

# Financial Dollarisation: Effects on Economic Growth in Ghana

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## Abstract

This study sought to examine the effects of financial dollarisation on economic growth in Ghana. The autoregressive distributed lag (ARDL) approach to cointegration was applied on quarterly data from the World Bank and Bank of Ghana (BOG) for the period of 1999 to 2018. It was revealed that financial dollarisation exhibited a negative and statistically significant effect on economic growth both in the short-run and long-run. Based on the findings, it is recommended that the Bank of Ghana should develop the financial market by continuing the implementation of the financial sector reforms to foster a growing financial sector to promote economic growth in the economy.

**Keywords:** Autoregressive distributed Lags, Financial dollarisation, Economic growth, Foreign currency deposit, Ghana.

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## 1.0 Introduction

The increasing rate of demand for foreign currency in recent times poses a great concern to policy-makers as far as decision-making in developing countries are concerned. What is more worrying is that most of these countries have witnessed the use of other countries' currencies as store of value, unit of account, or medium of exchange and in most cases, foreign currencies tend to be used extensively or even replaced the local currencies. This has sparked attention to financial dollarisation in many developing economies of which Ghana is no exception. This phenomenon is deemed to have been caused by macroeconomic instability leading to high inflation, volatility in exchange rates, weak institutions, prolonged depreciation of the local currencies, and the likes.

Dollarisation, the use of foreign currencies as a medium of exchange, store of value, or unit of account is a notable feature of financial development under macroeconomic fragile conditions. It has emerged as a key factor explaining vulnerabilities and currency crises, which have long been observed in Latin America, parts of Asia, and Eastern Europe (Mecagni, Corrales, Dridi, Garcia-Verdu, Imam, PMatz, & Narita, 2015). Dollarisation is also present, prominently in developing economies where it remains significant and persistent at over 30 percent rates for both bank loans and deposits although it has not increased significantly since 2001 (IMF, 2015). However, progress in reducing dollarisation in Ghana has lagged behind to other regions and, in this regard, it is legitimate to ask whether this phenomenon is an important concern in Ghana (Mecagni et al., 2015).

One issue that has trapped the attention of the monetary authorities and policymakers in Ghana as major cause of cedi depreciation is the growing dollarisation in the economy. This happens in countries with a history of high inflation and exchange rate instability. The resort to dollars for savings, that is essentially a risk mitigation measure. There is a vast empirical literature that supports the view that dollarisation is a reaction by rational economic players to expected depreciation of a currency. Ghanaians have over the years learnt the hard way that they cannot trust governments to keep the cedi stable. Cedi depreciation has become a fact of life and therefore Ghanaians have come up with coping strategies to deal with exchange rate depreciation, including the holding of foreign currency. For example, if you had GHC 100,000 in 2008, you had roughly the equivalent of US\$100,000, but today that same GHC100, 000 with an exchange rate of US\$1= GH¢5.5 is only equal to US\$18,181 meaning that through no fault of yours and just by deciding to hold on to your assets in cedis, you would have lost over US\$81,819 or 80% of your assets in just a decade. The extent of the phenomenon has become one of the most challenging issues bothering monetary authorities and policymakers. This is because of the risks and costs it presents to macroeconomic management.

Since antiquity, the sources of economic growth have been debated upon in the literature yet the ever - changing drivers of growth means that the literature is not exhaustive. Among the classical sources of growth are surplus labour, physical capital investment, technological change, foreign aid, trade openness, resources, and foreign direct investment. Contemporary sources, on the other hand, include but not limited to innovations from research and development (R&D), remittances and financial development. In recent times, much emphasis has been laid on the possible effects of financial development and remittances on economic growth and inequality through job creation and poverty alleviation (Bang, Mitra, & Wunnava, 2016). This study would empirically investigate the effects of financial dollarisation together with some mediating variables like real exchange rate,

inflation, labour, Foreign Direct Investment (FDI), capital, financial development on economic growth in Ghana.

## 2.0 Statement of the problem

Like most other sub-Saharan African countries, Ghana which was characterized by protracted instances of macroeconomic instability and social turmoil has seen significant improvements in recent years. There is considerable evidence of increased dollarisation in Ghana. Partly, this is because of the elimination of most exchange controls and the relaxation of restrictions on the holding of foreign exchange such that goods and services are index using the U.S dollar as the bench mark such that cost of building, prices of vehicles, tuition fees of some schools, cost of rent and even winning bonuses of the national team (black stars) are index in the U.S dollars but there is also a strong presumption that it has resulted from the inflation that has characterized Ghana over the past decade.

