Real Exchange Rate Volatility and Domestic Consumption in Ghana

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Abstract

Consumption forms a vital component of aggregate demand. Hence, its behaviour influences business cycles, long-term growth, employment and macroeconomic policy decisions. The literature has therefore focused on establishing the determinants of consumption. Chiefly among the key determinants established in the literature are income and the interest rate. The recent literature has added changes in the real exchange rate and its volatility as critical factors influencing consumption decisions, owing to their pass-through effects on inflation and inflation volatility. The extant studies have examined the effects of exchange rate volatility on consumption by considering countries in regions other than Sub-Saharan Africa (SSA). In this paper, we examined this issue by focusing on a small open SSA country, Ghana, which has experienced exchange rate volatility. Using annual data covering the period 1980–2015, and the annualised variance of the real exchange rate as a measure of exchange rate volatility, we found that exchange rate volatility has negative effects on domestic consumption in the short run, which is passed on as negative long-run effects. This conclusion is unaffected by an alternative measure of exchange rate volatility and the choice of lag restrictions. Our finding suggests that policymakers should seek to reduce or prevent exchange rate volatility by pursuing various policies including limiting foreign currency transactions within the country, and promoting quality exports.

Keywords: Exchange Rate Volatility; Domestic Consumption; Ghana.

JEL Classification: E31; F31; C22.

1. Introduction

The decision as to whether to consume or save is central to both short and long-run micro and macroeconomic analysis for at least two reasons. First, consumption influences business cycles, thereby shaping monetary policy decisions in the short run. Second, the level of aggregate savings influences the size of the aggregate capital stock, which in turn influences wages, interest rates, and the standard of living in the long run (see Carroll, 2006). Owing to their importance as the major components of aggregate demand, various studies have examined the factors, which drive consumption and saving. For consumption, in particular, real income and interest rate have often appeared in the literature as some of its determinants (see Bahmani-Oskooee, Kutan, and Xi, 2015). Lately, most economies have become more open, hence the exchange rate has become a key driver of most macroeconomic variables including consumption (Bahmani-Oskooee, Kutan, and Xi, 2015). Among the earliest to recognise the influence of the exchange rate on consumption is Alexander (1952), who argue that the exchange rate may determine the level of consumption through its pass-through effect on inflation. Real exchange uncertainty (or volatility) may induce inflation uncertainty, which may in turn shape household consumption decisions. In this sense, apart from the changes in the real exchange rate, its volatility may determine domestic consumption as well (see, Alexander, 1952).

Indeed, the effects of uncertainty or volatility on consumption in general have received attention, following Alexander (1952). For example, Carroll (1992), while examining the optimal behaviour of consumers with standard attitudes toward risk facing income uncertainty, found that target or "buffer-stock" saving may be optimal under some circumstances. Again, Carroll (1997), while studying the same issue, found that it can be optimal for average household spending patterns to mirror average household income profiles over much of the life cycle, depending on households' income profiles and their degree of impatience. Similarly, Carroll and Kimball (1996), demonstrated, that when faced with uncertainty, households with low levels of wealth responded more to a windfall infusion of cash than households with high wealth. From these studies, it is fairly obvious that exchange rate uncertainty or volatility like any form of uncertainty is critical to consumption behaviour of households, and consequently, their saving decisions (see Obstfeld and Rogoff, 1998). This is because exchange rate volatility can be pass-through to prices of goods and services, thereby introducing price volatility that affects domestic consumption positively or negatively. Obstfeld and Rogoff (1998), for instance, argued that exchange rate volatility hurt consumption through indirect and direct channels. From the indirect channel, firms may try to hedge the risks associated with exchange rate volatility by raising prices of their products or services, and this may slow down aggregate consumption. Regarding the direct channel, they argued that households and firms generally react negatively to exchange rate volatility, and this influences their consumption decisions. Volatility in the exchange rate, they argued, hurts trade, production, income, and consequently consumption.

