

THE EFFECTS OF EXCHANGE RATE AND PRICE VOLATILITY ON TRADE FLOWS IN CAMEROON FROM 1980 TO 2019

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ABSTRACT

This study examines the effects of exchange rate and price volatility on trade flows in Cameroon from 1980 to 2019. It uses time series analysis and adopts the Auto-regressive Distributed Lag (ARDL) model technique in analysing the effects of price and exchange rate volatility on trade flows in Cameroon in both the short and long-run period. The model tested the effects using the case with and without an interactive variable. The study found out that, in the short run, exchange rate has a significant negative relationship with trade flows in the model without interactive variable at 1% level of significance and a significant positive relationship with trade flows in the model with interactive variable at 5% level of significance. Consumers price index has an insignificant negative effect with trade flows in the model without interactive variable at 5% level of significant and a significant positive effect in the model with interactive variable at 1% level of significance. In the long-run, exchange rate has a significance negative relationship with trade flows in the long-run in the model without interactive variable and in the model with interactive variable at 1% level of significance. Consumer price index has an insignificant negative relationship with trade flows in the model with interactive variable at 5% level of significance and without interactive variable at 1% level of significance. We proposed that individuals, investors and government should adopt guarantee exchange rate approach like fixed exchange rate regimes and hedging to guarantee them stability in exchange rate in both short-run and long-run. Producers should increase prices in the short run and reduce prices in long-run in a bid to optimize sales.

Keywords: Exchange Rate, Investment, Prices, Trade Flows.

I. INTRODUCTION

Globalization enhancement has become a fundamental aspect in all walks of life and very paramount in the field of business to guarantee mutual exchange, world peace and stability. Nevertheless, despite its substantial benefits, it has been blamed on many shortcomings in the modern economy and society. Indeed, globalization has faced severe criticism than technological innovation and other secular trends that have potentially had even more profound consequences. International trade and financial openness go hand in hand. Trade is facilitated by financial links, such as international payments and credit, which can result to financial links. Such as accumulation of international assets and liabilities. This had cause countries that are more open to trade to tend to have higher financial openness and the trade collapse that followed the recent financial crisis furthermore, it has led to a renewed interest on the measurement issues affecting international merchandise trade statistics in the new globalized economy (Andreas & Christophe, 2010).

Flexible exchange rate seems to have had negative effect on trade and investment. This has made it such that, if exchange rate movement is not fully anticipated, increases in exchange rate volatility will increase risk and this can lead to risk averse agent which can reduce their import and export activity by reallocating production towards domestic markets (Giovanni, 1998). Some development policies appear to have high fluctuations in exchange. The liberalisation of capital flows in the last two decades and the enormous increases in the scale of cross-border financial transactions have increase exchange rate volatilities. Currency crises in emerging markets economies (EMEs) are special examples of high exchange rate volatility (IMF, 2004).

In Cameroon, Mathurin & Nkot (2017) observed that global shocks had more impact on investment and the current account and the most severe shocks are transmitted by oil, and the variables most affected are: the current account, investment and production. Single external price is also significant in transmitting part of the effects of foreign shocks to the Cameroonian economy. Global shocks stimulated by the terms of trade are responsible for variations in production and other indicators of aggregate activity in developing countries. For almost a decade now, food prices and retailing fuel prices have been the main contributing inflationary

pressures on the Cameroon economy (WB, 2014). Other studies in Cameroon shows that, Cameroon can use exchange rate policies besides protection and export taxes and subsidies to transform the level of domestic production and industrialization which can go a long way to increase exports thus devaluation or revaluation are closely very link to export/domestic prices as well as cost. It is seen that trade flows and exchange rate have a long run relationship on development in Cameroon (Aloysius, 1996).