The increasing trend at which Ghanaians hold deposits and credits denominated in foreign currency – notably the U.S. dollar has generated a lot of controversy in macroeconomic discourse recently. However, there exist limited empirical studies on the subject matter in Ghana. Where studies abound, the impact financial dollarisation on economic growth has not received attention within the Ghanaian context. The only empirical analysis that situate the issue of dollarisation within the Ghanaian context is that of Adenutsi and Yartey (2007) which looks at financial sector development and the macrodynamic of ‘de facto’ dollarisation in developing countries. Other few existing literatures by Chagonda (2010) and Sikwila (2013) tried to establish the effects of dollarisation on tourism and education and banking sectors, respectively in Zimbabwe. Nkomazana and Niyimbanira (2014) also focused on the causes and effects of financial dollarisation on the banking sector only. These studies were analyzed at a microeconomic level and the paper by Sikwila (2013) used a qualitative approach in its analysis and they were not analyzed within a liquidity constrained environment. This study, therefore, seeks to fill this literature gap by analyzing the macroeconomic effects of financial dollarisation in Ghana and applying econometric techniques for data analysis.

## 3.0 Objectives of the study

The general objective of the study was to empirically analyze the effects of financial dollarisation on economic growth in Ghana. The specific objectives of the study were to

1. determine the long-run effects of financial dollarisation on economic growth in Ghana.
2. determine the short-run effects of financial dollarisation on economic growth in Ghana.

## 4.0 Hypotheses of the study

$H_0$ : Financial dollarisation has no significant long run effect on economic growth in Ghana.

$H_1$ : Financial dollarisation has significant long run effect on economic growth in Ghana.

$H_0$ : Financial dollarisation has no significant short run effect on economic growth in Ghana.

$H_1$ : Financial dollarisation has significant short run effect on economic growth in Ghana.

## 5.0 Significance of the study

The study will be beneficial to the Bank of Ghana and Ministry of Finance on how financial dollarisation through exchange rate volatility (depreciation of the cedi) affects economic growth and the way forward in attenuating the issue of financial dollarisation for the fulfilment of Government objectives and goals. The study explicitly fills the gap by determining the need for BOG to strengthen the financial sector so as to boost the people’s confidence in the cedi in order to reduce financial dollarisation. Furthermore, the monetary authorities would benefit greatly from the findings on the effects of financial dollarisation on economic growth and how it affects the effectiveness of monetary policy mechanisms in Ghana.

## 6.0 Delimitations

The scope of this study is to analyze financial dollarisation in Ghana, and its effects on economic growth using a time series data. The total observations for the study are 76. The study is limited to Ghana only so as to avoid bias of any form when all developing and developed countries are analyzed jointly.

## 7.0 Limitation

The major drawback to this study was the unavailability of data which is common to Sub-Saharan African countries. This study could not use large sample size because of missing values for some of the variables in the 1980s and early 90s.

## 8.0 Literature review

### 8.1 Concepts of financial dollarisation: definition and measurement

Financial dollarisation defined in Ize and Yeyati (2003), simply denotes an empirical observation: the holding by

residents of foreign currency-denominated assets and liabilities, including bank deposits and loans as well as non-bank assets such as commercial paper or sovereign debt. The descriptive nature of this definition implicitly recognizes that the presence of financial dollarisation is merely a symptom of a weak currency problem (namely, the rejection of the local currency as store value).

## 8.2 Types and forms of dollarization

Calvo and Vegh (1992) slightly distinguish between the terminologies by describing currency substitution as transfer of transaction function of local currency, whereas dollarisation is described as transfer of the other functions of money. On the other hand, Mueller (1994) suggests a contrasting definition in which currency substitution and dollarisation describe the case where demand for foreign money is *reversible* and *non-reversible*, respectively. Regardless of what term is used to describe it, the phenomenon can hold crucial implications for economic modelling and policy analysis. Whenever a foreign currency performs any of the three traditional functions of money, the words are used as transposable in the extant literature.

Dollarisation as the name implies refers to the adoption of another country's currency as a medium of exchange and unit of account or for financial transactions. A government that adopts full dollarisation gives up the revenue from the loss of seigniorage. Since money plays an important role in enhancing financial transactions which eventually promote economic activities within an economy. However, if a country adopts the currency of another, it follows that there will high demand for the foreign currency at the expense of the local currency. As this happens, the local economy experiences lower growth as compared the economic growth of the foreign countries whose currency is adopted. This tends to imply that financial dollarisation reduces economic growth of the local economy, all other things being equal.

On the other hand, official dollarisation means that the foreign currency becomes the preferred tender within the country, while the domestic currency may also be accepted. This is also known as *De jure* dollarisation (Dean, 2001; Dean et al., 2002). The foreign currency will now be used as a unit of account, medium of exchange and store of value (Quispe-Agnoli, 2002). Economists argue that official dollarisation brings superior macroeconomic performances as measured by faster Gross Domestic Product (GDP) growth and lower GDP growth volatility (Edwards and Magenzo 2006), price stability, reduced transaction costs in foreign exchange, increased foreign direct investment, trade and a stronger balance of payment.