In spite of its obvious importance, few studies have examined the effects of exchange rate volatility on domestic consumption. However, recent studies have begun to explore the effects of exchange rates on consumption, through various channels. Bahmani-Oskooee and Hajilee (2010), for example, examined the impact of currency depreciation on the wages of skilled and unskilled workers in 18 countries. They found currency depreciation to be associated with low unskilled labour wages in six countries, and to boost skilled labour wages in seven countries. In a related study, Bahmani-Oskooee and Hajilee (2012) found short-run effects of currency depreciation on consumption in 37 out of 50 countries. They found long-run effects in 24 of the 50 countries. Their findings support Alexander's (1952) contentions. In addition to these studies, Bahmani-Oskooee and Xi (2012) examined the role of exchange rate volatility on domestic consumption by incorporating real income, interest rate, the exchange rate and a GARCH-based measure of exchange rate volatility in the consumption function. They found that exchange rate volatility leads to lower consumption in Canada, and higher consumption in the U.S. and Japan. In the context of emerging markets, Bahmani-Oskooee, Kutan and Xi (2015) have also examined the effects of exchange rate volatility on domestic consumption. In their sample consisting of 12 countries, they found that while exchange rate volatility has short-run effects on domestic consumption in all the countries, the short-run effects are passed on to the long-run effects only in 6 countries.

So far, these recent studies have focused on either industrialised countries or emerging market economies. The only Sub-Saharan African (SSA) country considered in the extant time series studies is South Africa. A recent study – that is, Oseni (2016) – has also examined the issue by focusing on a panel of 19 SSA countries. The main limitation of this study is that its findings may not adequately reflect country-specific experiences, since its results are based on panel data methods. In this paper, we add to this growing literature by examining the effects of exchange rate volatility on domestic consumption, focusing on Ghana. Apart from being an SSA country, Ghana is a small open economy whose exchange rate has been volatile. Since

1983, Ghana has pursued several economic reforms with the aim of achieving and sustaining economic growth and poverty reduction. A key exchange rate reform came under the Financial Sector Adjustment Programme (FINSAP), whereby the fixed exchange rate regime was replaced with the free-floating regime in the 1980s (see Alagidede and Ibrahim, 2016). Once the free-floating regime replaced the fixed exchange rate regime, the country's currency, the cedi, became volatile. Therefore, we aim to assess how this volatility in the cedi has influenced domestic consumption in the country. The rest of the paper is organised as follows. In section 2, we present the methodology. Then, in section 3, we report the empirical results. Section 4 concludes the paper.

2. Methodology

The theoretical underpinning of the relationship between consumption and real exchange rate volatility can be traced back to the seminal work of Alexander (1952), who recognised that the exchange rate may determine the level of consumption through its pass-through effect on inflation. According to him, real exchange volatility could generate inflation uncertainty, which plays a critical role in household consumption decisions. From this point of view, a consumption function should contain a measure of real exchange rate volatility as a determinant. Apart from this, other theoretical papers (see, e.g. Ando and Modigliani, 1963; Hall, 1978; Campbell and Mankiw, 1991) have emphasised the role of income and interest rate in shaping consumption decisions. From these theoretical papers, we could define domestic consumption as a function of real income, the nominal interest rate and the real exchange rate, and augment this function with a measure of real exchange rate volatility. The recent studies (see, e.g., Bahmani-Oskooee and Xi, 2012; Bahmani-Oskooee, Kutan and Xi, 2015) have modelled domestic consumption in this fashion. Hence, the Ghanaian consumption model will be of the form:

$$lnC_t = \alpha_0 + \alpha_1 lnY_t + \alpha_2 r_t + \alpha_3 lnRER_t + \alpha_4 VOL_t + \mu_t, \quad (1)$$

where C denotes a measure of domestic consumption; Y denotes real income, measured as real GDP; r denotes the nominal interest rate; RER is the real effective exchange rate between Ghana and the rest of the world, where an increase in RER represent real appreciation and a decrease real depreciation of the Ghana cedi relative to other currencies; VOL is a measure of real exchange rate volatility; ln is the natural logarithm operator; αs are the coefficients of the model; μ is the *iid* error term; t is the time subscript.