Cameroon is a small open economy and a price taker, meaning that prices in the international market are settled by external institutions and Cameroon has no means of influencing the process. Therefore, exports depend mainly on foreign income of the main destinations of Cameroonian exports which are China, India, the Netherlands, France, and Spain. It is just the Chinese and India currencies, which are the main contributors to Cameroon's export revenue are the most affected by such fluctuations, as those of the Europe zone cannot since the CFA is pegged to Euro (Dongfack & Ouyang, 2019).

If there were no exchange rate and price disparity between or among nations trade profit and business climate at the domestic and international level in the world economy, business transactions will have been more stable and predictable, this is not the situation as the constant increase in prices and exchange rate volatility makes the business environment much uncertain and unpredictable, greatly reduces the volume of trade flows, and dampens the expansion of economic growth (Bahmani & Abera, 2017). This has provided the need for researchers to do more work in order to reduce or eliminate this difference so that businessmen, government, international organizations and banks can easily carry out more voluminous transactions across international borders greatly enhance the liberalization of financial transaction and capital flows as well as to capture and measure in approximate certainty the level of exchange rate pass - through to domestic prices in the economy (Aliyu, 2010).

Cameroon like many other African countries is highly dependent on agriculture and forest export such as cocoa, coffee, banana, timber and crude oil. Similar problems at the international market such as biological and market lags (Manaseh, 2015), overvaluation of domestic currency, less competitive agro - product, internal and external debt crisis and domestic price instability (Aloysius, 1996), political and economic volatility due to governance challenges in both private and public sector, lack of innovative tools to enhance new ways of financial innovations (Beck et. al., 2014). As such, we see that exchange rate and price volatility does not only affect trade flows but has an extended impact on the general terms of trade and world peace which need to be well measured and in different dimension; and Africa has been neglected in the study of exchange rate and price volatility in international and financial economics and in most cross regional studies like that of Bahmania & Abera (2017) Cameroon was exempted in their research of exchange rate volatility and international trade performance using evidence from 12 African countries (Bahmania & Abera, 2017). So, we think it of much importance for us to undertake this study on Cameroon. This study uses an Autoregressive distributed lag model (ARDL) method to analyse and bring out the effect of exchange rate and price volatility in the short-run and long-run on trade flows in Cameroon. We intend that the findings and recommendations go a long way in identifying and proposing policy measures that can provide solutions in this sector.

Agbor (2012) in his work entitled "the future of the FCFA" clearly explains that it is the increasing evidence of the "Dutch disease" that have exemplified by the declining terms of trade and export profitability of CEMAC's non-oil exports since 2000, in spite of the fact that overall oil export profitability has been increasing. According to Gulde & Tsanga (2008), both the export-price wage and the export-price index to tertiary GDP deflator (used in capturing overall export profitability) for CEMAC countries have been improving from 1993 to 2006. At the same time, non-oil export-price wage and non-oil export-price index have been declining. The analysis suggests another important source of vulnerability for the fixed exchange regime considering that the profitability of the non-oil export sector is central to efforts aimed at diversifying the export resource base. A diversified export resource base helps in mitigating potential adverse effects of falling oil prices and or saturating oil production.

The Cameroon government has also recognized price fluctuation in a more global context under section 14, major sector challenges and sub section 113 high factor cost of the GESP (2010). At the global level the fluctuation of petroleum prices, the state's budgetary resources seem uncertain. The drop in the price per barrel from 140 US dollar in July 2008 to approximately 35 dollars in December 2008 shows the scope of these fluctuations. Petroleum revenue within the state budget which made a record of 7.4 percent of the GDP in 2008

witnessed a significant downward trend in 2009. The restoration of prices by adjusting supply affects demand that is not sustained due to economic crisis in rich countries. The government therefore, should step up mobilization of funds from non-petroleum products and ensure stringent management of the available resources (GESP, 2010).