Some studies provide evidence that official dollarisation causes a decline in volatility of exchange rates of the dollarized country. Akofio-Sowah (2009), Bogetic (2000), Lange and Sauer (2005), among others, consider the impact of full dollarisation and report that the volatility of exchange rates in Latin American countries has lowered. For the Euro zone area, studies like Barrell, Davis, and Pomerantz (2009), Bartram and Karolyi (2006), and Clark, Tamirisa, Wei, Sadikov, and Zeng (2004) and Schnabl (2007) also evinced that full dollarisation causes a drop-in exchange rate volatility

In their study, Felices and Tuesta (2003) showed that macroeconomic volatility grows with higher level of dollarisation. They also concluded that the higher the degree of dollarisation, the larger the effect of foreign shocks over the aggregate supply and the less effective the central bank is in stabilizing inflation. Monetary aggregates in dual currency countries are only under central bank's partial control, since a significant portion of money supply is in the relevant foreign country. In such a situation, economic entities affect the money supply structure by choosing between local and foreign currency. Berg and Borenstain (1999) found that monetary aggregates which also cover deposits in foreign currency are most closely connected with inflation. Study by Siregar and Ragaguru (2005) showed that, in such circumstances, money supply might decline considerably (by changing currency) in short term if economic policy's credibility decreased. In the situation of low currency substitution costs, the exchange rate depreciations may lead to change in money demand and accelerated velocity of money circulation. If the change originates from local currency depreciation, economic entities will make effort to "get rid of it" by substituting it with foreign currency or use it for purchase.

## 8.3 Empirical literature review on economic growth and dollarisation

The empirical relationship between dollarisation and economic growth is the thrust of this section of the study. The existing literature has varying opinions on the subject of dollarisation. However, Edwards et al. (2001) acknowledges that there are very few observed cases of dollarisation and history provides very little guidance on its consequences.

Eichengreen (2000), Molano (2000) and Edwards et al. (2001) all asserted that there is no sufficient evidence that countries which dollarized are more fiscally prudent and the behaviour of current account imbalances is no different either. Molano (2000) employed Auto Regressive Distributive Lag (ARDL) approach whilst Edwards et al. (2001) analysed the effect of dollarisation on economic growth and inflation by employing a matching estimator technique developed in the training evaluation literature. Their findings revealed that inflation and economic growth have been significantly lower in dollarized nations than in non-dollarized ones. They were of the view that the lower rate of economic growth in dollarized countries could be due, at least in part, to the difficulties these

countries faced in accommodating external disturbances, such as major term of trade and capital flows shocks.

Their findings are relevant for Zimbabwe because the nation is experiencing consistent budget deficits and current account imbalances even after dollarisation.

Klein (2002) found contrasting results regarding dollarisation and trade. Using an augmented gravity model to investigate on dollarisation and trade on a sample of 165 countries, Klein (2002) found out that currency unions do not increase trade significantly as against the popular conjecture that dollarisation promote trade which was supported by empirical evidence drawn from a recent series of papers by Rose (2000) and co-authors who show that a currency union increases bilateral trade among its members, and that this effect is both large and statistically significant. Furthermore, the study also found that the effect of dollarisation on trade with the United States is not statistically distinct from the effect of a fixed dollar exchange rate on trade with the United States.

## 9.0 Methodology

### 9.1 Research Design

The quantitative research design was adopted to address the research objectives of the study. The entire study followed the positivist philosophy. This is because the Positivists use validity, reliability, objectivity, precision and generalizability to judge the rigor of quantitative studies as they intended to describe, predict and verify empirical relationships in relatively controlled setting

Variables	Variable Description/ Measurement	Sources	Expected Signs
Financial dollarisation	Foreign currency deposits as a share of total deposit or broad money rate of return on assets denominated in domestic currency	Bank of Ghana	Negative
Economic growth	Real output (GDP constant)	World Bank, WDI	N/A
Financial Sector development	broad money (M2) as a ratio of GDP	World Bank, WDI	Positive
Inflation	Annual change in consumer prices (%)	World Bank WDI	Negative
Interest Rate differentials	Difference between the rate of returns on Foreign Currency Deposit and cedi deposits	WDI/IFS	Negative
$R_c$	Table 1: Summary of variables, sources, and expected sign	IFS	Positive
$C_{\&pm;pm}$	Gross fixed capital formation (%GDP)	World Bank, WDI	Positive
Labour	Labour force Participation Rate	World Bank, WDI	Positive
Foreign Direct Investment	Net inflows of investment	World Bank, WDI	Positive