In line with the theory, we expect α_1 to be positive, suggesting that an increase in real income is associated with an increase in domestic consumption (see Campbell and Mankiw, 1991). Increases in the interest rate should create an intertemporal substitution of savings for consumption, and vice versa (see Hall, 1988). Therefore, we expect α_2 to be negative. Increases in the real exchange rate (real appreciations) are expected to spur local consumption, and vice versa (see Bahmani-Oskooee, Kutan and Xi, 2015). Hence, α_3 is expected to be positive. Exchange rate volatility could enhance or hurt domestic consumption depending on how consumers react to the inflation uncertainty induced by exchange rate volatility (see, Obstfeld and Rogoff, 1998; Bahmani-Oskooee, Kutan and Xi, 2015). Therefore, α_4 could be either positive or negative.

The domestic consumption model specified in Eq. (1) only permits us to analyse the long-run effects of exchange rate volatility on consumption. In other words, the short-run effects of

exchange rate volatility on consumption cannot be recovered by this specification. We can differentiate short-run effects from long-run effects of exchange rate volatility on domestic consumption by reformulating Eq. (1) as an error correction model. There are various ways of formulating the error correction model. However, we used the ARDL bounds testing approach proposed by Pesaran, Shin and Smith (2001) to reformulate Eq. (1) due to its essential features. First, it does well in small samples. Second, it avoids pretesting bias because it does not require pretesting the variables for unit roots. Third, it is applicable even if the variables are integrated of mixed orders [i.e. I(0) and I(1)] or fractionally integrated. Using this approach, the domestic consumption model in Eq. (1) can be reformulated as:

$$\begin{aligned}\Delta lnC_t = \beta_0 + \sum_{i=1}^{q} \beta_{1i}\, \Delta lnC_{t-i} + \sum_{i=0}^{q} \beta_{2i}\, \Delta lnY_{t-i} + \sum_{i=0}^{q} \beta_{3i}\, \Delta r_{t-i} + \sum_{i=0}^{q} \beta_{4i}\, \Delta lnRER_{t-i} \\ + \sum_{i=0}^{q} \beta_{5i}\, \Delta VOL_{t-i} + \gamma_1 lnC_{t-1} + \gamma_2 lnY_{t-1} + \gamma_3 r_{t-1} + \gamma_4 lnRER_{t-1} \\ + \gamma_5 VOL_{t-1} \\ + \epsilon_t, \end{aligned} \quad (2)$$

where ϵ, β, and γ are the *iid* error term, the short and long-run coefficients of the model, respectively; Δ is the first-difference operator; and q is the maximum lag of the model. The short-run effects of the variables on domestic consumption are the coefficients of the first-differenced variables. We estimate the long-run effects of these variables on domestic consumption by setting the non-first-differenced lagged component of Eq. (2) to zero and normalize γ_2 to γ_5 on γ_1.

The estimates of Eqs. (1) and (2) are only reliable if we can establish that the coefficients γ_1, γ_2, γ_3, γ_4, and γ_5 are jointly significant. That is, the variables in Eq. (2) should be cointegrated. This can be verified by testing the joint hypothesis that $\gamma_1 = \gamma_2 = \gamma_3 = \gamma_4 = \gamma_5 = 0$ and comparing the calculated F-statistic to the two sets of critical values tabulated by Pesaran, Shin and Smith (2001). The first set of critical values are calculated by assuming that the variables in Eq. (2) are integrated of order zero, I(0), while the second set are calculated by assuming that they are integrated of order one, I(1). We can reject the presence of cointegration if the calculated F-statistic is smaller than the first set of critical values. Similarly, we fail to reject the presence of cointegration if the calculated F-statistic is larger than the second set of critical values. The test is inconclusive if the calculated F-statistic lies in-between both sets of critical values. In what follows, we report and discuss the empirical results.

