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Co-variation of exchange rates in the ecowas zone: A verification based on dynamic conditional correlations

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Abstract

The purpose of this study is to determine the synchronous or asynchronous nature of movements in the exchange rate yields of the various ECOWAS currencies. This analysis uses the dynamic conditional correlation model recently developed by [1]. The use of this methodology is mainly due to the non-constancy of the volatility of the financial series. Moreover, this characteristic of volatility remains natural for a small, very open economy, which is also subject to a multiplicity of exogenous shocks. The results indicate a transmission of the volatility of the main currencies, namely CEDI, NAIRA and FRANC CFA. Such results argue in favour of the creation of a monetary zone.

JEL classification numbers: C10; C 32; F31.
Keywords: Exchange Rate, Volatility Garch, Dynamic Conditional Correlation, West African Monetary Zone

1 Introduction

The debates on the formation of currency unions raise questions about the interactions between the capital markets of the different candidates and the degree of diversification of the economy. Such discussions have often focused on the importance of In Africa, the African Union's project is the creation of monetary unions in existing regional economic communities, which will eventually lead to

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the establishment of an African central bank and currency [2]. It is within this framework that ECOWAS countries launched the idea of creating a single currency in 2020. However, the failure of some countries to meet the convergence criteria is leading to a debate on the optimality of such an area. However, a significant difficulty related to these debates is the absence of empirical work that clearly highlights the feasibility of such a project, in particular the financial integration of countries with monetary experience. Indeed, the question of establishing a monetary union between countries at different levels of development revolves around the fear of asymmetric shocks that may affect them. The stabilization of exchange rates of ECOWAS currencies is a key element of the roadmap for the creation of the sub-regional single currency. This is considered as an ongoing process to be finalised two years before the launch of the single currency. In a context of wage and price rigidity, the exchange rate is a very effective economic policy instrument for managing the macroeconomic consequences of international competitiveness problems, of which the exchange reserves are a perfect measure. With financial globalization, the transmission of shocks from one economy to another can increase the transmission of exchange rate volatility in different markets. Exchange rate volatility can lead to increased costs, destabilization of markets and misallocation of capital. [3] also showed that the volume of trade between countries in a monetary union was considerably higher than between countries with different currencies. To this commercial gain, let us add the gain provided by the reduction in the imperfection of financial markets in currency unions and, to a lesser extent, in currency areas subject to exchange rate fixing agreements. [4] explain the degree of financial market integration partly through capital flows in global markets while [5] explain financial market co-moves partly through the development of bilateral trade. Despite the ambition to achieve an ECOWAS common market, the intensity of intra-regional trade between Member States remains very modest.

From 4.1% in 1975, trade between Member States represented only about 11% of their total production in 2005 (20% for landlocked countries). However, it represents a significant increase over time and places the community in front of some of Africa's regional economic communities [6].

In addition, the low level of intra-regional trade recorded should be taken with caution, as informal or unregistered trade dominates in the region, especially for agricultural and light industrial products, mainly marketed by women. The volume of informal intraregional trade is estimated at about 15 per cent of total trade, ranging from 1.7 per cent in Mali to 92 per cent in Benin. From this observation, a central emerges: to what extent has trade and financial integration led to an increase in transmission mechanisms between economies? Thus, the main objective of this study is to analyse the mechanisms for transmitting exchange rate volatility between ECOWAS countries. Specifically, it will assess and analyse the evolution of exchange rates of ECOWAS currencies and analyse the variations in exchange rate yields and their link with the transmission of currency volatility.

This study is of major interest. Exchange rates in the region are relatively volatile.

