Paradigm Academic Press
Frontiers in Management Science
ISSN 2788-8592
OCT. 2024 VOL.3, NO.5

Explaining the Nexus Among Government Spending, Real Exchange Rate and Private Sector Investment in Cameroon

Giyoh Gideon Nginyu[1,2], Ndangoh Solanche Ncho[1] & Ndambi Caroline Bita[2]

[1] The University of Bamenda, Cameroon

[2] Yaoundé International Business School, Cameroon

Correspondence: Giyoh Gideon Nginyu, The University of Bamenda, Cameroon; Yaoundé International Business School, Cameroon.

doi:10.56397/FMS.2024.10.04

Abstract

The main objective of this study was to investigate the nexus between government spending, real exchange rate, and private investments in Cameroon. The autoregressive distributed lag (ARDL) model was used to address issues of cointegration a time series data drawn from the World Bank WDIs spanning the period 1985-2020. The results reveal that the effect of government spending on consumption has a positive and significant effect on real exchange rate in the short run and a negative and significant effect on real exchange rate in the long run. Military expenditures as a proxy for government spending, have a positive and significant effect on real exchange rate in the long-run and a negative and significant effect in the short-run. More so, real exchange has a negative and significant effect on private sector investments in the long-run. Government consumption spending reinforces the negative effect of the exchange rate on private sector investments in the long-run and mitigates it in the short-run. The implication of these findings is that government consumption spending is key in managing the overall macroeconomic competitiveness of the Cameroon economy, which can incentivise or disincentives private sector investments.

Keywords: government spending, real exchange rate and private investment

1. Introduction

Investment is an important component of aggregate demand and a vital resource to foster economic growth as it helps expand the production capacity of the economy. Investment plans are important to meet the future demands as well as ensuring financial goals. By and large, a strong investment potential could guarantee a rapid and sustainable economic development. According to the World Bank (2003), a favourable investment climate may create opportunities and incentives for investors to conduct large-scale operations, create employment and increase output, thus sustaining private investment and economic growth. As noted by Agrawal & Khan (2011), in the context of fierce competition in the attraction of investment, most countries would focus their best efforts at creating an enabling environment or institutions that favour investment.

Private investment is a crucial pre-requisite for economic growth (Frimpong & Marbuah, 2010). To move an economy on a sustainable growth path, a significant share of additional savings and investment should emanate from private sources (Nyoni & Bonga, 2017). This is the case because it is believed that there is less corruption in the private sector investment compared to the public sector investment (Seruvatu & Jayaraman, 2001). However, some components of public investment maybe complementary to private investment and so would be beneficial for growth, while others maybe substituting and have a less positive, or even negative, effect on growth (Majeed & Khan, 2008).

Many developing countries experienced a downturn in economic growth in the early 1980s. The average growth rate of real GDP among developing countries fell from 0.4% per annum during the 1973-1980 period to -1.2% per

annum during the 1980-1989 period (Oshikoya, 1994). Africa continued to fare poorly in the 1990s, during which GDP per capita declined by around 1.8% per annum. The significant decline in gross investment rates may, perhaps, reflect many factors that affected most developing countries during the 1980s. On average, the ratio of total domestic investment to GDP fell from approximately 20.8% per annum in 1973-1980 to 1.1% per annum in 1980-1989. Though this rate has not been uniform across countries, investment has fallen by around 10% of GDP in some countries (Oshikoya, 1996).

There has been a continuous increase in the size of the private sector in Cameroon since the 1980s with the institution of privatization, the 1990 investment code and subsequently the 2002 investment charter which constitutes a significant modification to the others (Lambi, 2009). Their effectiveness to the private investment in Cameroon can be appreciated by looking closely at how far they have gone to eliminate the problems of private investment in the country. Private investment in the informal sector in Cameroon employs above 55% of the labour force (World Bank, 2007). The contribution of the informal sector in providing employment opportunities to the labour force is very significant (World Bank, 2007). This greatly helps in solving one of the major macroeconomic problems; unemployment, which hinders economic growth and development.

Exchange rate plays a crucial role in the stabilisation and adjustment programs (Rodríguez, 1989; Servers & Solimano, 1992). Exchange rate reform was given a special attention in the adjustment programs which were adopted after the economic crisis of the late 1980s (Elbadawi & Soto, 1997). Like is the case with Cameroon, most of the Sub Saharan African (SSA) countries produce and export primary products which need to be competitive in the world market (Aron, Elbadawi & Khan, 1997). This makes exchange rate an important policy instrument. Real exchange rate (RER) is an expression of the total macroeconomic environment of a country and is equally a major reflection of international competitiveness. It is an important relative price signalling intersectoral growth in the long-run. The level of the real exchange rate (relative to an equilibrium real exchange rate level) and its stability greatly influence the volume of exports and private investment (Servers & Solimano, 1992).

