

The Correlates of Financial Dollarization in Ghana

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ABSTRACT

This study aimed to investigate the correlation between the dollarization of Ghana's finances. The objects of this study are real output, interest rate differentials, real exchange rates, inflation, and financial developments. The research subjects are based on quarterly data from the World Development Index (WDI) and the Bank of Ghana (BOG) for the years 1999-2022. The research method uses the Autoregressive Distributed Lag (ARDL) approach for cointegration. This study finds that the driving factors for financial dollarization in Ghana are real output, interest rate differentials, real exchange rates, inflation, and financial developments. While the dollarization of Ghana's finances is constrained by factors such as inflation, exchange rates, and financial growth, the differential in interest rates and actual output increases the demand for foreign currency in Ghana. This study implies that much is expected from the monetary policy authorities, there is a need for proper coordination of fiscal and monetary policies to curb the issue of dollarization of finance in Ghana.

Keywords : **Financial Dollarization; Foreign Currency; ARDL; Ghana; Exchange Rate**

ABSTRAK

Tujuan dari penelitian ini adalah untuk menyelidiki korelasi dolarisasi keuangan Ghana. Objek penelitian ini yakni output riil, perbedaan suku bunga, nilai tukar riil, inflasi, dan perkembangan keuangan. Subjek penelitian didasarkan pada data triwulanan dari World Development Index (WDI) dan Bank of Ghana (BOG) untuk tahun 1999-2022. Metode penelitian menggunakan pendekatan Autoregressive Distributed Lag (ARDL) untuk kointegrasi. Studi ini menemukan bahwa faktor pendorong dolarisasi keuangan di Ghana adalah output riil, perbedaan suku bunga, nilai tukar riil, inflasi, dan perkembangan keuangan. Sementara dolarisasi keuangan Ghana dibatasi oleh faktor-faktor seperti inflasi, nilai tukar, dan pertumbuhan keuangan, perbedaan suku bunga dan output aktual meningkatkan permintaan mata uang asing di Ghana. Implikasi dari penelitian ini adalah banyak yang diharapkan dari otoritas kebijakan moneter, ada kebutuhan untuk koordinasi yang tepat dari kebijakan fiskal dan moneter untuk mengekang isu dolarisasi keuangan di Ghana.

Kata Kunci : **Dolarisasi Keuangan; Mata Uang Asing; ARDL; Ghana; Nilai Tukar**

INTRODUCTION

Policy officials are quite concerned about how decisions are being made in developing countries due to the recent increase in the need for foreign money. The fact that most of these countries have witnessed the widespread use of foreign currencies as a store of wealth, a basis for accounting, or a means of exchange is more alarming (Radebaugh et.al, 2006). In many instances, foreign currencies even take the place of native currencies (Kuroda, 2020). This has raised awareness of the financial dollarization of many developing economies, including Ghana.

This phenomenon is thought to be the result of macroeconomic instability, which has been linked to high inflation, fluctuating exchange rates, weak institutions, persistent local currency devaluation, and other issues (Ben Naceur et.al, 2019). It has emerged as a significant contributor causing the vulnerabilities and currency crises that have long been noticed in Eastern Europe, some of Asia, some of Latin America, and Africa (Mecagni et.al, 2015; Yehoue et.al, 2015). However, Ghana's efforts to reduce dollarization have trailed behind those in other areas, thus it is reasonable to wonder whether Ghana should be particularly concerned about this phenomenon.

This definition's descriptive nature implicitly acknowledges that financial dollarization is merely a symptom of a weak currency problem (specifically, the rejection of the local currency as a store of value), for which the literature has already advanced and tested several alternative explanations (Acheampong & Boadu, 2020). Nevertheless, regardless of the underlying reasons, the existence of financial dollarization has come to be recognized in both academic and policy circles as a source of concern due to its potential effects on monetary instability, financial fragility, and overall economic performance (Yildirim, 2022).

The Ghana Cedi has declined against major currencies, mainly the US Dollar (US\$), since Ghana adopted a free exchange rate regime, though not monotonically since the Ghana Cedi maintained some degree of stability between 2002 and 2007. The rapid dollarization of the economy in Ghana has attracted the attention of the country's monetary authorities and policymakers as a significant factor in Ghana Cedi's depreciation.

A review of the literature has demonstrated the paucity of scholarly publications and the narrow variety of empirical approaches used on the correlates of dollarization especially in the case of Ghana (Bărbuță-Mișu et.al, 2020; Catão & Terrones, 2000; Raheem & Asongu, 2018). This condition will have the effect of limiting the impact of scientific knowledge on the development and costs of financial dollarization on macroeconomic policymaking in Ghana.