Indeed, effective exchange rates are unstable in the WAEMU zone even if these countries have a fixed nominal bilateral exchange rate against the euro and effective bilateral exchange rates are unstable in other countries outside WAEMU. Restrictions on international payments help to stimulate trade through informal channels as well as through parallel foreign exchange markets in West Africa. Monetary integration will help to solve the problem of multiple currencies and exchange rate fluctuations that affect intra-regional trade. This study can help to validate the willingness of Member States to move towards monetary integration.
From a methodological point of view, the study adopts the technique known as dynamic conditional correlations, designed by Engle. The main advantage of using DCC-GARCH models is that the detection of plausible changes in the relationships between variables remains underlying the data used. This model also allows direct modelling of variance and covariance. In addition, this contribution is intended to fill the gap in work dedicated to the co-movement analysis of financial activities in the various ECOWAS markets.
The rest of the article is organized as follows. Section 2 is devoted to literature review. Section 3 presents the estimation method. Section 4 describes the data, the results of the estimates and the interpretations of the results. Finally, section 5 is reserved for the conclusion.

2 Literature Review

The traditional approach in terms of optimal monetary zones (OMZ) sets out a number of criteria designed to establish the conditions for the smooth functioning of a monetary union. The first formulation of the criteria determining the geographical coverage of a currency is generally attributed to the study of [7]. Mundell's analysis was repeated shortly afterwards by [8], and then by [9], leading to the development of a theory of optimal monetary zones. The main ones refer to the degree of mobility of factors within the Union, the degree of openness of the countries making up the Union, the degree of symmetry of shocks perceived through the diversification of production within the area, the degree of financial integration and the similarity of preferences between the authorities of the countries concerned. The OMZ theory specifies to what extent the common monetary policy can be used in the event of economic imbalances. Two types of imbalances can be distinguished: symmetrical and asymmetrical shocks.
In the case of symmetric shocks, all countries in the currency zone are affected by the same disruption (rise in oil prices, global slowdown in growth, etc.). In this case, monetary policy can be a lever to stimulate the economy of the area by lowering interest rates and/or depreciating the single currency against foreign currencies, without jeopardising fixed exchange rates or the single currency. In the case of asymmetric shocks, only one country, or part of the countries in the area, is affected by economic disruptions. In this case, monetary policy cannot be used in a discriminatory way (on a country or group of countries) unless it is based on the

single currency. The formation of a monetary union can be approached from a cost-benefit analysis perspective. [10] propose a model based on this approach. They identify two benefits: one related to international trade (lower transaction costs) and the other to the degree of commitment (lower inflation). The main cost associated with monetary union is the abandonment of an independent monetary policy. This cost can be high when asymmetric disturbances are numerous. When we say that a shock has an asymmetric effect, it is useful to know exactly what we are measuring. One approach is to simply measure exchange rate movements: if an event is followed by a realignment of parities between two currencies, it can be considered to have had an asymmetric effect, and the realignment was its adjustment mechanism.

For [11], the stronger the financial integration between the candidate countries, the easier it will be to finance deficits without significant disruptive changes in exchange rates or interest rates. An integrated financial market is the one on which volatilities are transmitted. Volatility is defined, in its simplest version, by the standard deviation of asset returns [12] and the transmission of volatility reflects the sensitivity of each market to information and uncertainties in other markets. The relevance of this approach has been reinforced by taking into account common factors, in particular price effects on yields and induced by exchange rate movements.

In addition, they also show the effects of integration on diversification gains [13]. It should be noted, however, that the analysis of the volatility of real exchange rates between candidate countries for monetary unification is a method proposed by [14]. It is based on the assumption that the production of asymmetric shocks in a given economic space results in variability in real exchange rates. To assess the possibility of a monetary union, the method consists in comparing the changes (over a given period) in real exchange rates between the candidate countries with the changes in real exchange rates between the regions of a control currency area.

One of the factors often cited as possible vectors for transmitting volatility remains the financial interdependence that characterizes most global financial markets ([15]; [16]). Trading volumes between stock markets and the actions of institutional investors are also factors that can be at the root of the transmission of volatility. But as pointed out [17], the intensity of interdependence between financial markets is greater in times of crisis and euphoria than in times of stability. Indeed, most often, stock markets overreact to good or bad news.