3. Empirical Results

3.1. Data

The data utilised in the empirical analysis is annual and covers the period 1980 to 2015. Observations on the real effective exchange rate (RER) are not available until December of 1979, hence the period restriction. The RER is the real effective exchange rate index (2010 = 100). We took monthly data on the RER from the International Financial Statistics (IFS) database compiled by the IMF. Then, we calculated the annualised variance of the log of

monthly RER, VOL, and used this index as our measure of real exchange rate volatility[1]. As a robustness check of our results, we calculated a GARCH-based conditional variance as the alternative measure of exchange rate volatility. Following other studies (see, e.g., West and Cho, 1995; Bleaney and Greenaway, 2001), we calculated this measure, VEX, as the conditional variance of GARCH (1,1) using the log of annual RER. The annual data on RER is taken from the World Development Indicators (WDI) database compiled by the World Bank. Real domestic consumption, C, is measured as household final consumption expenditure (current US$) deflated by GDP deflator. Data on this measure come from the WDI. The measure of real income, Y, is the GDP at market prices (constant 2010 US$) taken from the WDI. Lastly, the nominal interest rate, r, is the 91-day Treasury bill rates, taken from the Bank of Ghana's Monetary Time Series Data (for the period 1987-2015) and supplemented by the Central Bank Policy Rates obtained from the IFS (for the period 1980-1987). The descriptive statistics of the variables are shown in Table 1.

Table 1: Summary Statistics.

Statistic	*ln*C	*ln*Y	r	*ln*RER	VOL	VEX
Mean	8.882	10.244	23.812	2.232	2.963	0.266
Median	8.666	10.219	21.775	2.088	2.500	0.017
Maximum	10.802	10.667	47.880	3.563	7.605	2.763
Minimum	7.800	9.921	9.600	1.841	1.291	0.001
Std. Dev.	0.849	0.223	10.410	0.418	1.424	0.626
Skewness	0.661	0.370	0.794	1.899	1.614	2.796
Kurtosis	2.257	2.036	3.018	5.713	5.131	10.034
Jarque-Bera	3.453	2.217	3.783	32.698	22.463	121.121
P-value	0.177	0.330	0.151	0.000	0.000	0.000
Sum	319.776	368.795	857.250	80.357	106.670	9.604
Sum Sq. Dev.	25.284	1.741	3793.535	6.138	70.992	13.753
Observations	36	36	36	36	36	36

Notes: Std. Dev. and Sum Sq. Dev. denote, respectively, standard deviation and sum of squared deviations. *ln* denotes the natural log operator.

3.2. The Main Results

Since the ARDL approached does not require pretesting of the variables to establish stationarity, we proceeded to estimate Eq. (2). The ARDL approach is sensitive to lag choices, hence we followed the literature and restricted the maximum lag in the model to four and used the Akaike information criterion (AIC) to select the optimal lags to be included for each variable (see Halicioglu, 2007; Tang, 2007; Bahmani-Oskooee and Hajilee, 2012). The short and long-run results are shown in Table 2. The optimal model selected is ARDL (4, 3, 4, 1, 2). In order for these results to reliable, they must pass a battery of diagnostic tests. These diagnostic tests are: The LM, RESET, BPG, CUSUM, and CUSUMSQ tests.[2] From these

[1] De Vita and Abbott (2004), for example, have used the annualized standard deviation as a measure of exchange rate volatility. However, we used the annualised variance so that we can easily compare the results obtained using this index to those of the GARCH-based conditional variance index.

[2] These tests are, respectively, the Lagrange Multiplier (LM) test, Ramsey's Regression Equation Specification Error Test (RESET), the Breusch-Pagan-Godfrey test for heteroskedasticity, the Cumulative Sum of Recursive

diagnostic tests, reported at the bottom of Table 2, it is clear that there is structural stability, no serial correlation and heteroskedasticity, and no functional misspecification of the consumption model. Hence, the results are reliable. In addition to this, the estimated error correction term is negative and statistically significant, while the F-statistic is greater than the upper bound critical values at 1% indicating the presence of cointegration and convergence.[3]

Looking at the coefficients, exchange rate volatility has differential effects on domestic consumption in the short run. That is, the current level of volatility affects consumption negatively, while the previous level of volatility affects consumption positively in the short run. In the long run, exchange rate volatility has a negative effect on consumption. For the other variables, real income seems to affect consumption differently at different lags in the short run. At the zero lag, the impact is positive but not significant, while at the first and second lags, the impact is negative and positive, and being statistically significant, respectively. In the long run, real income affects consumption positively. The nominal interest rate affects consumption positively at the second lag in the short run. This effect changes to negative in the long run. In the case of the real exchange rate, it has a positive effect on domestic consumption in the short run, which is translated into the long run. Thus, real appreciation improves domestic consumption both in the short and the long run.

