

# The Impact of COVID-19 on the West African Stock Exchange (BRVM)

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## Abstract

The motivation for this article is to study the impact of COVID-19 on stock market trading volume within the WAEMU zone. We used a static panel data model for time-series (monthly) data from January 2020 to December 2021. The results of the analysis show that COVID-19 positively and significantly influenced the performance of the BRVM (Regional Stock Exchange).

## Keywords

COVID-19, Stock Market, Listed Companies, BRVM and Crisis

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## 1. Introduction

Coronavirus, better known as COVID-19, is one of the deadliest pandemics ever known. This pandemic has devastated entire economies around the world. In West Africa, the consequences of this pandemic have affected all sectors of the economy, leading to layoffs and bankruptcies for some companies.

The Regional Stock Exchange has not been spared the consequences of COVID-19. The member states of the West African Economic and Monetary Union (UEMOA) have taken measures to revive their respective economies with a view to maintaining employment levels and ensuring the continuity of economic activity. Following the example of the Senegalese government, which has deferred tax payments for at least six months and maintained salaries at 70% of their normal level, among other measures.

Beyond the health crisis, the coronavirus has triggered an economic crisis that has had a drastic impact on the world of finance. Furthermore, it is undeniable that the WAEMU member states have played a part in reducing the impact of this

crisis on the financial market. Financial institutions have also done what is necessary.

In this article, we will attempt to answer the following questions: What does the future hold for the BRVM in the face of exogenous shocks such as COVID-19? And what is the situation of the WAEMU financial system in times of crisis? To answer these questions and for methodological reasons, we will present this article in three parts. In the first section, we will review the literature on the impacts of COVID-19 and its consequences. The second section will focus on the impact of the pandemic on the BRVM by modelling the volume of monthly transactions corresponding to the quantity of securities traded during a month. The final section will analyse the results obtained and make recommendations for withstanding such shocks.

## 2. Literature Review

According to [Bennis & Lamrani \(2021\)](#), it is essential to study the impact of the coronavirus on the financial market and Moroccan companies listed on the stock exchange. This study revealed that the Moroccan financial market has been affected, with significant statistics and results.

It states that despite this, the Moroccan government and financial institutions have implemented measures to mitigate the effects of the coronavirus. The results obtained show that Morocco must strengthen its efforts and establish a contingency plan to ensure the transition to a sustainable economy. Despite all these effects and obstacles, the Moroccan economic system has been able to withstand this economic shock.

According to [Adrian et al. \(2023\)](#): Since the beginning of the pandemic, the prices of risky assets have fallen sharply: At the peak of the recent sell-off, risky assets suffered losses at least equivalent to half of those incurred in 2008 and 2009. For example, at the trough of this decline, many stock markets (in both large and small countries) recorded declines of 30% or more. Credit spreads widened, particularly for lower-rated companies. Tensions also emerged in key short-term funding markets, including the global dollar market.

[Cezar et al. \(2022\)](#): The COVID-19 crisis has caused greater capital outflows from emerging countries than in 2008. At the national level, countries responded to this crisis by implementing effective and unprecedented countercyclical policies: fiscal, macroprudential and monetary, often including unconventional asset purchase policies for the first time. There were numerous but temporary foreign exchange interventions, with many countries choosing to let their currencies float, and capital controls were rare. At the international level, it was mainly loans from the International Monetary Fund (IMF) that were mobilised. These responses enabled selective capital to return to certain emerging countries. Nevertheless, additional aid is needed to restore sustainable growth. The IMF's general allocation of special drawing rights at the end of August 2021 could be an opportunity to put in place more sustainable measures through their reallocation.

### 3. Methodology

Our study focuses on a single stock market, namely the BRVM, comprising the eight WAEMU countries, and seeks to explain the volume of monthly transactions in light of the COVID-19 crisis. To this end, the method adopted consists of measuring the effects of certain variables of interest and control on the variable to be explained, which in this case is none other than the volume of monthly transactions. The choice of trading volume is due to the fact that this variable best represents the performance of the stock market. Still with a view to elucidating the impacts of COVID-19 on the BRVM, drawing inspiration from Gnahe et al. 2021, monthly trading volume represents the BRVM, i.e. the dependent variable, and the number of confirmed COVID-19 cases, the consumer price index, representing inflation here, and the dollar-FCFA exchange rate are the explanatory variables. The first variable indicates the COVID-19 crisis, and is therefore the variable of interest in the model to be studied, while the others are control variables to mitigate bias.

Before moving on to econometric studies, it is necessary to present descriptive statistics for all variables to ensure their consistency.

**Table 1** shows that the volume of monthly transactions varies from 0 to 1.18e+08, i.e. the smallest value is 0 and the largest is 1.18e+08. The average is 1,195,874, which means that if the WAEMU countries distributed transactions equally each month, they could have had 1,195,874 each month between January 2020 and December 2021, and the same for the explanatory variables.