## 10.0 Effects of dollarisation on economic growth

### 10.1 Analytical Technique

This study adopted the neoclassical growth model which maintains that growth can arise when capital and labour are augmented by additional inputs in the production function. The study adopted the Aggregate Production Function (APF) which expresses the relationship capacity output and the volume of the various inputs used in production. The APF can be expressed below:

$$Y_t = T_t K_t^{\beta_1} L_t^{\beta_2} \dots \dots \dots (1)$$

where  $Y_t$  is the output or income,  $T_t$  is the Total Factor Productivity,  $K_t$  denotes capital while  $L_t$  denotes labour.  $T_t$  which is neutral produces an output from a given combination of labour and capital without affecting their relative marginal products. While “ $\beta_1$ ” and “ $\beta_2$ ” are the parameters for capital and labour respectively. The Total Factor Productivity takes into consideration other factors which affects production other than labour and capital. The TFP function is given by:

$$TFP_t = f(FDR_t, RER_t, FDI_t, INF_t) \dots \dots \dots (2)$$

In modelling output to be a function of labour, capital and the factors under total factor productivity, equation (2) is substituted into equation (1) to obtain equation (3) as:

$$Y_t = f(K_t^{\beta_1} L_t^{\beta_2} FDR_t^{\beta_3} FDI_t^{\beta_4} RER_t^{\beta_5} INF_t^{\beta_6}) + e_t \dots \dots \dots (3)$$

where, *FDI* is Foreign direct investment, *RER* is Real exchange rate, *FDR* is Financial dollarisation, *INF* is Inflation, *K* is capital and *L* is labour. Meanwhile,  $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5$  and  $\beta_6$  are the coefficients of the independent variables, and each, as expected not equal to 0, and  $e$  is the error term of the equation. We then linearized equation (3) by logging each variable to obtain equation (4).

$$\ln Y_t = \varphi + \beta_1 \ln K_t + \beta_2 \ln L_t + \beta_3 \ln FDR_t + \beta_4 \ln FDI_t + \beta_5 \ln RER_t + \beta_6 \ln INF_t + e_t \dots\dots\dots(4)$$

## 10.2 Estimation Technique

### Autoregressive Distributed Lag Model

The model here also follows all the tests conducted on the equation 1 to arrive at the choice of ARDL. The autoregressive distributed lag cointegration procedure was developed by Pesaran, Shin and Smith (2001) was used to estimate the long-run and short-run relationship among the variables.

Following Pesaran et al. (2001) as summarized in Choong, Yusop, Liew (2005), we expressed equation (4) in an ARDL model to obtain equation (5)

$$\Delta \ln Y_t = \varphi_0 + \phi \ln Y_{t-1} + \alpha_1 \ln K_{t-1} + \alpha_2 \ln L_{t-1} + \alpha_3 \ln FDR_{t-1} + \alpha_4 \ln FDI_{t-1} + \alpha_5 \ln RER_{t-1} + \alpha_6 \ln INF_{t-1} + \sum_{i=1}^p \beta_1 \Delta \ln Y_{t-i} + \sum_{i=0}^p \beta_2 \Delta \ln K_{t-i} + \sum_{i=0}^p \beta_3 \Delta \ln L_{t-i} + \sum_{i=0}^p \beta_4 \Delta \ln FDR_{t-i} + \sum_{i=0}^p \beta_5 \Delta \ln FDI_{t-i} + \sum_{i=0}^p \beta_6 \Delta \ln RER_{t-i} + \sum_{i=0}^p \beta_7 \Delta \ln INF_{t-i} + \varepsilon_t \dots\dots\dots(5)$$

This is followed by the estimation of the short-run parameters of the variables with the error correction representation of the ARDL model. The speed of adjustment is determined by the application of the error correction model. The unrestricted ARDL error correction representation is estimated when there exists a long-run relationship as:

$$\Delta \ln Y_t = \varphi_0 + \phi \ln Y_{t-1} + \alpha_1 \ln K_{t-1} + \alpha_2 \ln L_{t-1} + \alpha_3 \ln FDR_{t-1} + \alpha_4 \ln FDI_{t-1} + \alpha_5 \ln RER_{t-1} + \alpha_6 \ln INF_{t-1} + \sum_{i=1}^p \beta_1 \Delta \ln Y_{t-i} + \sum_{i=0}^p \beta_2 \Delta \ln K_{t-i} + \sum_{i=0}^p \beta_3 \Delta \ln L_{t-i} + \sum_{i=0}^p \beta_4 \Delta \ln FDR_{t-i} + \sum_{i=0}^p \beta_5 \Delta \ln FDI_{t-i} + \sum_{i=0}^p \beta_6 \Delta \ln RER_{t-i} + \sum_{i=0}^p \beta_7 \Delta \ln INF_{t-i} + \varphi ECT_{t-1} + v_t \dots\dots\dots(6)$$