Many empirical studies ([18], [19]; [20]; [21]) have been devoted to studying the relationships between financial markets. 22] indicate that the United States and Europe have a high conditional correlation in their financial markets, i.e. European markets are integrated with those of the United States and are affected by shocks in the latter. For their part, [23] examined the degree of integration of East Asian equity markets using the methodology of the International Financial Asset Valuation Model.

They used three market indices to test integration: the weighted average stock market index for all countries in the sample, the Japanese stock market index and the US stock market index. The study covers the period 1991 to 2005. The results indicate that the level of financial efficiency of the stock markets and financial integration of the sampled countries is high and improved significantly between 1991 and 2005, and they are more integrated in the region and with the largest Asian market (Japan) than with the largest world market (USA).

[24] have studied the possibility for ECOWAS countries to move towards a single currency. They analysed the convergence of real exchange rates and their returns. The results support the non-convergence of exchange rates in the monetary area, which hinders the eventual implementation of the single currency in the ECOWAS region. [25] analysed the behaviour of exchange rate volatility in West African Monetary Zone (WAMZ) currencies over the period 1960 to 2011. The study selects a sub-sample period of 2000 to 2011 to investigate whether central bank intervention decreases volatility of the local currencies per US$. Their results reveal that the Ghanaian cedi is the most volatile currency in the Zone. The authors also found that leverage exists for the Gambian Dalasi, while it does not exist for the Nigerian naira, but is inconclusive for other countries. The impact of the central bank's intervention on exchange rate volatility is also inconclusive for Ghana, Guinea and Liberia. However, the impact of central bank interventions on exchange rates reduces the level of volatility persistence in the Gambia and Nigeria, while it increases the level of volatility persistence in Sierra Leone during the period under review. The transmission of monetary policy decisions to the final objectives remains insufficient in many studies.

[26] argue that BCEAO's key rates do not influence the path of commercial bank lending rates within UEMOA due to the structural overliquidity of the banking system and the uncompetitive structure of the banking sector in UEMOA. In the case of Ghana, [27] considered the lack of competitiveness of the banking sector as a handicap in the conduct of monetary policy. [28] had already shown that, in a context of excess liquidity, monetary policy innovations had a small impact on output and inflation in Nigeria. The advantage of this model is that it allows direct modelling of variance and covariance.

3 Methodology

In this section, we present the two-step model of dynamic conditional correlations proposed by [29]. As an example, let us consider a vector composed of any two variables $Y_t \equiv [y_{1t}, y_{2t}]$.

Each variable is a function of a constant and its own past values. Thus, the reduced form of the autoregressive process is written:

$$A(L)Y_t = c + \varepsilon_t \quad \text{with} \quad \varepsilon_t \sim N(0, H_t),\ \nabla\ t = 1,2,3,\ldots.T \tag{1}$$

Where $A(L)$ is the delay polynomial and $\varepsilon_t = [\varepsilon_{1t}, \varepsilon_{2t}]$ is a vector of the residues resulting from the estimation of the autoregressive process specific to each variable whose variance-covariance matrix is described by $H_t \equiv \{h_i\}_t$ with $i = 1, 2$.The DCC-GARCH model can be easily understood by rewriting the variance-covariance matrix (H) such as: $H_t \equiv D_t R_t D_t$

Where $D_t = diag\left\{\sqrt{h_{it}}\right\}$ is a diagonal matrix of time-varying standard deviations from the estimation of the two previous equations according to a univariate GARCH process; $D_t = \left\{\rho_{ij,}, t\right\}$ represents the matrix of conditional correlation coefficients. The elements contained in Dt are generated according to a GARCH process (P, Q), which can be formulated as follows:

$$h_{it} = \omega_i + \sum_{p=1}^{P_i} \alpha_{ip} \varepsilon_{it-p}^2 + \sum_{q=1}^{Q_i} \beta_{iq} h_{it-q} \qquad \nabla\, i = 1, 2. \tag{2}$$