Table 2: The Main Results.

Lags	0	1	2	3	4	
Selected Model: ARDL (4, 3, 4, 1, 2)						
Short-run						
ΔlnC		-0.260[-3.209]	-0.142[-1.704]	-0.168[-2.969]		
ΔlnY	0.280[0.391]	-1.541[-2.437]	1.316[2.901]			
Δr	-0.001[-1.403]	-0.001[-1.566]	0.002[2.016]	-0.001[-1.433]		
ΔlnRER	0.959[4.852]					
ΔVOL	-0.020[-1.932]	0.030[2.877]				
ECM(-1)	-0.154[-5.206]					
Long-run						
Constant	0.979[9.869]					
lnY	0.576[2.699]					
r	-0.026[-3.403]					
lnRER	0.549[3.388]					
VOL	-0.436[-2.319]					
Adj. R-sq.	F-statistic	RESET	LM	BPG	CUSUM	CUSUMSQ
0.948	9.205	0.098(0.759)	0.528(0.767)	0.638(0.814)	S	S

Notes: The values in the block parentheses are the t-statistics. P-values for the diagnostic tests are in the parentheses. S denotes stable.

3.3. Sensitivity Analysis

Residuals (CUSUM) test and the Cumulative Sum of Squares of Recursive Residuals (CUSUMSQ) test (see Breusch, 1978; Breusch, and Pagan, 1979; Brown, Durbin and Evans, 1975; Godfrey, 1978; Ramsey, 1969).

[3] The F-statistic is compared to Table CI(iii) Case III: Unrestricted intercept and no trend of Pesaran, Shin and Smith (2001, p.300) for four independent variables (i.e. k = 4).

In order for the results presented above to be sound, we have to be sure that they are not driven by: (i) the maximum lag restriction, (ii) the choice of the optimal lags for each variable, and (iii) the measure of real exchange rate volatility. We have analysed each of these three factors in details here.

Are the main results driven by the maximum lag restriction? To answer this question, we reduced the maximum lags to be included in the model from four to two. As in the main results, we used the AIC to select the optimal lags for each variable. The optimal model chosen based on this information criterion is ARDL (2, 0, 2, 2, 2). The resulting estimates are shown in Table 3. The diagnostic tests reported at the bottom of Table 3 show that there is no structural stability, no serial correlation and heteroskedasticity. The functional form of the consumption model is misspecified as the RESET test clearly shows. Therefore, these results are not reliable. This could be due to model under-specification as we reduced the maximum lags. The error correction term indicates cointegration and convergence. Although these results are not reliable, the coefficient estimates look similar to those reported in Table 2. For example, exchange rate volatility has differential impacts on domestic consumption in the short run. The current level of exchange rate volatility has a negative effect and a positive lag effect on domestic consumption in the short run. The effect is negative, although insignificant in the long run. Therefore, it does not appear that the coefficient estimates are affected by the reduction in the maximum number of lags allowed in the model. The only concern is that the estimates are unreliable.

Table 3: Results based on ARDL Model Restricted to Two Lags.

Lags	0	1	2			
Selected Model: ARDL (2, 0, 2, 2, 2)						
Short-run						
ΔlnC		-0.498[-3.073]				
ΔlnY	0.232[0.201]					
Δr	-0.003[-2.116]	-0.004[-2.545]				
ΔlnRER	0.145[1.606]	-0.259[-2.155]				
ΔVOL	-0.082[-3.457]	0.053[2.141]				
ECM(-1)	-0.260[-5.001]					
Long-run						
Constant	1.662[4.569]					
lnY	2.739[1.879]					
r	-0.039[-1.029]					
lnRER	0.862[1.072]					
VOL	-3.161[-2.012]					
Adj. R-sq.	F-statistic	RESET	LM	BPG	CUSUM	CUSUMSQ
0.894	7.707	7.011(0.015)	0.318(0.731)	0.943(0.526)	US	US

Notes: The values in the block parentheses are the t-statistics. P-values for the diagnostic tests are in the parentheses. US denotes unstable.