Where the short-run dynamics are the coefficients, while  $\phi$  is the speed of adjustment to long-run equilibrium following a shock to the system and  $ECT_{t-1}$  is the error-correction term, the residuals from the cointegration equation lagged one period is given by:

$$ECT_{t-1} = \ln Y_t - \varphi_0 - \phi \ln Y_{t-1} - \alpha_1 \ln K_{t-1} - \alpha_2 \ln L_{t-1} - \alpha_3 \ln FDR_{t-1} - \alpha_4 \ln FDI_{t-1} - \alpha_5 \ln RER_{t-1} - \alpha_6 \ln INF_{t-1} - \sum_{i=1}^p \beta_1 \Delta \ln Y_{t-i} - \sum_{i=0}^p \beta_2 \Delta \ln K_{t-i} - \sum_{i=0}^p \beta_3 \Delta \ln L_{t-i} - \sum_{i=0}^p \beta_4 \Delta \ln FDR_{t-i} - \sum_{i=0}^p \beta_5 \Delta \ln FDI_{t-i} - \sum_{i=0}^p \beta_6 \Delta \ln RER_{t-i} - \sum_{i=0}^p \beta_7 \Delta \ln INF_{t-i} \dots\dots\dots(7)$$

## 11.0 Results and Discussion

### 11.1 Descriptive Statistics

The study computed the descriptive statistics of all the relevant variables involved. These descriptive statistics include, the mean, median, maximum value, minimum value, standard deviation, skewness, kurtosis, sum, sum squared deviation and number of observations. Generally, the descriptive statistics of variables are done to check for the distribution of the variables or data. A vivid illustration of this statistics is presented in Table 2.

From Table 2 above, all the variables have positive average values (means). It can also be seen from Table 2 that Financial Dollarisation (FDR), foreign direct investment (FDI), real gross domestic product (RGDP), gross capital formation (K), inflation (INF) and interest rate differential (DINT) are positively skewed implying that the majority of the values are less than their means. However, labour force (L) and Real exchange rate (RER) are negatively skewed implying that majority of the values are greater than their means. The Jarque-Bera statistic which shows the null hypothesis that all the series are drawn from a normally distributed random process cannot be rejected for all the variables.

Furthermore, the standard deviation of the variables from their means are quite low when compared to their respective means with the exception of financial development. This is normal considering the fact that the variable change easily depends on the nature and extent of instability in the goods market at any point in time.



**Table 2: Summary Statistics of the Variable**

	FDR	RER	FDV	DINT	RGDP	INFL	K	L	FDI
Mean	0.314	88.867	14170.590	17.973	55470.880	16.195	6.87E+09	56.949	1.94E+09
Median	0.305	94.191	6436.524	17.296	22336.060	15.459	4.68E+09	57.188	2.53E+09
Maximum	0.385	107.734	55357.050	36.453	145438.200	33.588	1.63E+10	57.815	3.49E+09
Minimum	0.253	44.038	437.500	4.654	13739.430	8.731	1.15E+09	55.551	5893000
Std. Dev.	0.033	16.265	16613.260	8.444	54364.910	6.839	5.54E+09	0.769	1.43E+09
Skewness	0.185	-1.301	1.254	0.425	0.793	1.228	0.657	-0.439	-0.312
Kurtosis	2.458	4.149	3.427	2.692	1.681	3.788	1.747	1.710	1.286
Jarque-Bera	0.342	6.399	5.121	0.647	3.367	5.270	2.609	7.705	10.535
Probability	0.843	0.041	0.077	0.724	0.186	0.072	0.271	0.021	0.005
Sum	5.962	1688.481	269241.200	341.481	1053947.000	307.709	1.30E+11	4328.117	1.47E+11
Sum Sq. Dev.	0.020	4761.643	4.97E+09	1283.347	5.32E+10	841.965	5.52E+20	44.354	1.52E+20
Observations	76	76	76	76	76	76	76	76	76

Note: Std. Dev. represents Standard Deviation while Sum Sq. Dev. represents Sum of Squared Deviation.

### 11.2 Unit Root Test Results

The ARDL approach to cointegration does not require the pretesting of the variables for unit roots, but it is essential to perform this test to verify that the variables are not integrated of an order higher than one. The purpose is to ascertain the absence or otherwise of  $I(2)$  variables to extricate the results from spurious regression. Thus, in order to ensure that some of the variables are not integrated at higher order, there is the need to complement the estimated process with unit root tests. For this reason, before applying the ARDL approach, unit root tests were conducted in order to investigate the stationarity properties of the data although the ARDL approach does not require the pretesting of the variables for unit roots. As a result, the ADF and PP tests were applied to all the variables in levels and in first difference in order to formally establish their order of integration. To be certain of the order of integration of the variables, the test was conducted with intercept and time trend in the model.