In addition, the author adopts a GARCH structure in his modeling of correlation dynamics. Thus, a DCC process of order (M, N) can be described by :

$$R_t = (Q_t^*)^{-1} Q_t (Q_t^*)^{-1}$$

$$Q_t = \left(1 - \sum_{m=1}^{M} a_m - \sum_{n=1}^{N} b_n\right)\bar{Q} + \sum_{m=1}^{M} a_m(\xi_{t-m} - \xi'_{t-m}) + \sum_{n=1}^{N} b_n Q_{t-n} \tag{3}$$

where $\xi_t = \left\{\varepsilon_{it}/\sqrt{h_{it}}\right\}$ is the vector containing the standardized residuals from the estimation of the univariate GARCH model, $Q_t = \left\{q_{ij,}, t\right\}$ is the matrix of conditional variance-covariances of these same standardized residues, while; $\bar{Q} = E(\xi_t, \xi'_t)$ represents the matrix of unconditional variance-covariances, which are invariable in time. The parameters (a_m, b_n) are expected to intercept, respectively, the effects of delayed shocks and dynamic correlations on the contemporary level of the latter. As for Q_t^*, it is a diagonal matrix containing the square root of the elements of the main diagonal of Q_t. In accordance with our example, this matrix is written:

$$Q_t^* = \begin{bmatrix} \sqrt{q_{11}} & 0 \\ 0 & \sqrt{q_{22}} \end{bmatrix}$$

The dynamic conditional correlations $\rho_{12,t} = \frac{q_{12,t}}{\sqrt{q_{11,t}q_{22,t}}}$ are the elements of the matrix (R_t) whose main diagonal is composed of 1. The parameters of the DCC model are estimated by the maximum likelihood method. [30] has shown that the log-likelihood function can be expressed by:

$$L = -\frac{1}{2}\sum_{t=1}^{T}\{2\log(2\pi) + 2log|D_t| + log|R_t| + \xi_t' R^{-1}\xi_t\} \quad (4)$$

The estimation process is a two-step process. The first consists in substituting an identity matrix for the R_t matrix in the log-likelihood function. The advantage of this process is that it allows to obtain the sum of the likelihood function of the univariate GARCH models. In other words, through this first step we obtain the values of the parameters of equation 2. The second step is dedicated to estimating the parameters of equation 3 by adopting the original likelihood function described by equation 4. This makes it possible to obtain dynamic correlations between the variables studied.

4 Data and Estimation Results

In this section, we will explore the presence of similar movements between the three major ECOWAS currencies by adopting the bivariate DCC-GARCH model. The data used are the daily exchange rates of 3 countries: Ivory Coast, Ghana and Nigeria. They are extracted from the database of the West African Monetary Agency. The observation period runs from May 30, 2010 to December 30, 2016. The use of these three variables is justified by the fact that we used the most representative ECOWAS economies in terms of economic power. The graphs showing the evolution of currency prices against the Dollar and their returns, respectively, are illustrated in Figures 1, 2 and 3.