Some studies too which analysed the Socio-Economic Determinants of Cocoa Production in Meme Division in Cameroon postulated that prices per ton of cocoa has a positive relation between price and cocoa output. This means that price in their model has a positive influence on the output of cocoa price has both the short term and long-term effect on cocoa output. They also found that prices back the theory of supply, which identifies price as a major factor, which has a very crucial effect on the supply of the agricultural products (Ngoong & Forgha, 2013). It is also observed that his finding is in line with the earlier conclusions of Adams et al. (1999).

The GESP, the present and main Cameroon developmental working document recognizes two threats and risks which were already identified in the PRSP in 2003 as a key factors resurgence of exogenous shocks owing to the pattern of its exports. Cameroon will for a long time continue to depend on fluctuating prices of primary products, and unstable exchange rates and changing of oil prices. In the short and medium term, the international financial crisis and its economic repercussions may lead to a recession in the country's economy. Concerning foreign trade, the export of rubber and timber, as well as of many other products will suffer this impact and hence drop. This will show up in the budgetary resources and will particularly reduce the states investment capacity since priority will go to operating budgets which cannot be released (GESP, 2010).

With regards, to the balance of payment, the gloomy picture of the labor market in their host countries exposes Cameroonians to incomes losses just like other workers in these countries. It is thus, worthwhile to envisage a drop in money transfers, which will affect family assistance, building construction and the establishment of SMEs usually supported by these transfers. Regarding donor countries, it should be noted that, the economic recessions will translate into more limited budgetary resources excluding loans and that their limited resources will have to be used to meet request for financial support to the banking system and to companies affected by the economic recession is likely to reduce their contribution to public developmental aid. The suspension of development in the Cameroon economy is more feasible and the country must effectively mobilize sufficient internal means to replace funds from development aid currently flowing when they needs to stop (sub section 127 of GESP).

There is enough reason to undertake this study by looking at the effect of exchange rate and price volatility on trade flows in Cameroon. This is because it will help us answer the following research questions and provide solutions to problems and ensure concrete policy mix are applied in order to ensure a more stable and sustainable economy both domestically and internationally.

II. METHODOLOGY

Research Questions

Main Research Question

The main research question we have answered in this study is; what is the effect of exchange rate and price volatility on trade flows in Cameroon?

Specific Research Questions

The specific research questions that have helped us to better simplify our main research question include:

- 1) What is the effect of exchange rate volatility on trade flows in Cameroon?
- 2) What is the effect of price volatility on trade flows in Cameroon?
- 3) What is the interactive effect of exchange rate, price volatility and investment on trade flows in Cameroon?

Objective of the Study

Main objectives

The main objective of this study is to examine the effect of exchange rate and price volatility on trade flows.

Specific Objectives

To attain the main objective above we will have to critically examine the following specific objectives which include:

- 1) The effect of exchange rate volatility on trade flows Cameroon.
- 2) The effect of exchange rate volatility on trade flows in Cameroon.
- 3) The interactive effect of exchange rate, price and investment on trade flows in Cameroon.

Hypothesis

For us to better appreciate the effect of exchange rate and price volatility on trade flows in Cameroon. we will have to consider the following assumptions which are stated in the null (H_0) form.

H_{01} : Exchange rate volatility has no effect on trade flows in Cameroon.

H_{02} : Price volatility has no effect on trade flows in Cameroon.

H_{03} : There's no interactive effect of exchange rate, prices and investment on trade flows in Cameroon.

Research Design

This study thus falls under quantitative research where everything that makes up the research process is predetermined and some literature exists on the topic. This necessitates the use of the causal ex post factor research design. This design explores causal relationships in phenomena where causes already exist and the researcher cannot alter them in any way. Independent variables have already taken effect on the dependent variable (Harold, 1973). This research work is designed to examine effect of exchange rate and price volatility on trade flows in Cameroon. The study uses time series data over a period of 40 years which runs from 1980 to 2019 inclusive and employs the Autoregressive distributed lag (ARDL) model to estimate the coefficients of the variables in the specified models.