**Table 1.** Descriptive statistics.

	Minimum	Average	Maximum
<b>Monthly trading volume</b>	0	1,195,874	1.18e+08
<b>Number of confirmed COVID-19 cases</b>	0	1356.219	19333
<b>Exchange rate</b>	554.53	564.9837	575.59
<b>Consumer price index</b>	98.27	106.8056	113.8

Source: (Base de l'auteur, Banque mondiale, Sika finance, 03 Décembre 2024).

The resulting economic model can be written mathematically as follows:

$$VTM = F(NCC, IPC, TXC) \quad (1)$$

where:

*VTM*: monthly transaction volume,

*NCC*: number of confirmed COVID-19 cases,

*CPI*: consumer price index,

and *TXC*: Dollar-FCFA exchange rate.

In order to study the causal link between monthly transaction volume and all other variables, it is necessary to transform this economic model (1) into an econometric model in the form of an equation:

$$VTM_{it} = C + \alpha NCC_{it} + \beta IPC_{it} + \gamma TXC_{it} + \varepsilon_{it} \quad (2)$$

with  $i = 1, \dots, N$ ,  $t = 1, \dots, T$ .

- ✓ The  $i$  represents the individual and  $t$  represents the period, which in this case corresponds to the month.
- ✓  $C$  represents the constant and  $\varepsilon$  represents the error term.
- ✓ And  $\alpha$ ,  $\beta$  and  $\gamma$  represent weighting coefficients representing the parameters of the economic model.

We have quantitative data and the period selected is from 2020 to 2021, i.e. time series data. This data only concerns the WAEMU zone, which means that it is country-specific. Consequently, the panel data model is more suitable for capturing the time effect and the individual (country) effect. Here, we have monthly data from January 2020 to December 2021 (24 months) and 8 countries, giving a total of 192 observations. This means that in order to capture the individual effect (country in this case), Equation (2) becomes:

$$VTM_{it} = C_i + \alpha NCC_{it} + \beta IPC_{it} + \gamma TXC_{it} + \varepsilon_{it} \quad (3)$$

Before moving on to the explanation of the results, it is necessary to make estimates and validity tests of the model in order to see exactly the nature of the relationship between the variables and what corrections we need to make to the model to ensure that it is correct and to decide on the significance of the results.

$$\log(VTM_{it}) = C_i + \alpha \log(NCC_{it}) + \beta \log(IPC_{it}) + \gamma \log(TXC_{it}) + \varepsilon_{it} \quad (4)$$

### 3.1. Data Homogeneity Test

The importance of this test is that it allows us to determine the panel structure to be adopted for the rest of the study. We therefore use Fisher's test, and the results are as follows.

First, the test hypotheses are written as follows:

H0: No effects

H1: Presence of fixed effects

The null hypothesis is  $H_0: C_1 = C_2 = \dots = C_N = C$ .

And the decision rule is as follows:

- We accept the null hypothesis of no effects if the  $F^*$  statistic is less than the critical value read from Fisher's table.
- The null hypothesis of no effects is rejected if the  $F^*$  statistic is greater than or equal to the critical value read from Fisher's table.

After estimating the parameters of the fixed effects model using STATA, we obtain the following results (**Table 2**).

**Table 2.** Fisher's test results.

LVTM	Coef	Std. Err	$t$	$P >  t $
LNCC	0.3564752	0.0797471	4.47	0.000
LTXC	177.3161	174.8322	1.01	0.312

**Continued**

LIPC	41.87845	4.588273	9.13	0.000
CONS	-1309.013	1106.802	-1.18	0.239
F test all $U_i = 0$ :		F(21,129) = 1.33		
		Prob > F = 0.1685		

Source: (Base de l'auteur, Banque mondiale, Sika finance, 03 Décembre 2024).

Fisher's statistic is 1.33 with a non-zero critical probability (Prob > F = 0.1685), so the null hypothesis ( $H_0$ ) of no effects is accepted. Consequently, the model without effects is better than the one with fixed effects, which means that the equation to be used for the rest of the analysis is:

$$\log(VTM_{it}) = C + \alpha \log(NCC_{it}) + \beta \log(IPC_{it}) + \gamma \log(TXC_{it}) + \varepsilon_{it} \quad (5)$$

This result shows a certain degree of homogeneity among the countries of the WAEMU zone, i.e., the individual effect that should have been specific to each country becomes a common parameter, so that  $C_i$  becomes  $C$ .

### 3.2. Model Estimation

Following Fisher's test, which concluded that there were no fixed effects, we used OLS estimation, which gave the following results (Table 3).