For this reason, before applying Autoregressive Distributed Lags approach to cointegration and Granger-causality test, unit root tests were conducted in order to investigate the stationarity properties of the data.

The results of ADF and PP test for unit root with intercept and trend in the model for all the variables are presented in Table 2 and Table 3 respectively. The null hypothesis is that the series is non-stationary, or contains a unit root.

**Table 2: Results of Unit Root Test: ADF Test**

Variables	Levels		First Difference	
	Intercept	Intercept +Trend	Intercept	Intercept+Trend
FDR	-2.25	-2.23	-8.50***	-8.45***
RER	0.60	-1.48	-2.46	-2.94
INFL	-2.49	-2.38	-8.51***	-8.56***
RGDP	-0.39	-1.95	-8.68***	-8.69***
DINT	-2.16	-2.12	-8.54***	-8.51***
FDV	2.33***	2.72	3.75***	1.42
FDI	-0.87	-1.45	-8.85***	-8.81***
K	-0.84	-2.18	-8.65***	-8.59
L	0.59	-7.39***	-49.56***	-92.16***

Note: \*\*\*, \*\*, \* indicates the rejection of the null hypothesis of non- stationary at one percent, 5%, 10% level of significance respectively

TABLE 3: RESULTS OF UNIT ROOT TEST: PP TEST

Variables	Levels		First Difference	
	Intercept	Intercept +Trend	Intercept	Intercept +Trend
FDR		-2.37	-2.36	-8.50***
RER	1.76		-1.02	-9.47***
INFL	-1.07		-2.19	-8.56
RGDP	-2.60		-3.20	-8.51***
DINT	-2.17		-2.14	-8.54***
FDV	-5.10***		0.39	-9.71***
FDI	-0.93		-1.21	-8.72***
K	-0.84		-2.21	-8.65***
L	0.919		-7.74***	-22.13***

Note: \*\*\*, \*\*, \* indicates the rejection of the null hypothesis of non-stationary at one percent, 5%, 10% level of significance respectively

From the unit root test results in Table 2, the null hypothesis of the presence of unit root for most of the variables in their levels cannot be rejected since the critical values of the ADF statistics are not statistically significant at any of the three conventional levels of significance with the exception of financial development and labour which were stationary at one percent significant levels. However, at first difference, the variables become stationary. This is because the null hypothesis of the presence of unit root (non-stationary) is rejected at one percent significant levels for all the estimates.

The PP test results for the presence of unit root with intercept and time trend in the model for all the variables are presented in Table 3. From the unit root test results in Table 3, the null hypothesis of the presence of unit root for majority of the variables in their levels cannot be rejected since the critical values of the PP statistics are not statistically significant at any of the three conventional levels of significance with the exception of financial development and labour which were stationary at 5 percent significant levels. However, at first difference, the variables become stationary. This is because the null hypothesis of the presence of unit root (non-stationary) is rejected at 1 percent significant levels for all the estimates. The PP unit root test results in Table 2 are in line with the ADF test in Table 3, suggesting that most of the variables are integrated of order one, I(1), when intercept and time trend are in the model.

The unit root results discussed above shows 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 used for estimation.

### 11.3 Effects of Financial Dollarisation on Economic Growth

The concept of cointegration has its roots in the work of Engle and Granger (1987). Two variables are cointegrated if they share a common stochastic trend in the long-run. The general rule when combining two integrated variables is that their combination will always be integrated at the higher of the two orders of integration. The most common order of integration in time series is either zero or one.

TABLE 4: BOUNDS TEST RESULTS FOR COINTEGRATION ON THE EFFECTS OF FINANCIAL DOLLARISATION ON ECONOMIC GROWTH.

K	Critical Value Bound of the F-statistic: intercept and no trend (case II)					
	90% Level		95% Level		99% Level	
	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)
6	1.99	2.94	2.27	3.28	2.88	3.99
Calculated F-Statistics:						
FLRGDP (LRGDP LRER, LRFDR, INFL, LRL, LRK, LRFDI) = 14.57						

From Table 4, the F-statistics that the joint null hypothesis of lagged level variables (i.e. variable addition test) of the coefficients is zero is rejected at 5 percent significance level. Also, since the calculated F-statistics for FLRDR (.) = 14.57 exceeds the upper bound of the critical value of band (3.28), the null hypothesis of no cointegration between financial dollarisation and economic growth is rejected.

### 11.4 Long-run results on the effects of financial dollarisation on Economic growth.

The second objective of the study sought to determine the effects of financial dollarisation on economic growth. Table 5 shows results of the long run estimate based on the Schwartz Bayesian criteria (SBC).

