appears that the stock market returns experienced downward movement after the pandemic in Kenya. The standard deviation for the returns in the Kenyan market is, however, higher than the average returns for the respective periods, showing that there were wide variations and instability in stock market returns over the period, with variations becoming more pronounced after the Covid 19 pandemic. Thus, there is evidence that not only did overall market returns decline after the pandemic relative to the period before the pandemic, but stock prices were more unstable during the period after the pandemic. It appears that the pandemic produced a decline and instability in Kenya's stock market returns.

Table 2: Summary Statistics of Stock Market Returns

Stat	Kenya		South Africa		Ghana		Mauritius		Nigeria	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
<i>Mean</i>	0.27	-0.69	-0.16	-0.42	0.34	0.68	0.25	24.94	0.34	2.35
<i>Median</i>	-0.21	-0.07	-0.02	0.14	-0.59	-0.38	0.00	0.36	-0.59	2.30
<i>Max.</i>	11.34	13.32	22.08	16.19	19.28	15.73	42.31	565.08	15.95	14.92
<i>Min.</i>	-10.69	-14.26	-20.85	-13.99	-9.23	-7.60	-38.50	-85.23	-9.11	-18.75
<i>Std. Dev.</i>	4.51	5.12	7.99	5.97	5.43	4.85	14.74	103.58	5.73	6.69
<i>Skewn.</i>	0.03	-0.21	0.05	0.22	1.04	1.49	0.32	4.12	0.80	-0.53
<i>Kurt.</i>	3.12	4.12	3.56	3.40	5.27	5.39	4.01	21.92	3.34	4.16
<i>J-B</i>	0.04	2.38	0.67	0.62	19.31	23.09	2.93	638.39	5.52	4.15
<i>Prob.</i>	0.98	0.30	0.72	0.74	0.00	0.00	0.23	0.00	0.06	0.13

Source: E-Views' result. Stock market returns are measured by the total return approach, which is calculated as follows: Total Return = (Ending Price - Beginning Price + Dividends) / Beginning Price multiply by 100 (%)

For South Africa, average stock market returns also declined from -0.16 during the period before the pandemic to -0.42 during the period after the pandemic. Again, there was a negative change in periodic average returns for South Africa after the pandemic. The standard deviations for both periods are also quite larger than the mean values, indicating that the stock market returns experienced deep variations over the period. The result, however, shows that the variations and instability in returns were higher during the period after the pandemic, suggesting that the returns were more stabilised after the pandemic. Hence, there was only a shift in the returns, which did not lead to instability as a result of the pandemic in South Africa.

For Ghana, Mauritius and Nigeria, the average stock returns for the period after the Covid-19 pandemic are larger than the average values for the period before the pandemic. This shows that for these countries, market returns generally increased after the pandemic, with the largest increase occurring in Mauritius, where average returns were 0.25 in the period before the pandemic and 24.94 per cent in the period after the shock. Thus, there is evidence that for three of the countries, stock returns were relatively higher in the market after the pandemic. Whether these positive changes were short-term or long-term can only be determined from the estimation of the regression models in the study. The standard deviation for the two periods are relatively high and suggest that instability occurred in the returns movement over the period, especially after the pandemic. Thus, stock returns were more unstable across the SSA countries after the Covid-19 pandemic.

The initial patterns of relationships between Covid-19 and the stock market price index within and among the sampled countries are analysed by considering the correlations among the variables. The correlation matrix is presented in Table 3. There is a positive correlation between Covid-19 pandemic cases and the stock market price index for all the countries except Mauritius, where the correlation is negative. In between countries, there is evidence of a high level of contagion in terms of the reported Covid cases among the countries, given that a strong positive correlation exists in the number of Covid-19 cases among the countries. In terms of the stock market price index, the correlations among the different markets are pervasive. While some countries have positive cross-correlation among the markets, others have negative correlations. For example, the correlation between the index in the Nigerian and South African markets is -0.357, while the correlation between the Nigerian and Ghana markets is 0.615. Thus, it appears that the stock market indexes do not experience similar trends across the board.

Table 3: Correlation Matrix

Variable	SMP_ KE	COVID_ KE	SMP_ MA	COVID_ MA	SMP_ GH	COVID_ GH	SMP_ NG	COVID_ NG	SMP_ SA
SMP_KE	1								
COVID_KE	0.259 (0.01)	1							
SMP_MA	-0.250 (0.02)	-0.541 (0.00)	1						
COVID_MA	0.084 (0.43)	0.077 (0.46)	-0.280 (0.01)	1					