**Table 3.** OLS estimation results.

Source	SS	df	MS	Number of obs = 154
Model	168.521851	3	56.1739504	F(3,150) = 40.60
Residual	207.522195	150	1.3834813	Prob > F = 0.0000
Total	376.044046	153	2.45780422	R-squared = 0.4481 Adj R-squared = 0.4371 Root MSE = 1.1762
LVTM	Coef.	Std. Err	$t$	$P >  t $
LNCC	0.3645904	0.0678225	5.38	0.000
LTXC	24.37623	6.052851	4.03	0.000
LIPC	31.28667	3.624898	8.59	0.000
_cons	-290.7214	48.74537	-5.96	0.000

Source: (Base de l'auteur, Banque mondiale, Sika finance, 03 Décembre 2024).

### 3.3. Student's T-Test for the Significance of Explanatory Variables

This test allows us to see the effect of each explanatory variable on the variable to be explained.

The hypotheses to be tested are:

$H_0: \alpha = 0$ ;

$H_1: \alpha \neq 0$ .

These student's  $\alpha$  ratios associated here with 0.36, 24.37 and 31.28 correspond respectively to the number of confirmed COVID-19 cases, the Dollar-FCFA exchange rate and the consumer price index with a critical probability of zero, which explains why the  $\alpha$  coefficients are significantly different from zero ( $H_0$  rejected).

### 3.4. Tests of Overall Model Significance and Error Normality

The Fisher F statistic  $(3, 150) = 40.60$ , accompanied by a critical probability of zero, allows us to say that the exogenous variables significantly explain the volume of monthly transactions. Thus, the model is globally significant. As for the normality of errors, we perform White's test, which is stated as follows:

$H_0$ : the model residuals are homoscedastic;

$H_1$ : the model residuals are heteroscedastic.

The test gives the following results (**Table 4**).

**Table 4.** White test results.

Source	Chi2	df	P
Heteroskedasticity	13.49	9	0.1415
Skewness	4.89	3	0.1804
Kurtosis	1.09	1	0.2954
Total	19.47	13	0.1091
Chi <sup>2</sup> (9)		13.49	
Prob > chi <sup>2</sup>		0.1415	

Source: (Base de l'auteur, Banque mondiale, Sika finance, 03 Décembre 2024).

White's statistic is 13.49 with a critical probability of 14.15%, which is greater than 5%, explaining why the null hypothesis  $H_0$  is accepted. The model residuals are homoscedastic. This means that the estimates obtained using the ordinary least squares method are optimal.

## 4. Analysis of Results

Ultimately, our research findings show that the shock caused by the measures linked to COVID-19 has had a positive impact on the volume of stock market transactions within the WAEMU. Similarly, the exchange rate and the consumer price index, which measures the level of economic activity, have had a positive and significant impact on the volume of transactions on the BRVM. The measures taken by the competent authorities during the coronavirus crisis are designed to limit travel and transport, among other things, and to increase aid. This stimulates fund transfers via online platforms with financial institutions, especially governments and large companies, in order to access financing. These effects lead to the development of financial transactions by listed companies. Our results corroborate those of [Cezar et al. \(2022\)](#), who confirm capital outflows and inflows in

emerging countries, referring to the countercyclical policies implemented in response to the shock caused by the health crisis. They are also in line with [Adrian et al. \(2023\)](#), who find that the global financial system has shown remarkable resilience during the COVID-19 pandemic, despite a sharp decline in economic activity.

However, they contradict the findings of [Bennis & Lamrani \(2021\)](#) on Moroccan listed companies, which experienced significant declines during the lockdown period.

## 5. Conclusion and Recommendations

The purpose of this study was to determine the impact of COVID-19 on the WAEMU stock market. We reviewed a number of contributions concerning the coronavirus and its impact on the financial market and listed companies. Using a static panel time series method, our results show that COVID-19 has had a positive impact on the financial performance of the BRVM. The study confirms that the responses of governments and institutions to the shocks linked to COVID-19 in the real sector have helped to keep the BRVM on an upward trend. Future research on this topic could therefore focus on the impact of COVID-19 on the efficiency of listed companies in the WAEMU.

## Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

## References

- Bennis, L., & Lamrani, K. (2021). Coronavirus et son impact sur le marché financier et les sociétés cotées en bourse. *Revue Internationale de Sciences de Gestion*, 4, 190-211.
- Cezar, R., Lecat, R., Marsilli, C., et al. (2022). Crise COVID-19 et sortie de capitaux dans les économies émergentes: Des filets de sécurité internationaux efficaces, Mais à compléter. *Bulletin de la France*, 239, 1-12.
- Adrian, T., Natalucci, F. M., & Qureshi, M. S. (2023). Stabilité macrofinancière dans la crise du COVID-19: Quelques réflexions. *Revue Annuelle d'Économie Financière*, 15, 29-54.