Data Collection

In this study, we are interested in assessing effect of exchange rate and price volatility on trade flows in Cameroon from 1980 to 2019. The basis of our analysis is on time series data. The data used in this study was collected from secondary sources. Secondary data was preferred over primary data for this study because of the time scope, over which the study is carried out and also due to the large nature of the population size of the area of study. The data used for this study was thus obtained mainly from the World Bank Data base known as World Development Indicators (WDI). It covers the period of 1980 to 2019 making it a 40 years' times' series analysis.

Variables on Which Data is Collected

Table 1: Variables on which Data is Collected

Variables	Symbol	Definition	Expected sign
Dependent variable			
Trade Flow	TRADE	Trade in goods or trade flows refers to all goods which add to, or subtract from, the stock of material resources of a country by entering its economic territory as imports or leaving it as export (OECD, 2020).	/
Independent variables.			
Effective exchange rate	EER	Effective exchange rate is a summary measure of the external value of the currency of a country or area vis-à-vis the currencies of the most important trading partners of that country or area (ECB, 1999).	negative
Consumers price index	CPI	It is a measure of the proportionate, or percentage, changes in a set of prices over time(ILO, 2004).	negative
Control Variable			
Capital formation	INV	The physical increase in fixed asset such as factories, machines, housing (Kaldor, 1953).	positive

Source: Author, 2020

III. MODELING AND ANALYSIS

Method of Data Analysis

For estimation of the parameters of the model specified, our study will use the Autoregressive Distributed Lag (ARDL) Co-integration technique or Bound Co-integration technique since the long run and short run relationship between the variables are of great importance to this study. This method has gained an increased importance in analyses that describe long-run or short relationship in analysing time series data. This is because time series data is usually not stationary. The ARDL model is appropriate for variables differentiated of Order I(0), I(1) or a combination of both (Emeka & Aham, 2016). The ARDL model is a technique which is applicable to both non-stationary time series and for times series with mixed order of integration. It is advantageous because a dynamic error correction model ECM can be derived from it through a simple linear transformation (Min & Guna, 2018).

The estimation procedure for the ARDL model begins with an indication that you want to perform a time series analysis, choose your optimal lag length for the model, undertake unit root test, perform ARDL regression, do the ARDL error representation, carryout the bound test for co-integration, lastly do your post-test (Angeliki, 2019). The implication of non-stationarity in econometric modelling is grave as it leads to spurious regression. This often manifests when regression of unrelated non-stationary series indicate that the series are correlated (Adam, 1992). Egwaikhide (1999) argued that using one or more non stationary series in a regression equation could produce biased estimates, thereby leading to incorrect statistical inferences when such series are estimated at their levels, except in the case of a co-integration relationship. Therefore, identification of the time series properties of model variables assists in avoiding the problem of spurious estimates. This is closely followed by testing for causality and co-integration of the variables in the model and then the error correction estimation.

In order to ascertain the effect of exchange rate and price volatility on trade flows in Cameroon, the researcher has employed the Autoregressive Distributed Lag (ARDL) Co-integration technique or Bound co-integration technique of Ordinary Least Square (OLS). Given that the use of ARDL is conditioned by the existence of a long run equilibrium relationship between the variables, a co-integration test is priory carried out to examine whether there exists a long run equilibrium relationship between the variables. According to Granger's representation theorem (Engel and Granger, 1987), if it is established that variables are co-integrated, it follows that there are forces that tend to restore the equilibrium relationship between variables each time it is broken. This also means this return to equilibrium goes through a process of a dynamic short term adjustment. they can be represented through an ARDL technique.

Finally, this study employed the ARDL technique because of the advantages it has in minimising indigeneity, identification of co-integration vectors in cases of multiple co-integration vectors, and above all, its ability of being transform into an Error Correction model through a simple linear transformation which integrates short run adjustment with long run adjustment without losing long run information. By adopting the Peasaran & Shin (1997) and Taghvae and Parsa (2015), our ARDL model will be as below for both without and with interactive variable.