TABLE 5: ESTIMATED LONG RUN COEFFICIENTS USING THE ARDL APPROACH (1, 1, 0, 4, 4, 4, 1) SELECTED BASED ON SBC DEPENDENT VARIABLE: LRGDP

Variable	Coefficient	Std. Error	T-Statistic	Prob.
LOG(FDR)	-0.698283***	0.115992	-6.020104	0.0000
INFL	0.027371***	0.003145	8.702498	0.0000
LLF	0.961611***	0.148353	6.481914	0.0000
LNK	0.388588***	0.053728	7.232497	0.0000
LNFDI	-0.127224***	0.028154	-4.518784	0.0000
LNRER	0.278551***	0.071326	3.905345	0.0003
CONS	-51.32353***	7.285729	-7.044392	0.0000

Source: Author's estimate (2019) \*, \*\*, \*\*\* indicates 10%, 5% and one percent significance level.

From Table 5, the long run results show that financial dollarisation and foreign direct investment exerted a negative and statistically significant effect on economic growth. However, inflation, labour, capital and real exchange rate exerted a positive and statistically significant effect on economic growth. From the results, the coefficient of financial dollarisation is statistically significant at 1percent significance level, implying that if financial dollarisation increases by 1percent, economic growth will decrease by 0.698 percent in the long run. This result supports the findings of Edwards and Magendzo (2001) who revealed that dollarized nations have a lower rate of economic growth than non-dollarized ones. The results, however contradict the findings of Yepes (2016) who found no causal effect of dollarisation on economic growth in Ecuador.

Moreover, the coefficient of inflation is statistically significant at one percent significance level indicating that if inflation increases by one percent, economic growth will increase by approximately 2.7 percent in the long run. Economic theory suggests that a moderate amount of inflation is good for the economy while hyperinflation is detrimental to economic activity and growth. Khan and Ssnhadji (2001) maintained that inflation per se is not harmful to growth. Their study suggested that there is a threshold beyond which inflation is harmful to growth. Hence, Ghana needs to maintain a moderate amount of inflation in order to stimulate economic growth. There was no estimation of the actual limit of inflation upon which its effect may become negative in the study.

The results show that the coefficient of labour force (LLF) is positive and statistically significant implying a positive influence on economic growth. A coefficient of 0.96 indicates that if labor force increases by one percent, economic growth will be stimulated by 96% in the long run. This result concurs with the argument of Jayaraman and Singh (2007) and Ayibor, (2012) who asserted that there can be no growth without the involvement of labour as a factor input hence, the positive and significant coefficient.

As expected, capital was found to exert a significant positive effect on economic growth in Ghana. The coefficient of capital indicates that a one percent increase in capital will increase economic growth by 0.39 percent in the long run and it is significant at one percent significance level. This result is consistent with the theoretical tenets of the neoclassical growth model, which asserts that a rise in capital stock has a positive effect on the national output and hence economic growth (Harrod, 1939).

In most macroeconomic studies that used aggregate FDI flows for a broad cross-section of countries, generally suggest a positive role for FDI in stimulating economic growth especially in particular environments (De Gregorio, 1992) but in this study, FDI adversely affects economic growth in the long run. The coefficient of FDI shows that a one percent increase in FDI will decrease economic growth by 0.13 percent in the long run and it is significant at one percent significance level. The result supports the findings of Frimpong and Oteng-Abayie (2006) who argued that most of the FDI inflows into the country go to the mining and construction sectors of the country. This however, does not generate direct growth impact on the economy as a whole and hence the negative effect.

Finally, real exchange rate exhibited a significantly positive effect on economic growth. The coefficient specifically indicates that a one percent increase in real exchange rate will increase economic growth by 0.28 percent and it is significant at one percent significant level. This indicates that when a country's currency depreciates in value, its tradable goods become cheaper and hence leading to higher exports and as such leads to increase in demand for exports and by extension economic growth. This result supports the findings of Majeed and Ahmad (2007).

### 11.5 Short run results on the effects of financial dollarisation on Economic growth.

The short run estimates also based on the Schwartz Bayesian Criteria (SBC) employed for the estimation of the ARDL model are reported in Table 9.