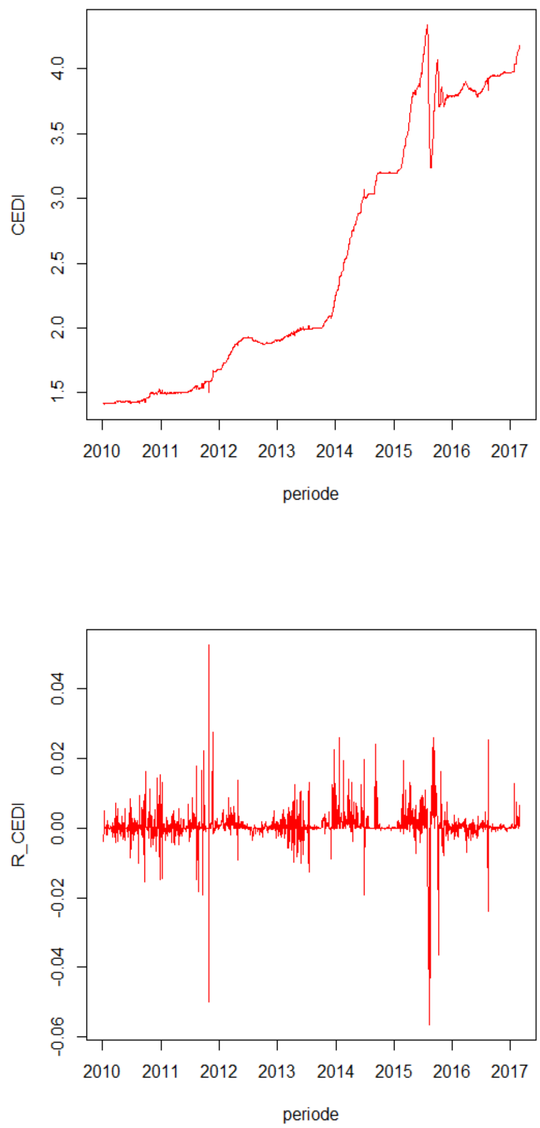

Figure 1: CEDI exchange rate and its yield (R-CEDI)

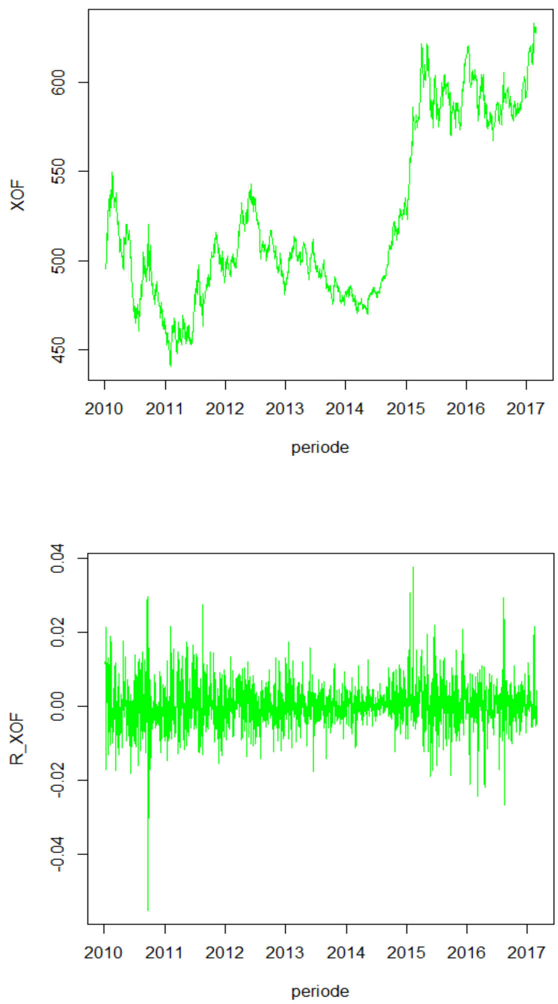

Figure 2: Exchange rate CFA Franc and its yield (R-XOF)