ARDL model without interactive variable

$$\text{Trade Flow}_t = f(\text{EER}_t, \text{CPI}_t, \text{INV}_t) \dots\dots\dots 1$$

Model Specification

Econometrically, the model can be stated for the long run and short run as:

Long run Model

$$\text{TRADE Flow} = \beta_0 + \beta_1\text{EER}_t + \beta_2\text{CPI}_t + \beta_3\text{INV}_t + \varepsilon_t \dots\dots\dots 2$$

ARDL model with interactive variable

$$\text{TRADE} = f(\text{EER}_t, \text{CPI}_t, \text{INV}_t, (\text{INV}_t \times \text{EER}_t \times \text{CPI}_t)) \dots\dots\dots 3$$

Econometrically, the model can be stated functionally as:

$$\text{TRADE} = \beta_0 + \beta_1\text{EER}_t + \beta_2\text{CPI}_t + \beta_3\text{INV}_t + \beta_4(\text{INV}_t \times \text{EER}_t \times \text{CPI}_t) + \varepsilon_t \dots\dots\dots 4$$

Where Trade Flow is dependent variable, EER is the effective exchange rate, CPI is the consumers price index, INV is investment or capital accumulation, ϵ is the error term in the model and $\beta_0, \beta_1, \beta_2, \beta_3$ and β_4 are the parameter coefficient of EER, CPI, INV respectively and the interactive variable is the product of EER, CPI and INV

Short run Model

The ARDL specification for short run association is determined by the error correction model as seen on the following:

$$\Delta TRADE_t = \alpha_0 + \sum_{i=1}^p \gamma_{2i} \Delta EER_{t-i} + \sum_{i=0}^p \theta_{2i} \Delta CPI_{t-i} + \sum_{i=0}^p \varphi_{2i} \Delta (INV_t \times EER_t \times CPI_t)_{t-i} + \sum_{i=0}^p \omega_{2i} \Delta LGOV_{t-i} + \sum_{i=0}^p \pi_{2i} \Delta LGDPPC_{t-i} + \sigma ECT_{t-1} + \epsilon_t \dots \dots \dots (4)$$

Where ECT_{t-1} is the error correction term. All coefficients of short run equation are representing the short run convergence of the model towards long run equilibrium. σ is the speed of adjustment

Estimation and Validation Technique

The data has been analysed with the help of (Statistics and data) STATA software following the steps involved in Autoregressive Distributed Lag (ARDL) model seen above. The following analysis will be carried out in order to better estimate and validate our parameters. This analysis will be carried out with the help of instruments from descriptive statistics and inferential statistics.

IV. RESULTS AND DISCUSSION

Estimation Analysis

Table 2: Regression Results of ARDL Model

VARIABLES	Model without Interactive variable			Model with interactive variable		
	ADJ	LR	SR	ADJ	LR	SR
LD.ltrade			0.1843			-0.0527
			(0.1480)			(0.208)
L2D.ltrade						-0.105
						(0.123)
L3D.ltrade						-0.215
						(0.123)
D.linv			-0.162**			-0.138*
			(0.0622)			(0.0751)
LD.linv			-0.168**			-0.230**
			(0.0710)			(0.101)
L2D.linv			-0.349***			-0.384***
			(0.0673)			(0.0922)
L3D.linv						0.102
						(0.0881)
D.lcpi			-0.167			5.040*
			(0.202)			(2.634)
D.lerr			0.634***			4.831**
			(0.195)			(2.217)
LD.lerr			0.190			0.120