Given that Ghana is one of just two African nations (the other being South Africa) to have fully embraced inflation targeting as a monetary policy framework, hence the focus on Ghana is highly merited. By providing answers to a few key issues, this study aims to fill significant gaps in the literature, allowing us to draw conclusions and determine the best course of action for economic policy in light of the growing dollarizing effect.

The sole empirical study that tackles the question of dollarization within the context of Ghana is that of (Tweneboah & Alagidede, 2019), which examines the dollarization, inflation targeting, and inflationary dynamics in Ghana. Other existing literature by (Junior et.al, 2019; Tweneboah et.al, 2016) tried to establish the interdependency of dollarization and economic integration, and exchange rate dynamics in the West African monetary zone. (De Nicolo et.al, 2003) also focused on the causes and effects of financial dollarization on the banking sector only. Most of these studies used a qualitative approach rather than examining them in a scenario where liquidity was constrained, and they were all conducted at the microeconomic level. To close this gap in

the literature, this study uses econometric methods to analyze the correlates of financial dollarization in Ghana.

The study will help the Bank of Ghana and the Ministry of Finance to comprehend the correlates of financial dollarization and how to mitigate the problem to achieve government objectives and aims.

According to the aforementioned expositions, it is fair to say that research on the drivers of financial dollarization in Africa is less explored. To the best of my knowledge, no study focuses on the correlates of financial dollarization in the body of existing literature in the case of Ghana. Because of this, Ghana's macroeconomic policy has not profited considerably from a scientific understanding of the advancement and expenses of financial dollarization. Hence the study's specific objective is to investigate the main correlates of Ghana's financial dollarization.

RESEARCH METHOD

Quantitative methods are used in this investigation. When collecting and analyzing data, the research design serves as a framework or approach for the investigation (Abutabenjeh & Jaradat, 2018). (Creswell, 2014) suggests applying a quantitative approach when tackling a research problem that requires pinpointing factors that influence a conclusion. The positivist philosophy was used throughout the entire investigation. This is because positivists assess the validity, reliability, objectivity, precision, and generalizability of quantitative studies in light of the fact that they were created to describe, predict, and validate empirical relationships in a context that was mostly controlled. Using values of the known independent variables, the goal is to predict the value of the dependent variable and to explain how each independent variable influences the dependent variable.

The research object for this study is $x_t, p_t, y_t, r_t^d, f_t^d, fd_{t-1}$ referred to as a stand-in for the anticipated prices, a stand-in for actual output, a stand-in for the difference in interest rates, and a stand-in for financial development, respectively. The unit of analysis are data set from the Bank of Ghana and the World Development Indicators. The Autoregressive Distributed Lag (ARDL) technique to cointegration was used to analyze quarterly data from the World Development Index (WDI) and Bank of Ghana (BOG) for the period from 1999 to 2022.

(Yeyati, 2021; Ize & Yeyati, 2006) balance models and basic money demand functions served as the foundation for empirical modeling. This can be modeled as:

$$M_t - P_t = \theta_0 + \alpha_1 E(\pi) + \alpha_2 y_t + \mu_t \quad (1)$$

Where $M_t - P_t$ (indicates demand for real money balances, where M_t is the log of money supply and P_t is the log of the price level). $E(\pi)$ is the expected inflation rate and y_t is the log of aggregate income.

Following this motivation, the analysis is based on a modified version of model 1 to get model 2, using financial dollarization (fdr_t) as the dependent variable and other macroeconomic variables as determinants. Therefore, dollarization (fdr_t) process can be modeled as a function of the following variables as

$$fdr_t = f(x_t, p_t, y_t, r_t^d, f_t^d, inf_t) \quad (2)$$

The measurement dollarization (fdr_t) which is the dependent variable in this model was measured as foreign currency deposit to the ratio of the broad money supply.