Variable	SMP_ KE	COVID_ KE	SMP_ MA	COVID_ MA	SMP_ GH	COVID_ GH	SMP_ NG	COVID_ NG	SMP_ SA
SMP_ GH	0.461 (0.00)	0.046 (0.66)	0.258 (0.01)	0.278 (0.01)	1				
COVID_ GH	0.175 (0.09)	0.683 (0.00)	-0.570 (0.00)	0.094 (0.38)	-0.031 (0.78)	1			
SMP_ NG	-0.077 (0.47)	0.136 (0.20)	0.106 (0.32)	0.403 (0.00)	0.615 (0.00)	0.059 (0.58)	1		
COVID_ NG	0.170 (0.11)	0.544 (0.00)	-0.543 (0.00)	0.051 (0.63)	-0.077 (0.47)	0.862 (0.00)	0.084 (0.43)	1	
SMP_ SA	0.293 (0.01)	-0.333 (0.00)	0.401 (0.00)	-0.284 (0.001)	0.083 (0.44)	-0.316 (0.00)	-0.357 (0.00)	-0.282 (0.00)	1
COVID_ SA	0.231 (0.03)	0.671 (0.00)	-0.512 (0.00)	0.101 (0.34)	0.054 (0.61)	0.756 (0.00)	0.140 (0.19)	0.754 (0.00)	-0.33 (0.00)

Source: E-Views' result.

The Augmented Dickey-Fuller ERS (developed by Elliot *et al.*, 1996), ERS, the MZ_{α}^{GLS} , and MZ_t^{GLS} by Ng & Perron (2001) are employed. These tests are performed in order to determine the time series properties of the dataset for each country in greater detail. Each of these tests reported in Table 4 indicates important characteristics of the variables. The test shows that the variables are all stationary in levels and integrated at order zero (i.e., I [1]).

Table 4: Unit root tests

Variable	Exogenous regressor	ADF	ERS	MZ_{α}^{GLS}	MZ_t^{GLS}
Nigeria	Constant	-5.88**	-2.25*	-11.85*	-2.41*
South Africa	Constant	-7.67**	-3.85**	-28.23**	-3.75**
Kenya	Constant	-5.13**	-4.54**	-30.68**	-3.91**
Ghana	Constant	-5.95**	-3.38**	-23.80**	-3.45**
Mauritius	Constant	-6.83**	-2.15**	-9.62*	-2.17*

Note: * and ** indicate significance at 5% and 1% respectively. Source: E-Views' result.

The unit root test above suggests that all the stock market returns series for the countries are I(0). A further evaluation of the Covid-19 data series indicates that they are either I(1) or I(0). This suggests that the traditional test for common stochastic trends in the data series (or cointegration test) may not be sufficient for determining the long-run relationship. In this direction, the Bounds testing

procedure for cointegration is adopted in this study. The results of the Bounds test for cointegration for the equations for each of the countries are shown in Table 5, and the evaluations are based on the critical F-statistic values. From the Table, the F values for the tests are all greater than both the lower and upper Bounds values at the 5 per cent levels, except for Ghana and Kenya. According to the empirical output of the F-values in all the panels, it can be seen that the null hypothesis of no cointegration between stock market price indexes for three of the selected countries and the reported Covid-19 cases can be rejected at the 5 per cent level of significance. These results reveal that for the countries, the Covid-19 pandemic has a significant long-run relationship with the stock market index. Apparently, this result shows that a long-run relationship exists among the variables, except for Ghana and Kenya.

Table 5: Results of Bounds Test of Cointegration

<i>Country</i>	<i>F-statistic</i>	<i>I(0)</i>	<i>I(1)</i>
Nigeria	4.49	3.62	4.16
SA	6.97	6.56	7.30
Kenya	0.44	3.62	4.16
Ghana	0.76	4.68	5.15
Mauritius	4.29	3.62	4.16

Source: E-Views' result

It should be noted that the dynamic form of the ARDL estimates suggests that both the long-run and short-run estimates are presented. Based on the objectives of the study, the dynamic interaction between Covid-19 and the stock market indicator is completely emphasized. The results for each of the countries are reported in Table 6. The adjusted R-squared values for the estimates for each county are relatively low, with the highest at 0.37 for South Africa. This tends to suggest that a low proportion of the systematic variations in stock market returns for the sampled markets was explained by the effects of the Covid-19 pandemic. Although the value of the adjusted R-squared is relatively low, it however shows how Covid-19 accounted for variations in stock market returns in the country. The DW statistics for each of the equations are relatively close to 2.0.