			(0.163)			(0.244)
L2D.lerr			0.867***			0.798**
			(0.158)			(0.270)
L3D.lerr						0.347*
						(0.187)
D.inter						-1.005*
						(0.528)
LD.inter						0.0630
						(0.0443)
L2D.inter						0.0586
						(0.0429)
L3D.inter						-0.153***
						(0.0460)
LD.lcpi			0.0829			
			(0.225)			
L2D.lcpi			0.435**			
			(0.193)			
L3D.lcpi			-0.504***			
			(0.153)			
Linv		0.458***			0.437**	
		(0.0609)			(0.185)	
Lcpi		-0.187			-2.420	
		(0.195)			(7.710)	
Lerr		-1.655***			-3.615	
		(0.284)			(6.877)	
L.ECT	-0.565***			-0.481**		
	Model without Interactive variable			Model with interactive variable		
VARIABLES	ADJ	LR	SR	ADJ	LR	SR
	(0.107)			(0.221)		
Inter					0.479	
					(1.551)	
Constant			15.67***			17.98
			(2.558)			(10.29)
Observations	35	35	35	35	35	35
R-squared	0.902	0.902	0.902	0.949	0.949	0.949

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Source: Computed by Author using STATA, 2020

Table 2 above presents the ARDL results as estimated by the model. This result is presented using the short run and the long run equations above. The table presents results of model without interactive variable and that of model with interactive variable.

Apriori Test

With respect to the result of model without interactive variable:

Following the short run scenario, the short run coefficient of trade lag1 is positive indicating a direct relationship with trade. Specifically, from the result, if trade lag1 increases by 1unit in the short run, trade flow will increase by about 0.1843unit. However, trade lag1 is found to be statistically insignificant at 1% level of significance.

The short run coefficient of investment is negative, indicating an inverse relationship with trade. This implies that as investment increases, trade will tend to decrease. Specifically, as investment increases by 1units in the short run, trade tends to fall by about 0.162units, and this result is significant at 5% level of significance. Same inverse relationship exists between trade and investment lag 2 and lag 3. The short run results of investment are all found to be statistically insignificant at 5% level of significance.

Consumer Price Index (CPI) has a negative short run coefficient, indicating an inverse relationship with trade. Specifically, 1units increase in CPI in the short run will lead to 0.167units fall in trade. However, this result is found to be statistically insignificant at 5% level of significance

The short run coefficient of exchange rate is negative, indicating an inverse relationship with trade. From the result, as exchange rate increases by 1% in the short run, trade tends to decrease by about 0.634%. This result is statistically significant at 1% level of significance.

Looking at the long run scenario, investment has the capacity to increase trade in the long run as reflected by the positive coefficient. If there is a 1% increase in investment, trade will increase by about 0.458% in the long run which is statistically significant at the 1% level of significance.

Consumer Price Index (CPI) has the ability to decrease trade in the long run as reflected by the negative coefficient. It shows that if CPI increases by 1unit trade will fall by about 0.187units in the long run. However, this result is statistically insignificant at 1% level of significance.

Exchange rate has the ability to reduce trade in the long run as seen by its negative coefficient. Specifically, a 1% increase in exchange rate will reduce trade by about 1.655% in the long run. This result is statistically significant at 1% level of significance.

The Error Correction Term (ECT) of -0.565 indicates that there is an adjustment in the system when disequilibrium occurs since the coefficient of the ECT is negative, and this is statistically significant at 1% level of significance. The estimated ECT measures the speed at which there is an adjustment to Trade towards equilibrium in the long run when there is disequilibrium. The empirical estimations of the error correction mechanism (the coefficient of -0.565) means that about 56.5% of disequilibrium is dissipated before the next time period.

With respect to the result of model with interactive variable:

Following the short run scenario, the short run coefficient of trade lag1 is negative indicating an inverse relationship with trade. Specifically, from the result, if trade lag1 increases by 1unit in the short run, trade will decrease by about 0.0527unit. However, trade lag1 is found to be statistically insignificant.

The short run coefficient of investment is negative, indicating an inverse relationship with trade. This implies that as investment increases, trade will tend to decrease. Specifically, as investment increases by 1units in the short run, trade tends to fall by about 0.138unit, and this result is significant at 10% level of significance. Same inverse relationship exists between trade and investment lag 2 and lag 3. The short run results of investment are all found to be statistically insignificant at 1% level of significance.