According to Oshikoya (1994), following years of declining economic growth particularly in Africa, consensus has emerged on the importance of firstly increasing total investment as well as promoting private-sector development and increasing its share of total investment for long-term growth posits Oshikoya. Additionally, the 2008/09 global financial crisis brought to the fore the perils of dependence on Foreign Direct Investment (FDI) which halved in value within two years from US$2.08trn in 2007 to US$1trn in 2009 (Economic Intelligence Unit, 2010). This reflected a sharp decline in the availability of credit, and exacerbated the deep recession in the developed world and emerging markets in the so-called flight to quality and a large-scale retreat from risk. Given the declining FDI, policymakers have been forced to promote efficient domestic private investment as a form of diversification from the dependence on FDI. Despite the endorsement of domestic private sector investment as a strategic asset, it is beset by deficiencies in monetary policy that retard the attainment of optimal investment portfolios resulting in low expectations of business in future economic performance (Economic Intelligence Unit, 2010).

Despite the role played by the real exchange rate in shaping country-wide policies, little recent quantitative work has been carried out to thoroughly examine the influence of some key macroeconomic variables on real exchange rate in Cameroon. Amin and Awung (1997) evaluated the determinants of real exchange rate, simulated the path of the equilibrium real exchange rate and evaluated the degree of its misalignment. Using the cointegration methodology, they found that the explanatory variables have only a short-run impact on the real exchange rate. They failed to explicitly identify the path of the equilibrium real exchange rate. Elbadawi & Soto (1997) and Baye & Khan (2002) used the fundamental approach in the determination of equilibrium RER much of the past study concentrated on the determinants of real exchange rate. None has investigated the extent of how real exchange rate impacts private sector investment nor how government spending is likely to influence the nexus between real exchange rate and private sector investment in Cameroon.

The effect of government expenditure on private investment performance has not received much attention as opposed to effects of government spending on economic growth. Consequently, it is not apparent what effects the government expenditure has had on private capital accumulation (Milbourne, Otto, & Voss, 2013). Despite the government increasing external borrowing to expand development expenditure, which would significantly elevate private capital formulation, the efforts have not borne fruits. Therefore, the study sought to determine the effects government expenditure on private investors in Cameroon.

Moreover, despite all these efforts put in place by the Cameroon government and its development partners, the level of private investment in Cameroon is still very low. The government is still highly involved in the economy to provide essential goods and services, and the real exchange is believed to be signalling lack of competitiveness of the economy compared to comparative economies. Even with the revision of these investment codes over time, private investment is gagging behind expectation. It is therefore value added to provide updated information on the linkages between government spending, real exchange rate and private sector investments in Cameroon. The

objective of this study was therefore aimed at investigating the nexus amongst government spending, real exchange rate and private sector investments in Cameroon.

2. Literature

2.1 Theoretical Review

The relationship between the real exchange rate and government spending has been a subject of interest in economic research. For example, the purchasing power parity suggests that in the long run, the exchange rate adjusts to equalises the price levels of two countries. Government spending influences domestic prices, thereby affecting the real exchange rate (Dornbusch, 1983). According to Keynesian theory, increased government spending leads to higher aggregate demand, which may increase the nominal exchange rate and affect the real exchange rate everything being equal. Increased government spending leads to higher interest rates, attracting foreign capital and therefore appreciating the currency, thus the real exchange rate (Barro, 1989).

Increased government spending increases interest rates, which turns to crowd out private investment (Barro, 1989). A depreciated real exchange rate reduces the cost of domestic goods to foreign buyers, and therefore, increasing export-driven investment and vice versa (Edwards, 1989). Dornbusch's overshooting model suggests that changes in the nominal exchange rate affect the real exchange rate, which in turn affect private investment decisions (Dornbusch, 1976). For example, the depreciation of the real exchange rate enhances competitiveness and encourages investment in export-oriented activities.