Will the results reported in Table 2 look different if we maintain the restrictions but select the optimal lag for each variable using the Schwarz information criterion (SIC)? We verified this by re-estimating Eq. (2) restricting the maximum lags to four and selected the optimal lags for each variable using the SIC. These results are reported in Table 4. The preferred model is ARDL (2, 0, 3, 1, 3). By comparison, the information criterion is critical for optimal lags chosen for each variable. The lags chosen using the SIC are generally lower, when compared to those chosen using the AIC [i.e. ARDL (4, 3, 4, 1, 2)]. Looking at the diagnostic tests reported at the

bottom of Table 4, we can say that there is structural stability, no serial correlation and heteroskedasticity, and no functional misspecification of the consumption model.

Here, exchange rate volatility has negative effects on domestic consumption in the short run, and remaining so in the long run. The only difference between these coefficients and those reported in Table 2 is the lag effect. In the main results, exchange rate volatility has a positive lag effect on consumption in the short run but here the effect is negative. The remaining variables affect consumption in a similar way as those reported in Table 2. Real income has a positive but insignificant effect on consumption in the short run. Its effect on consumption remains positive but significant in the long run. Nominal interest rate has positive effects on consumption both in the short and the long run. Real exchange rate has positive effects on consumption both in the short and the long run.

Table 4: Results base on Optimal Choice of Lags using SIC.

Lags	0	1	2	3	4	
Selected Model: ARDL (2, 0, 3, 1, 3)						
Short-run						
ΔlnC		-0.332[-2.143]				
ΔlnY	1.348[1.200]					
Δr	-0.002[-1.757]	-0.003[-1.348]	0.002[1.043]			
ΔlnRER	0.052[2.598]					
ΔVOL	-0.044[-2.142]	-0.013[-1.057]	-0.030[-2.571]			
ECM(-1)	-0.492[-4.961]					
Long-run						
Constant	2.608[4.638]					
lnY	2.173[2.461]					
r	-0.025[-1.521]					
lnRER	2.178[2.444]					
VOL	-0.959[-3.350]					
Adj. R-sq.	F-statistic	RESET	LM	BPG	CUSUM	CUSUMSQ
0.926	7.578	0.288(0.597)	1.861(0.185)	0.656(0.779)	S	S

Notes: The values in the block parentheses are the t-statistics. P-values for the diagnostic tests are in the parentheses. S denotes stable.

Lastly, will the results be different if we measured real exchange rate volatility differently? To verify this, we derived the conditional variance of a GARCH (1,1) model of the log of the annual real exchange rate as a measure of exchange rate volatility. Using this measure and the restrictions imposed on Eq. (2) in section 3.2., we performed the estimations and reported the results in Table 5. The selected model is ARDL (2, 3, 4, 3, 2). The model is structurally stable, there is no serial correlation and heteroskedasticity, and no functional misspecification of consumption model, implying that the estimates are reliable. Real exchange rate volatility has negative effects on consumption both in the short and the long run. Real income has differential effects on consumption in the short run. In the long run, real income has a positive effect on consumption. Nominal interest rate has differential effects on consumption in the short run. In the long run, nominal interest rate has a negative effect on consumption. Real exchange rate has both positive short and long-run effects on consumption. In all, the alternative

specifications of the consumption model have not influenced the main conclusion of the paper – that exchange rate volatility has negative effects on domestic consumption. This conclusion generally ties with those documented by Bahmani-Oskooee and Xi (2012), and Bahmani-Oskooee, Kutan and Xi (2015).

Table 5: Results based on Conditional Variance of Exchange Rate Volatility.