Consumer price index (CPI) has a positive short run coefficient, indicating a direct relationship with trade. Specifically, 1units increase in CPI in the short run will lead to 5.040units increase in trade. This result is statistically significant at 10% level of significance.

The short run coefficient of exchange rate is positive, indicating a direct relationship with trade. From the result, as exchange rate increases by 1unit in the short run, trade tends to increase by about 4.831units. This result is statistically significant at 5% level of significance.

Interactive variable has a negative short run coefficient, indicating an inverse relationship with trade. Specifically, 1unit increase in in the interactive variable in the short run will lead to 1.005unit decrease in trade. This result is statistically significant at 10% level of significance.

Looking at the long run scenario with the interactive variable, investment has the capacity to increase trade in the long run as reflected by the positive coefficient. If there is a 1unit increase in investment, trade will increase by about 0.437unit in the long run which is statistically significant at the 5unit level of significance.

Consumer price index (CPI) has the ability to decrease trade in the long run as reflected by the negative coefficient. It shows that if CPI increases by 1unit trade will fall by about 2.420unit in the long run. However, this result is statistically insignificant at 1% level of significance.

Exchange rate has the ability to reduce trade in the long run as seen by its negative coefficient. Specifically, a 1unit increase in exchange rate will reduce trade by about 3.651unit in the long run. However, this result is statistically insignificant at 10% level of significance.

The interactive term has the ability to increase trade in the long run as seen by its positive coefficient. Specifically, a 1unit increase in the interactive variable will increase trade by about 0.479unit in the long run. However, this result is statistically insignificant at 10% level of significance.

The Error Correction Term (ECT) of -0.481 indicates that there is an adjustment in the system when disequilibrium occurs since the coefficient of the ECT is negative, and this is statistically significant at 1% level of significance. The estimated ECT measures the speed at which there is an adjustment to Trade towards equilibrium in the long run when there is disequilibrium. The empirical estimations of the error correction mechanism (the coefficient of -0.481) means that about 48.1% of disequilibrium is dissipated before the next time period.

Fitness Test

With respect to the result of model without interactive variable:

The value for R-squared indicates the degree of variations in trade captured by variations in the variables used in the model. From the result above, the value of R-squared is 0.902 indicating that 90.2% variation in trade is attributed to changes in the variables included in the model while only 9.8% variations in trade is caused by variables not included in the model.

With respect to the result of model with interactive variable:

The value for R-squared indicates the degree of variations in trade captured by variations in the variables used in the model. From the result above, the value of R-squared is 0.949 indicating that 94.9% variation in trade is attributed to changes in the variables included in the model while only 5.1% variations in trade is caused by variables not included in the model.

Comparing the two models (model without interactive variable and model with interactive variable), in the short run, the CPI is found to be significant with the presence of the interactive variable meanwhile it is insignificant without the interactive variable. Also, the interactive term is statistically significant in the short run and R-squared is much bigger with the interactive term than without it (0.949 versus 0.902), therefore it can be concluded that the interactive term contributes in a meaningful way to the predictive ability of the regression equation. However, the short run significant of the interactive term means uncertainty about the relative importance of the main effects in the short run.

The interactive term is found to be insignificant in the long run. This means a greater certainty about the relative importance of the main effects in the long run.

Findings

The major findings of this study show that; in the short-run, considering the model without interactive variable, effective exchange rate has an insignificant negative relationship with trade flows in Cameroon. Why Consumers price index has an insignificant negative relationship with trade flows in Cameroon. We also discover that, Investment has an insignificant negative relationship with trade flows in Cameroon. Whereas, in

the case of model with interactive variable, effective exchange rate has significant positive relationship with trade in the short-run and a significant negative relationship in the long-run in Cameroon this is in line with Bahmani & Gelan (2017) results prediction in Sierra Leone, the results further matches with Mohamed & Ndzembanteh (2016) findings in Cameroon while studying the determinant of economic growth. Consumers price index has a significant positive relationship with trade flows in the short-run, investment has an insignificant negative relationship with trade flows in Cameroon, the interactive variable has a significant negative relationship with trade flows in Cameroon.