The results of the short-run estimates for Nigeria show that the coefficient of the current Covid-19 variable is significant at the 5 per cent level. This shows that Covid-19 had an immediate negative impact on stock market returns in the short run. The pandemic led to a decline in the returns by 0.015 percentage points. The

Table 6: ARDL Results for Nigeria

Variable	Nigeria	South Africa	Kenya	Ghana	Mauritius
<i>Short run</i>					
Constant	18285.4* (0.026)	2942.1** (0.008)	224.03* (0.031)	126.3 (0.132)	-1.677** (0.001)
Δ COVID	-0.015* (0.035)	-0.001 (0.423)	0.044** (0.009)	0.136 (0.853)	0.083 (0.070)
Δ COVID _{t-1}	-0.003 (0.711)	0.000 (0.789)	0.033 (0.078)	-0.052 (0.163)	-0.143** (0.002)
Δ COVID _{t-2}	-0.008 (0.263)	0.000 (0.740)	0.031 (0.086)	0.001 (0.839)	-0.052 (0.270)
Δ COVID _{t-3}	-0.017* (0.023)	-0.001* (0.026)	0.024 (0.116)	0.000 (0.993)	0.032 (0.498)
ECM _{t-1}	-0.087** (0.000)	-0.180** (0.006)	-0.040 (0.248)	-0.001 (0.840)	-0.082* (0.050)
<i>Long run</i>					
COVID	0.063** (0.009)	-0.009** (0.032)	0.209 (0.511)	0.022 (0.062)	0.726* (0.035)
Constant	10.378 (0.000)	12332.5 (0.000)	131.6** (0.000)	2.619 (0.847)	1.301 (0.644)
Adj. R-sq.	0.119	0.370	0.132	0.246	0.195
D-W stat	1.801	1.882	1.802	1.630	2.61

Note * and ** indicate significance at 5 and 1 percent level respectively; p-values for t-ratios in parentheses. Source: E-Views' result.

coefficient of the first and second lags of the Covid-19 variable, however, fail the significance test at the 5 per cent level. The coefficient of the third lag of the Covid-19 variable passes the test at the 5 per cent level and is negative. This shows that in the short run, the Covid-19 pandemic also had a significant delayed impact on stock returns in Nigeria. The coefficient of the error correction term (ECM) is negative and significant at the 1 per cent level, indicating long run adjustment to equilibrium. The second panel in Table 6 reports the long-run estimates of the relationship. The coefficient of the Covid-19 variable is positive and significant at the 1 per cent level for Nigeria. This shows that the pandemic had a positive long-run impact on the stock market returns in the Nigerian stock market. Thus, there is evidence in the study that the pandemic lifted the time path of the stock market return to a higher level in Nigeria.

The third column of the results in Table 6 shows the stock market returns estimate for South Africa. The results of the short-run estimates show that the

coefficient of the current Covid-19 variable to the second lags all fail the significance test at the 5 per cent level. This shows that Covid-19 did not exert any significant immediate effects on stock market returns in the short run for South Africa. The South African stock market thus appears to have shown some level of resilience in the first few months of the pandemic, which made the responses of returns in the market to be weak during the initial period. The coefficient of the third lag of the Covid-19 variable is significant at the 5 per cent level, indicating that this lag had a significant short-run impact on stock market returns. The coefficient is negative, showing that the pandemic had a significant short-run negative effect on stock returns. The short-run effect is, however, a delayed effect, given that the current and first two lags do not have significant coefficients. The coefficient of Covid-19 in the long-run estimates is negative and also significant at the 5 per cent level. This shows that the pandemic had a significant negative impact on the stock market returns in South Africa in the long run. The Covid-19 shock in the market is shown to lead to a decline in the market return by 0.009 percentage points in the long run for the South African market.

The fourth column in Table 6 shows the results for the estimates of the effects of the Covid-19 pandemic on stock market returns in Kenya. The short-run estimates in the model show that the coefficient of the current Covid-19 variable is significant at the 1 per cent level. The coefficient is also positive, which shows that the advent of the Covid-19 pandemic led to an initial or immediate positive response from the Kenya stock market. This pattern of response shows that the shock from the pandemic information led to positive news in the market that motivated investors. The coefficients of the other lags in the Covid-19 variables are not significant. These outcomes can also be demonstrated in the coefficient of the error correction term (ECM) that failed the significance test at the 5 per cent level, even though it has the expected negative sign. The long run result shows that the coefficient of the long-run effect of Covid-19 on stock market returns fails the significance test even at the 5 per cent level. This shows that the pandemic had no long-run effects on stock market returns in Kenya. The effects were predominantly short-term and did not take long to settle. The results for the Ghana stock market *also* shows that there is no significant long run impact of Covid-19 on the stock market return.

The results of the dynamic effects of the Covid-19 pandemic on stock market returns in Mauritius are shown in the last column of Table 6. Only the coefficient of the first lag of Covid-19 passed the significance test, while the ECM term also passes

the test at the 5 percent level, with a negative coefficient. This shows a significant long run dynamic stability in the model. For the long-run estimates in the second panel, the results show that the coefficient of the Covid-19 variable is significant at the 5 per cent level and is also positive. Thus, after the stock market has completed adjustments arising from the Covid-19 shocks, the net effect over time is to raise the stock market returns in Mauritius. The results from the study therefore indicate that there are variations in terms of the impacts of the pandemic based across countries in Africa and over the time horizon. The variations of the impacts of Covid-19 on the stock markets across different countries have also been found in studies by Zoungrana *et al.* (2023), Arya & Singh (2022), Apergis *et al.* (2022), Singh & Shaik (2021).