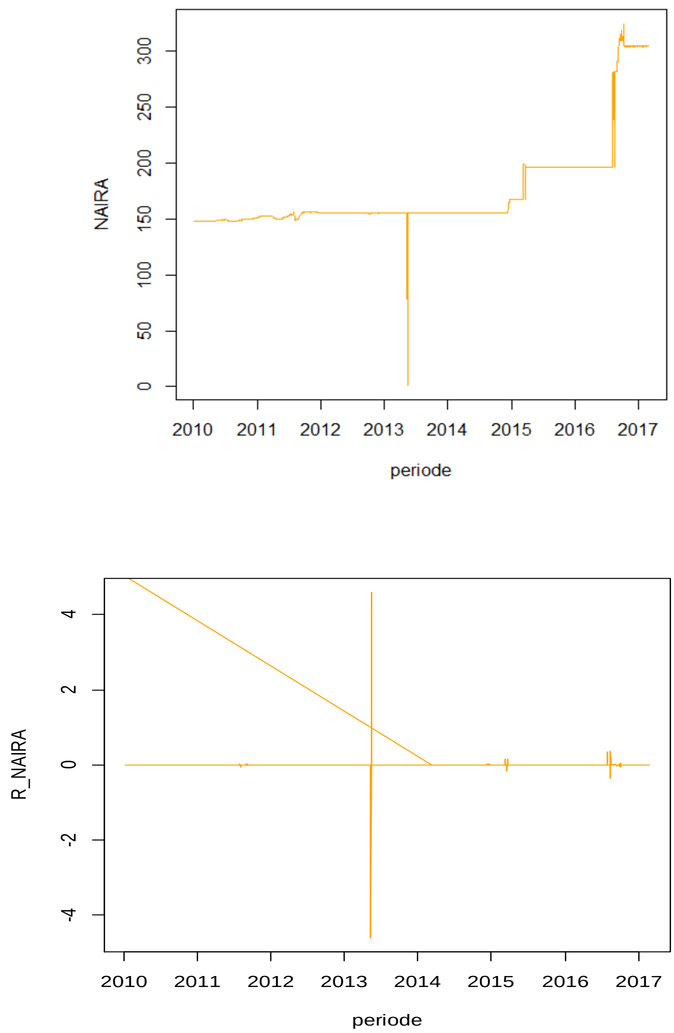

Figure 3: NAIRA exchange rate and its yield (R-NAIRA)

The observation of these figures shows a number of stylized facts that are characteristic of financial data. In particular, we note familiar volatility clustering effects that are low volatility groups and high volatility groups. Similarly, we occasionally observe a few large yields that are generally followed by lower yields. This could be explained by the so-called effect of the law of mean reversion. Indeed, according to the latter, short-term increases or decreases in stock market returns tend to be average. However, following a sharp rise or fall, it may take some time for the index to return to its performance level before the shock occurs. Thus, after a crisis, most stock market indices take time to recover from their pre-crisis situation and some have never been able to do so [31].

Of the three currencies, the XOF appears to have experienced the least significant fluctuation. CEDI and XOF yields appear to be more similar. Indeed, we can observe a significant increase in the volatility of CEDI at the end of 2011 and in June 2015 and towards the end of 2016. Although both markets appear to move in the same way, Ghana's yields appear to be more sensitive and volatile than the XOF's. As for the Naira, its volatility is characterized by peaks, which means that this currency has experienced significant volatility. Table 1 provides more information on descriptive statistics on the yields of the various currencies.

Table 1: Descriptive statistics of exchange rate performance

	RCEDI	**RXOF**	**RNAIRA**
MAX	0.052525	0.037508	98.150597
MIN	-0.056352	-0.055214	-0.989914
MEAN	0.000642	0.000158	0.057254
VAR	0.000025	0.00004	5.621403
STDEV	0.004968	0.006325	2.37095
SKEWNESS	-1.86967	0.032396	41.318076
KURTOSIS	39.26733	6.522118	1706.456017
JARQUE-BERA	111396.3993	3048.5926	208940207
BOX-LJUNG	94.152	392.17	428.48

Source: Author's compilation from software R

Descriptive statistics of returns show disparities in behaviour. Average returns are positive for all currencies. The high average yield concerns the Naira followed by the Cedi and the XOF. These positive returns provide information on the appreciation of the exchange rates of the various currencies. As a result, the Naira remains the currency that has appreciated most. The three variables are characterized by flattening coefficients sufficiently higher than the normal distribution. They also have different asymmetry coefficients than a normal distribution. The negativity of the asymmetry coefficients for the CEDI indicates that the economy has suffered more negative shocks than positive shocks during the period analysed. With standard deviations, it appears that the most volatile currency on ECOWAS markets is NAIRA with a standard deviation of 2.37 followed by XOF with a standard deviation of 0.0063 and CEDI with a standard deviation of 0.0049. The Jarque-Bera test allows us to reject the assumption of normality with a level of significance well below 0.05, for the yields of the various currencies. Indeed, the values of the student T's are higher than 1.96, explaining the presence of the GARCH effects. In addition, let us observe that the critical probability of the LJUNG - BOX statistic is, for all delays, higher than the threshold $\alpha = 5\%$, so we can accept the assumption H0 of absence of autocorrelation, which proves that our residue is correctly bleached.