In the long-run, considering the model without interactive variable, effective exchange rate has a significant negative relationship with trade flows in Cameroon. CPI has an insignificant negative relationship with trade flows in Cameroon. investment has a significant positive relationship with trade flows in Cameroon. whereas, for the model with interactive variable; effective exchange rate has an insignificant negative relationship with trade flows in Cameroon, CPI has an insignificant negative relationship with trade flows in Cameroon, investment has a significant relationship with trade flows in Cameroon, the interactive variable has an insignificant positive relationship with trade flows in Cameroon. This result are similar to those of Mathurinú & Nkot (2017) and Haque (2012) who compare price and exchange rates fluctuations between Canada and less developing nations and their trade flows and saw that less developing countries are more prone to variability in prices in agricultural products and exchange rates than are developed countries.

Exchange rate has a negative relationship with trade flows, investment and consumer price index. While the other pairs of variable have a positive relationship between them (CPI-Trade flows, INV-Trade flows, CPI-INV). We also found out that for the model without Investment as an interactive variable, changes in effective exchange rate, consumer price index, investment are responsible for 90.2% changes in Trade flows which is contrary with Aloysius (1996) findings that showed that these exchange rate and other trade policies have been the major cause of deterioration of Cameroons agricultural competitiveness. While, for the model with investment as an interactive variable, changes in exchange rate, consumer price index, investment are responsible for 94.9% of changes in trade flows. In the model with investment as an interactive variable, we also found out that investment has the ability to decrease trade significantly through effective exchange rate and consumers price index in the short-run than it can insignificantly increase trade in the long-run in Cameroon.

Recommendations

The following are proposed recommendations which can go a long way to ameliorate the problems associated with exchange rate and price volatility in Cameroon.

- 1) Individuals and investors should adopt a guarantee exchange rate approach to avoid exchange rate volatility effects in the long-run such as Hedging by taking forward contract for currency and interest.
- 2) The government should encourage and facilitates the operation of money market operations for currency and interest such as treasury bills, certificate of acceptance or deposit and repurchased agreement. This can help to upset the losses or gains that can arise as a result of exchange rate fluctuations.
- 3) Government should promote domestic investment to boost trade flows through exchange rate by focusing on investment policies that can stimulate investment which reduces exchange rate thus increases trade flows.
- 4) Investment is a tool that guide producers in setting prices especially in the short-run, high investment will lead to surpluses production as such producers need to reduce prices to sell out the excess production especially in the short-run.
- 5) Producers should increase price in the short-run and reduce prices in the long run to optimize sales.

V. CONCLUSION

This study has shown that; exchange rate and price volatility has unique effect on trade flows in Cameroon. This is because it looks at the join effect of both exchange rate and price volatility on trade flows in the short and long run. The study uses investment as an interaction factor where, we have seen the responsiveness of exchange rate to investment in determining trade flows, the long run negative relationship between consumer's price index and trade flows in the long-run. This study has proven that, there is need to continue giving an update of the effect that macro-economic variables such as exchange rate, price and investment have on trade

flows. This is why we recommend that government, individuals and investors should adopt guarantee exchange rate regimes and reduce prices in the short-run. This can go a long way to ascertain the stability of stakeholders incomes and values of international transactions and yield them more profitable incomes. Thus, it will be very important if future studies can then try to model the effect of interest rate on trade flows as interest and investment are seen to be closely link. More recent studies to predict any abnormalities in exchange rate and price behaviors are very important as to help stake holders keep up to date with recent development in this variables. The study predict similar results found by different authors in different countries in Africa and align with other authors in Cameroon and Africa at large.

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