The variables $x_t, p_t, y_t, r_t^d, f_t^d, inf_{t-1}$ as a proxy for real output, prices, interest rate differential, predicted exchange rate depreciation, and financial development, respectively. All the variables are in logarithms except the interest rate differential (r_t^d). The aforementioned equation's specific model has the following multiplicative form:

$$fdr_t = Kx_t^{\alpha_1} p_t^{\alpha_2} y_t^{\alpha_3} r_t^{d\alpha_4} f_t^{d\alpha_5} inf_t^{\alpha_6} e^{\mu_t} \quad (3)$$

log-linear form of equation (3) gives,

$$\ln fdr_t = \theta_0 \ln x_t + \alpha_2 \ln p_t + \alpha_3 \ln y_t + \alpha_4 r_t^d + \alpha_5 \ln f_t^d + \alpha_6 \ln(inf_t) + \mu_t \quad (4)$$

The study also employed the limits testing technique to co-integration in the ARDL framework suggested by (Natsiopoulos & Tzeremes, 2022; B. Pesaran & Hashem Pesaran, 1995; M. H. Pesaran et al, 2001; M. H. Pesaran & Shin, 1996) to fulfill the stated objective. Using the ARDL approach to cointegration, the conditional error correction model of dollarization and its determinants are calculated as follows.:

$$\begin{aligned} \Delta \ln(fdr_t) = & \theta_0 + \sum_{i=1}^n \rho_i \Delta \ln(fdr_t)_{t-i} + \sum_{i=0}^n \beta_i \ln \Delta(x)_{t-i} + \sum_{i=0}^n \vartheta_i \ln \Delta(p)_{t-i} + \\ & \sum_{i=0}^n \gamma_i \Delta \ln(y)_{t-i} + \sum_{i=0}^n \omega_i \Delta r_{t-i}^d + \delta \Delta \ln f_{t-1}^d + \sigma_1 \ln(inf)_{t-1} + \\ & \sigma_2 \ln x_{t-1} + \sigma_3 \ln p_{t-1} + \sigma_4 \ln y_{t-1} + \sigma_5 \ln r_{t-1}^d + \sigma_6 \ln f_{t-1}^d + \mu \end{aligned} \quad (5)$$

Where the short-run dynamics give,

$$\begin{aligned} ECT_t = & \theta_0 - \ln(fdr_t)_t - \sum_{i=1}^n \rho_i \Delta \ln(inf)_{t-i} - \sum_{i=0}^n \beta_i \ln \Delta(x)_{t-i} - \\ & \sum_{i=0}^n \vartheta_i \ln \Delta(p)_{t-i} - \sum_{i=0}^n \gamma_i \Delta \ln(y)_{t-i} - \sum_{i=0}^n \omega_i \Delta r_{t-i}^d - \delta \Delta \ln f_{t-1}^d - \\ & \sigma_1 \ln(p)_{t-1} - \sigma_2 \ln x_{t-1} - \sigma_3 \ln y_{t-1} - \sigma_4 \ln r_{t-1}^d - \sigma_5 \ln f_{t-1}^d - \sigma_6 \ln(inf_{t-1}) \end{aligned} \quad (6)$$

RESULTS AND DISCUSSION

The unit root results show that all the variables are integrated of order zero, I(0), or order one, I(1). Since the test results have confirmed the absence of I (2) variables, the ARDL methodology is then used for estimation. Also, since the calculated F-statistics for FDR is 4.42 exceeds the upper bound of the critical value of band (3.79), the null hypothesis of no cointegration (i.e., long-run relationship) between financial dollarization and its determinant is rejected as indicated in Table 1.

Table 1. displays the bounds test results for cointegration for the correlates of financial dollarization.

Table 1. Bounds test results for cointegration for drivers of financial dollarization

K	Critical Value Bound of the F-statistic: intercept and no trend					
	90% Level		95% Level		99% Level	
	I (0)	I (1)	I (0)	I (1)	I (0)	I (1)
5	2.26	3.35	2.62	3.79	3.14	4.68

Source: Generated from author's construct, 2023

Table 2. displays the estimated long-run results of the correlates of financial dollarization.

Table 2. Estimated long-run results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
x	-0.039**	0.0190	-2.013	0.046
r ^d	0.064***	0.009	7.724	0.000
inf	-0.23***	0.062	-3.685	0.005
y	0.041***	0.0116	3.529	0.008
fd	-0.003***	0.0001	-4.278	0.001

Source: Generated from author' construct, 2023

Given *, **, and *** indicate 10%, 5%, and 1% significance level respectively. The estimated results from Table 2 show that the effects of the exchange rate, inflation, and financial development on financial dollarization were all adverse and statistically significant. However, interest rate differential and real output exerted a positive and statistically significant effect on financial dollarization in Ghana.

The coefficient (-0.039) of the exchange rate implies that a one percent increase in exchange will increase financial dollarization by 0.039 percent. This could be explained by the fact that an increase in exchange rates entails the local currency's depreciation, which lowers prices for products and services relative to those in other nations. Although the finding, however, contradicts the findings as evidenced in literature and economic intuitions, our findings concur with (Elliott et.al, 2003).