Table 2, 3 and 4 show the parameter coefficients of the equation are significantly different from zero and positive. As a result, the coefficients check the constraints that ensure the positivity of the variance.

Table 2: ARCH Test (RXOF)

	Estimate	Std.Error	T-vlue	Pr (>|t|)
X1	0.210	0.024	0.865	0.000***
X2	28.290	0.025	11.378	0.000***
X3	-0.026	0.026	-0.998	0.318
X4	-0.018	0.026	-0.712	0.476
X5	0.137	0.026	5.318	0.000***
Signif, codes: '***' 0.001 '**' 0.01 '*' 0.05 '				
F-statistic: 31.25 on 12 and 1689 DF, p-value: < 0				

Source: Author's compilation from software R

Table 3: ARCH Test (RCEDI)

	Estimate	Std.Error	T-vlue	Pr (>|t|)
X1	0.000	0.000	9.229	0.000***
X2	0.115	0.024	4.822	0.000***
Signif, codes: '***' 0.001 '**' 0.01 '*' 0.05 '				
F-statistic: 43.47 on 2 and 1709 DF, p-value: < 0				

Source: Author's compilation from software R

Table 4: ARCH Test (RCEDI)

	Estimate	Std.Error	T-vlue	Pr (>|t|)
X1	0.001	0.021	0.029	0.409
X2	0.499	0.021	23.829	0.000***
Signif, codes: '***' 0.001 '**' 0.01 '*' 0.05 '				
F-statistic: 283.9 on 2 and 1709 DF, p-value: < 0				

Source: Author's compilation from software R

From Tables 2, 3 and 4, it is possible to use the AR(1), AR(2), AR(5) model for the XOF; AR(1) and AR(2) for the CEDI; AR(2) for the NAIRA which are significant at the 1% threshold as a model representing the conditional variance of the exchange rate yield. Before presenting the results of the DCC-GARCH, it is advisable to check whether or not there is a unitary groove in order to avoid false regressions. We adopt here the Elliot, Rothenberg and Stock test to test the presence of deterministic trends. This procedure consists first of all in estimating for each variable an AR(p) model with constant. Second, a deterministic trend is added to the regression.

In Tables 5, 6 and 7, we note that the P-value is below the 5% confidence level, thus rejecting the null hypothesis: There is therefore no unit root present. In addition, this procedure allows us to conclude that all the level variables have a deterministic trend and a constant.

Table 5: DF-GLS type test (RCEDI)

	Estimate	Std.Error	T-vlue	Pr (>|t|)
yd lag	-0.202	0.026	-7.634	0.000***
yd diff lag 1	-0.678	0.032	-21.413	0.000***
yd diff lag 2	-0.544	0.033	-16.384	0.000***
yd diff lag 3	-0.323	0.030	-10.479	0.000***
yd diff lag 4	-0.146	0.024	-6.145	0.000***
Signif, codes: ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05				
F-statistic: 274.8 on 5 and 1704 DF, p-value: < 0				
critical values : -3.48 -2.89 -2.57				

Source: Author's compilation from software R

Table 6: DF-GLS type test (RXOF)

	Estimate	Std.Error	T-vlue	Pr (>|t|)
yd lag	-0.321	0.031	-10.121	0.000***
yd diff lag 1	-0.643	0.344	-18.657	0.000***
yd diff lag 2	-0.168	0.033	-5.053	0.000***
yd diff lag 3	-0.323	0.030	-10.479	0.000***
yd diff lag 4	-0.688	0.024	-2,850	0.004
Signif, codes: ‘***’ 0,001 ‘**’ 0,01 ‘*’ 0,05				
F-statistic: 353.9on 5 and 1704 DF, p-value: < 0				
critical values : -3.48 -2.89 -2.57				

Source: Author's compilation from software R

Table 7: DF-GLS type test (RNAIRA)