The classic Keynesians argue that increased government spending increases interest rates, which crowd out private investment. In the same light, when the government borrows to finance its spending, it reduces the funds available for private investment (Barro, 1989). More so, the fiscal multiplier concept suggests that an increase in government spending leads to a more than proportional increase in national income, and therefore stimulating private investment as firms anticipate increased demand (Blanchard & Perotti, 2002). Government spending on public goods enhances productivity and therefore attracts private investment. These public goods reduce the costs for businesses and provide a favourable investment climate (Ghosh & Phillips, 1998). In the same light, the Ricardian equivalence theorem argues that consumers are forward-looking and therefore adjust their savings in anticipation of future taxes base government borrowing. This implies that government spending may not affect private investment significantly if consumers offset government deficits with increased savings (Barro, 1974).

2.2 Empirical Literature

Government spending is an important tool for stimulating economic growth. It increases aggregate demand and creates a conducive environment for private investment. Recent studies indicate that public investment, especially in infrastructure, creates a crowding effect on private investment (Calderón & Servén, 2010). This crowding-in effect is significant in developing economies, where infrastructure deficits are more pronounced. According to the Keynesians, increased government expenditure counterbalances the decline in private-sector spending during economic recessions (Keynes, 1936). The real exchange rate reflects a country's competitiveness in international markets. A depreciated real exchange rate makes exports cheaper and imports more expensive, enhancing domestic production (Obstfeld & Rogoff, 1996). Recent research suggests that a stable and competitive real exchange rate increases private investment by reducing uncertainty and fostering a favourable business environment (Frenkel & Ros, 2021). However, excessive volatility in the real exchange rate can deter investment, as firms may be reluctant to commit resources in an uncertain environment (Aghion et al., 2018).

Private investment is influenced by various macroeconomic factors, including government policy, interest rates, and exchange rates. Increased government spending leads to higher private-sector investment through the crowding-in effect, where public investment creates opportunities for private investment (Aschauer, 1989; Baldwin & Krugman, 2004; Alfaro et al., 2019).

Empirical studies demonstrate that productive government spending can lead to increased private sector investment, especially in sectors where public and private investments complement each other (Khan & Kumar, 2020; Ahmed, 2012; Calderón & Servén, 2010; Zhang et al., 2021; Aghion et al., 2019; Barro, 2021). The demand for loanable funds may rise in response to the government's heavy borrowing to support spending, which increases interest rates and borrowing costs for private businesses. In industrialised economies, this crowding-out effect is demonstrated in a study by Buiter (2020). Gupta et al. (2021) also found that inefficient public investment leads to a negative effect on private investment. In addition, Hassett and Mathur (2019) found that higher tax rates coincided with increased government expenditure reducing the after-tax return on investment for private firms and discouraging new investments. High government spending creates uncertainty about the future economic environment, leading firms to reduce investment (Baker et al., 2020).

In Cameroon, Afonso & Sousa (2019) found that productive government spending, especially in infrastructure, positively affects private sector investment. Baldacci & Kumar (2010) found that capital expenditure promotes private investment. Khan & Senhadji (2020) also found that effective public investment enhances private sector

confidence and investment and Meyer & Weller (2021) on their part found that targeted fiscal policies stimulate investment in Cameroon.

Earlier studies such as Edwards (1989), Froot & Rogoff (1991), and De Gregorio et al. (1994) conclude that increased government spending appreciates countries' real exchange rates. Conversely, in recent times, conclusions reached in earlier studies have been questioned as more data for analysis have become increasingly available. The available rich data have led to a coordinated list of empirical findings that diverge considerably from earlier studies. Among these empirical findings are Bouakez et al. (2011), Kim & Roubini (2008), and Ravn et al. (2012) who all conclude that positive shocks to government spending attract a significant and persistent depreciation, rather than appreciation, of the real exchange rate.

Depreciated real exchange rate enhances export performance, generating additional tax revenues that can be reinvested into public spending, thereby creating a positive feedback loop (Rodrik, 2021; Bénassy-Quéré et al., 2007). Aghion et al. (2020) argued that countries with appreciated currencies adjust their fiscal policies to counteract reduced export competitiveness. According to the findings of Bénassy-Quéré et al. (2021), countries with depreciated currencies often increase public investment in infrastructure to bolster export sectors. Fawley and Neely (2021) and Ghosh et al. (2022) argued that inflationary pressures from currency appreciation make the governments adjust fiscal policies which necessitates increased government spending to stabilise the economy. Nevertheless, other studies have also shown that a decrease in the real exchange rate can lead to reductions in government spending. For example, Kose et al. (2021) found that the depreciation of a currency leads to high debt servicing costs, leading to a reduction in government spending. More so, Ghosh et al. (2022) and Bénassy-Quéré et al. (2021) found that rising inflation linked to a depreciated currency makes governments reduce discretionary spending. In addition, Cottarelli and Giannini (2020) argued that though lower real exchange rates boost exports, it also strains public finances, leading to a reduction in government spending.