Lags	0	1	2	3	4	
Selected Model: ARDL (2, 3, 4, 3, 2)						
Short-run						
ΔlnC		-0.189[-1.949]				
ΔlnY	0.190[0.300]	-1.163[-1.770]	2.312[3.781]			
Δr	-0.001[-2.052]	-0.002[-2.951]	0.021[1.220]	-0.312[-2.162]		
ΔlnRER	0.976[8.105]	0.580[4.362]	0.269[2.594]			
ΔVEX	-0.092[-2.313]	-0.126[-2.840]				
ECM(-1)	-0.440[-6.006]					
Long-run						
Constant	1.591[10.054]					
lnY	2.733[2.749]					
r	-0.077[-2.693]					
lnRER	1.200[2.167]					
VEX	-0.947[-2.556]					
Adj. R-sq.	F-statistic	RESET	LM	BPG	CUSUM	CUSUMSQ
0.908	8.529	0.762(0.399)	0.426(0.662)	0.329(0.984)	S	S

Notes: The values in the block parentheses are the t-statistics. P-values for the diagnostic tests are in the parentheses. S denotes stable.

4. Summary and Conclusion

The decision regarding whether to consume or save is central to both short and long-run micro and macroeconomic analysis. Due to the policy significance of consumption decisions, the older literature has been dedicated to establishing the determinants of consumption. Towards this end, the level of income and the interest rate have mostly emerged as the primary determinants of consumption. Recent studies have identified the effects of exchange rate changes on consumption, arguing that depreciations may hurt consumption through their inflationary effects by redistributing income from high marginal propensity to consume (MPC) workers to their low MPC counterparts. Other studies have argued that exchange rate volatility, rather than its mean changes may have strong influence on the level of consumption. According to this view, exchange rate volatility induces inflation volatility which may in turn hurt or enhance consumption.

We followed these recent studies by investigating the effects of exchange rate volatility on consumption in Ghana. We focused on Ghana because previous studies have not considered this country, despite the fact that it is a small open economy which has experienced exchange rate volatility frequently. Using annual data covering the period 1980–2015, and the annualised variance of the real exchange rate as a measure of exchange rate volatility, we found that exchange rate volatility has negative effects on domestic consumption in the short run, which

is passed on as negative long-run effects. This conclusion is unaffected by alternative lag restrictions and the choice of the exchange rate volatility measure. This conclusion also ties with the extant theoretical predictions.

The evidence of a short-run negative impact of exchange rate volatility on consumption suggests that exchange rate volatility is an important source of output fluctuations or business cycles in Ghana. This is because exchange rate volatility affects domestic consumption negatively which may in turn slow down aggregate expenditure. Hence, in terms of policy, exchange rate stability is important if policymakers are to lessen the frequency of business cycles in Ghana. Also, since exchange rate volatility is found to exert negative effects on domestic consumption in the long run, one should expect long-run economic growth to be dampen as well. Specifically, the evidence suggests that exchange rate volatility could lead to the multiple macroeconomic challenges of high inflation uncertainty, declining domestic consumption, declining rate of economic growth, high unemployment, high rate of poverty, and widening income inequality. Policymakers in the country may counter this situation by pursuing exchange rate policies that prevent exchange rate volatility.

As an exchange rate policy, the authorities should prevent the price quotation of local goods and services in foreign currencies. Businesses, especially those focusing on real estate, hotel services, and automobile retailing, have the tendency of quoting the prices of their products and services in dollars or pounds. Such practices have negative impacts on the local currency and its management. That is, the local currency may continue to depreciate or become worthless, while monetary policy may become less effective under such practices. Hence, to prevent exchange rate uncertainty in the future, policymakers should seek to curtail these practices. Since the country pursues a free-float exchange rate regime, volatility in the local currency is unavoidable. What can be prevented is the frequency and severity of the volatility. A sure way to achieve this is by making the currency competitive through the enhancement of the quality and quantity of exports. The country currently exports raw or unprocessed goods and services, which are uncompetitive. However, a large chunk of its imports are refined goods and services. Therefore, policies to prevent exchange rate volatility in the country should be directed towards promoting exports of finished goods and services. Other policies to stabilise the exchange rate in the country are available. Hence, our suggested policies are by no means exhaustive.

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