TABLE 6: ESTIMATED SHORT-RUN ERROR CORRECTION MODEL: *DEPENDENT VARIABLE: LNRGDP (LOG OF GDP)*

Variable	Coefficient	Std. Error	T-Statistic	Prob.
LNFD(-1)	-0.465954***	0.093614	-4.977410	0.0000
DLN(FDR)	-0.697045***	0.122421	-5.693824	0.0000
DINFL	0.018264***	0.002461	7.421720	0.0000
D(L)	0.176178	0.147737	1.192511	0.2387
DL(-1)	-0.666570***	0.159317	-4.183913	0.0001
DL(-2)	-0.666570***	0.159317	-4.183913	0.0001
DL(-3)	-0.666570***	0.159317	-4.183913	0.0001
DLN(K)	-0.139705**	0.053527	-2.610010	0.0119
DLNK(-1)	-0.417196***	0.058722	-7.104613	0.0000
DLNK(-2)	-0.417196***	0.058722	-7.104613	0.0000
DLNK(-3)	-0.417196***	0.058722	-7.104613	0.0000
DLNFDI)	0.009846	0.025207	0.390610	0.6977
DLNFDI(-1)	0.083147***	0.023817	3.491051	0.0010
DLNFDI(-2)	0.083147***	0.023817	3.491051	0.0010
DLNFDI(-3)	0.083147***	0.023817	3.491051	0.0010
LNRRER(1)	0.185873***	0.060842	3.055008	0.0036
DLN(RER(-1))	0.490255***	0.111826	4.384087	0.0001
CONS	-34.2474***	5.375975	-6.370454	0.0000
ECT (-1)	-0.667285***	0.057885	-11.52779	0.0000

From Table 6, the coefficient of the lagged error correction term ECT (-1) exhibits the expected negative sign (-0.667) and is statistically significant at one percent. This indicates that approximately 67% of the disequilibrium caused by previous years' shocks converges back to the long run equilibrium in the current year.

From the result, except lag of FDI, Labour and capital, the signs of the short run co-efficient concur with long-run estimates. The lag of financial dollarisation had its expected negative coefficient and is statistically significant at one percent significance level. This means that previous quarters financial dollarisation will decrease economic growth by about 0.47 percent in Ghana in the short-run.

Moreover, the coefficient of inflation also maintained its positive sign and it is statistically significant at one percent significance level which is consistent with the long run results. The result therefore suggests that if inflation increase by one percent, economic growth will increase by approximately 1.8% in the short run. The result is consistent with the findings of Mallik and Chowdhury (2001) who found a positive relationship between inflation and economic growth for South Asian Countries.

Contrary to expectation, the lags of labour force and capital did not have the expected a prior sign but has a significant influence on economic growth in the short run. Thus, with negative values, it can be explained that a one percent increase in the previous quarter's labour force and capital will adversely affect economic growth in the current year and all are statistically significant at one percent level of significance. This finding concurs with the findings of Abayie (2006), Frimpong, Oteng and Sakyi (2011) who found a negative and significant effect of labour force on economic growth in Ghana.

The lags of foreign direct investment exert a positive influence on economic growth. Its coefficients suggest that, a percentage increase in previous years' FDI will stimulate economic growth at one percent level of significance. The positive effect of FDI re-emphasizes the fact that Ghana has benefited positively from the spillover effect of foreign investors in the country. This result concurs with the work of De Mello (1997).

Finally, lag of real exchange rate had its expected a prior sign. The coefficient of real exchange rate is positive and statistically significant at one percent level of significance. The coefficient of 0.49025 implies that a one percent increase in real effective exchange rate leads to approximately 0.49 percent increase in economic growth meaning that real effective exchange rate is growth inducing in the short run in Ghana.

## 12.0 Conclusions

The study established that exchange rate, financial development, interest rate differential and real output drive financial dollarisation in Ghana. Whiles, inflation, exchange rate and financial development curtail financial dollarisation in Ghana, interest rate differential and real output increases the demand for foreign currency in Ghana.

Finally, the empirical evidence from the study revealed financial dollarisation exhibited a negative and statistically significant effect on economic growth both in the short-run and in the long-run. However, inflation, labour, capital and real exchange rate exerted a positive and statistically significant effect on economic growth in the long-run and in the short-run with the exception of labour and capital which adversely affected economic

growth in the short-run. Foreign direct investment exerted negative and significant effect on economic growth in the long run but in the short run it exerted a positive and significant effect on economic growth.

### 13.0 Recommendations

The following recommendations are made based on the findings from the study:

1. Based on the findings, it is recommended that the Bank of Ghana should endeavour to ensure a well-developed financial system through its continuing implementation of the financial sector reforms in Ghana since financial sector developments is found to serve as a disincentive to financial dollarisation in Ghana. This is necessary in order to safeguard against increasing financial dollarisation so as to promote economic growth in the economy.
2. Based on the findings, it is revealed that financial dollarisation adversely affects economic growth in Ghana both in the short-run and the long run. Thus, it is recommended that government policies should focus on restoring confidence and credibility in the domestic currency and institutions by ensuring long-term macroeconomic stability, coupled with the development of domestic risk hedging instruments and financial markets in order to reverse the trend of dollarisation in Ghana so as to enhance economic growth.

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