Additionally, interest rate differential, which is the distinction between domestic and foreign interest rates, did not match up with predictions made by the theory. According to theory, demand for domestic currency increases, and demand for foreign currency decreases as domestic interest rates rise relative to foreign interest rates. This indicates that financial dollarization in Ghana is driven by interest rate differentials. This finding contradicts the theory that economic agents' demand for dollar deposits is influenced by the differences between the real rates of return on deposits in local currency and those in foreign currency. The outcome confirms Tweneboah's (2016) findings, which showed a conflicting association between interest rate divergence and financial dollarization.

From the result in Table 2, a one percent increase in inflation decreases financial dollarization by 0.23 percent in the long run and it is statistically significant at a one percent significance level. This implies that the rate of inflation discourages financial dollarization in Ghana. This argument has been propounded by (Adu & Marbuah, 2011). From June 2010 to December 2012, Ghana had 31 months of unbroken single-digit inflation, yet the cedi was seen to be declining against the major trading currencies, which raised questions about the relationship between inflation and currency rates in Ghana.

At a 1% level of significance, the actual output coefficient is statistically significant and positive. This outcome is in line with what we anticipated would happen, which is that a rise in real output would lead to a significant increase in the demand for foreign currency. This confirms the finding of (Pasara & Garidzirai, 2020) whose study found that economic growth (measured by GDP) and financial dollarization are positively related in Zimbabwe.

The association between Ghana's financial progress and financial dollarization is also statistically significant as a negative relationship. The results of this analysis are consistent with those of (Bannister et.al, 2018; Feige, 2003) who found that high levels of financial dollarization in some countries are partially caused by weak domestic financial markets.

Table 3. displays the estimated shortrun results of the correlates of financial dollarization.

Table 3. Estimated Short-Run Error Correction Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
x	-0.0371**	0.029	-2.619	0.011
r ^d	0.053***	0.018	7.4194	0.000
inf	-0.013**	0.053	-2.657	0.011
y	-0.023***	0.014	-2.959	0.004
y(-1))	-0.026***	0.080	-2.896	0.0053
y(-2))	-0.026***	0.0090	-2.895	0.0053
p	0.207***	0.0080	-2.895	0.053
fd	-0.002**	0.001	-2.241	0.0287
c	-0.015***	0.041	-4.452	0.000
ect(-1)	-0.410***	0.073	-5.426	0.000

Source: Generated from author's construct, 2023

The table *, **, and *** indicates 10%, 5%, and 1% significance level respectively. The findings demonstrate that the lagged error correction term's coefficient, ect (-1), exhibits the anticipated negative sign (-0.410) and is statistically significant at 1 percent. This means that roughly 41% of the disequilibrium brought on by shocks from prior years will return to the long-term equilibrium in the current year. Restoring the equilibrium state may be affected by this.

Holding all other factors constant, the negative coefficient of the exchange rate shows that a one percent increase in the exchange rate will, in the near run, result in a 0.037 percent reduction in the country's financial dollarization in the short run.

Moreover, unexpectedly, the rate of inflation had a negative relationship with financial dollarization in Ghana in the short run. This concurs with the finding of (Tweneboah et.al, 2019).

Furthermore, at a 1% level of significance, the real output lag and associated lags exhibited unexpectedly negative coefficients and were statistically significant. This denotes a change in direction over the short run as opposed to the long run. This indicates that enhancing real output growth in Ghana would serve as an effective measure in the fight against financial dollarization in the short run. This corroborates the finding of (Broda, 2004).

Finally, the coefficient of financial development carried the expected negative sign and it is statistically significant at a one percent significance level. This is in line with the works by (Boutabba, 2014).

CONCLUSION

The study found that the factors driving financial dollarization in Ghana are real output, interest rate differential, inflation, financial development, and exchange rate. The demand for foreign currency in Ghana rises as a result of interest rate differentials and real output, but inflation, exchange rates, and financial growth slow Ghana's financial dollarization.

RECOMMENDATION

According to the findings, it is recommended that the Bank of Ghana work to ensure a well-developed financial system by continuing to undertake financial sector reforms in Ghana, as it has been discovered that such developments work to discourage financial dollarization in Ghana. The Bank of Ghana should guarantee consistency in key macroeconomic indicators like inflation.

This article considered a few macroeconomic drivers of financial dollarization, future research can be undertaken to examine other possible macroeconomic drivers of financial dollarization like trade openness and governance variable like political instability. Also, given that a small sample size was used in the study as a result of limited data, future research should consider using a large sample size as more data becomes available.

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