	Estimate	Std.Error	T-vlue	Pr (>|t|)
yd lag	-0.321	0.031	-10.121	0.000***
yd diff lag 1	-0.643	0.344	-18.657	0.000***
yd diff lag 2	-0.168	0.033	-5.053	0.000***
yd diff lag 3	-0.323	0.030	-10.479	0.000***
yd diff lag 4	-0.688	0.024	-2.850	0.004
Signif, codes: ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05				
F-statistic: 353.9 on 5 and 1704 DF, p-value: < 0				
critical values : -3.48 -2.89 -2.57				

Source: Author's compilation from software R

Now we can present the results of the DCC-GARCH test and the interpretations. This model allows us to identify the mechanisms for transmitting exchange rate volatility in the different ECOWAS markets. In concrete terms, the model makes it possible to measure the interdependence that exists between the XOF, CEDI and NAIRA through the volatility of their respective prices against the Dollar (USD). The results are presented in Table 8. The parameters of this DCC-GARCH model

(1.1) indicate that all coefficients are significant.
The coefficients α_1, α_2 and α_3 have respectively 0.103 for the CEDI, 0.040 for the XOF and 0.286 for the NAIRA. These results confirm the sensitivity of the three indices to their own shocks. In addition, we note that all three indices have achieved a high level of volatility persistence with β_1 which is 0.895 for the CEDI, β_2 of 0.953 for the XOF and β_3 of 0.712 for the NAIRA. They are significant at the 5% threshold.

Table 8: DCC-GARCH model parameters for CEDI, XOF and NAIRA

	Estimate	Std. Error	T value	Pr (>|t|)
[RCEDI]. α_1	0.103	0.024	4.282	0.000
[RCEDI]. β_1	0.896	0.031	28.683	0.000
[R_XOF]. α_2	0.041	0.244	0.168	0.867
[RXOF].β_2	0.953	0.231	4.120	0.000
[RNAIRA].α_3	0.286	0.050	5.698	0.000
[RNAIRA]. β_3	0.713	0.036	19.553	0.000
[Joint] DCCα	0.017	0.039	0.427	0.669
[Joint] DCCβ	0.983	0.039	25.026	0.000

Source: Author's compilation from software R

Finally, the conditional correlation parameters are significant. Indeed, the DCCα coefficient of 0.017 is close to the value of 0 and DCCβ of 0.983 is close to the value 1. The DCCβ coefficient shows a strong conditional correlation between the three indices in our sample. These results are consistent with the empirical literature which argues that DCCα is close to 0 and DCCβ is close to 1 ([32]). The persistence of the conditional correlation calculated through the sum of DCCα and DCCβ is very important, it reaches 0.99 and close to 1.
In view of these results, we can conclude that the three variables, i. e. the three currencies, are highly interdependent. Changes in exchange rate yields have acted as a catalyst for the transmission of volatility from one currency to another through the volume of subregional trade.

5 Concluding Remarks

The purpose of this study was to examine the transmission of volatility on financial markets in the ECOWAS region during the period 2010-2016. To do this, we used the daily exchange rates of the three major currencies in the area, namely CEDI, NAIRA and FRANC CFA. In terms of methodology, we used the DCC-GARCH. This model allowed us to verify that there was a transmission of volatility during the period studied. In other words, our results argue in favour of a transmission of volatility between the three indices. In addition, this volatility is persistent. Another important result is that this volatility reached a high level between CEDI and FRANC CFA during the Ivorian crisis of 2011.

These results lead to major lessons. First, the evidence of the transmission of volatility provides scientific support for the willingness of ECOWAS countries to form a monetary union in the coming years. The second is the need to reduce the volatility of currency prices. Indeed, given that ECOWAS countries are mainly exporters of raw materials (oil, coffee, cocoa, groundnuts and gold...), the weakness of some local production will contribute to a divergence in exchange rates. Consequently, member countries must diversify their economic bases in order to reduce erratic shocks affecting their various financial markets.

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