The dynamic effect of the Covid-19 pandemic on stock return for the panel of African countries is estimated by the dynamic OLS (DOLS) procedure based on the ARDL estimation results for the panel and reported in Table 7. The coefficient of Covid-19 is negative and passes the significance test at the 5 per cent level. This shows that, in general, Covid-19 had a significant and negative impact on stock market returns among African countries. Essentially, the stock market responded negatively to the pandemic outbreak among African countries, consistent with previous literature (Bagh, 2023; Apergis *et al.*, 2022; Chiang *et al.*, 2022). The channels of these negative impacts have been known to result from increased risks in financial assets that the pandemic generated, with implications on the returns in the stock market (KPMG, 2023; PwC, 2023). The negative effects also resulted from a combination of negative information in the stock market as well as social and economic policies that prevailed in the period (Chiang *et al.*, (2022), especially due to the rise in economic policy uncertainty that Covid-19 generated in the economy.

Table 7: Long Run Estimates for the Panel (Combined) Relationship

Variable	Coefficient	t-Statistic	Prob.
COVID	-0.094	-2.353	0.019
Constant	-6655.2	-1.671	0.095
TREND	83.900	2.015	0.045
TREND2	-0.013	-0.145	0.885
Adj. R-sq.	0.407		
L-R variance	0.000		

Source: E-Views' result

The cumulative sum of squares (CUSUM) test is employed to test the structural stability. The CSUM squares plots for each country are reported in Fig.1. As depicted in the charts, the cumulative sum plots for each country case lie within the boundary lines for each of the countries. This confirms that the ARDL equations were correctly specified and that the models are stable. Furthermore, the result shows that there is no structural instability in the models during the estimation period. It is, therefore, concluded that the long- and short-run estimates are stable, indicating that the results of the estimated model are efficient and reliable.

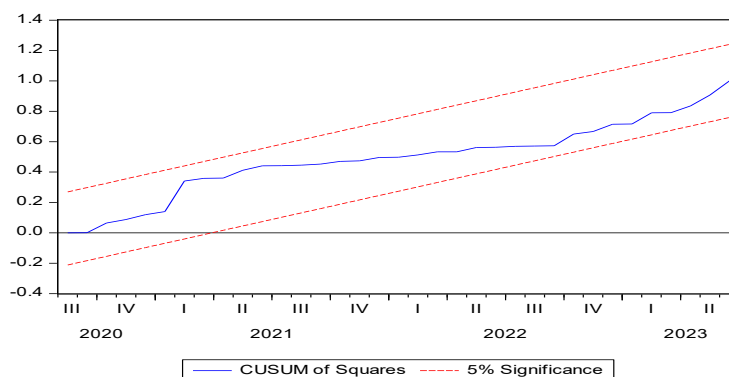


Figure 1: CUSUM Squares Test for Structural Breaks and Stability of Estimates.

Source: E-Views' result.

Conclusion

In this study, the effect of the Covid-19 pandemic on stock market returns was examined by focusing on five selected African countries (Nigeria, Ghana, Mauritius, Kenya, and South Africa). Monthly data for Covid-19 cases and stock market price index were used in the analysis for the period of 2017 to 2023, while a bi-variate analysis was conducted in order to obtain more direct relationships. Given the dynamic nature of the relationships, the autoregressive distributed lags (ARDL) technique was adopted. The results showed that, in general, Covid-19 had some effects on stock market returns in Africa. Specifically, the study found that the effect of the Covid-19 pandemic on stock markets across African countries were more long run than short run in nature. There was also evidence of wide variations in terms of the patterns of effect of Covid-19 pandemic. While the short run impacts were immediate for some countries, the effect were delayed for others. Also, while Nigeria and Mauritius experienced significant positive long run effects, South Africa

had a negative long run effect, and the effects in Kenya and Ghana were both not significant.

It is therefore recommended that stock markets across Africa should develop capacity for early warning mechanisms to ensure that there is enough preparation for the short-term effects of shocks like Covid-19. The stock markets also need to maintain appropriate balance between short-term and long-term assets and instruments in such a way that more long-term contracts dominate the market, especially for countries where shocks can likely generate positive long-run effects. This can be done by deepening the market and ensuring that a widespread investor system is entrenched. Moreover, rising risks during financial shocks in the system need to be reduced by the stock markets in an absorptive manner. Better regulation of the stock market can achieve these outcomes. Finally, a healthy financial system is critical if any emerging economy to achieve more stable and resilient stock market. The overall financial system both money and capital markets, need to be strengthened using appropriate monetary policy tools and directions.

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