Ngimanang & Baye (2016) found that public spending significantly appreciates the real exchange likewise the trade openness variable in the long run in Cameroon from 1977 to 2010. Akanbi (2016) found that though public spending increases growth in Cameroon, it also affects the real exchange rate through inflationary pressures. More so, Nkuindja, M. (2018) also found that increased government spending depreciates the real exchange rate in Cameroon, affecting the trade balance. Bafakih & Ngatane (2020) argued that investments in infrastructure enhances productivity and stabilises the exchange rate in Cameroon. Ngwa & Tabi (2021) on their part found that sustainable public spending helps maintain a competitive exchange rate in Cameroon.

A stable real exchange rate encourages private investment by enhancing the predictability of future returns. When firms perceive the real exchange rate as stable, they are more likely to invest in long-term projects (Ghosh et al., 2020; Mackenzie, 1999; Ghosh et al., 2020; Quéré et al., 2021; Aizenman & Jinjarak, (2022) argued that the depreciation of the real exchange rate leads to increased investment in export-oriented sectors, as firms invest to take advantage of improved competitiveness. In addition, Alfaro et al. (2019) found that countries with depreciated currencies usually experience increased FDI, leading to subsequent growth in private-sector investment. On the other hand, a depreciated real exchange rate leads to inflation and increased costs for imported goods, which reduces private investment Buiter (2020); Cottarelli and Giannini (2020) also found that exchange rate volatility negatively affects investment decisions, as firms shy away their resources in an uncertain environment. Ghosh et al. (2021) and Kose et al. (2021) showed that a depreciated currency increases production costs, leading to reduced profitability and lower levels of private investment.

The nexus amongst government spending, real exchange rate and private investment is not a common place for researchers in Cameroon and other developing countries. Even if there are dealing with it combined as is the case with this study has not been done. The method of analysing the data in this study is also different and may provide results from another angle capturing effects that were not captured in related works. Also, a lot of works have been carried out on the effect of public sector activities on the private sector which often shows that the public sector crowds out the private sector but little has been done to show how this problem can be mitigated and so this study has brought in the aspect of real exchange rates to see if government spending influence through exchange rates can help the private sector.

3. Research Methodology

3.1 Model Specification

All the data for this study was gotten from the World Bank's World Development Indicators (WDI) for Cameroon for the period 1985-2019. This data set was preferred because it has a national coverage which suits the nature of our research study. To examine the effects short and long-run effects of government spending on the real exchange rate in Cameroon, we assume an implicit functional form as follows.

$$REXch=f(Trad, GExp, GExpm, FDI, Remit, Save)\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(1.1)$$

Econometrically, the corresponding long-run model can be presented as,

$$InREXch_t = \theta_0 + \theta_1 InTrad_t + \theta_2 InGExp_t + \theta_3 InGExpm_t + \theta_4 FDI_t + \theta_5 InRemit_t + \theta_6 InSave_t + \varepsilon_t \quad (1.2)$$

Where $REXch_t$ = Real exchange rate, $GExp$ =government spending on consumption, $GExpm$ = government spending on military, Trad=trade openness, FDI = foreign direct investment, Remit=remittance, Save= Savings Tt = time dimension, $\theta_i, \forall i\ 1, \dots 4, and\ \theta$ are $paramters\ to\ be\ estimated, u_t$= stochastic error term assumed to be normally distributed.

The first step before estimating Equation (1.2) is to test the stationarity of all the variables. Assuming that none of the variables is I (2), the second step is testing for cointegration using the Autoregressive Distributed Lag (ARDL) bounds test. Recently ARDL approach has been used extensively (Frimpong & Marbuah, 2010; Hamuda et al., 2013; Kolade, 2014, among others). ARDL technique, pioneered has several advantages over other techniques of testing cointegration. Particularly, it does not require testing stationarity in advance, it can be used whether the variables are I(0), I(1), or mutually cointegrated, and finally it is suitable when the sample size is small (Pesaran et al., 2001). The ARDL model can be represented by the unrestricted error correction model (UECM) described in Equation (1.3).

$$\begin{aligned}\Delta \mathrm{In} REXch_t = \alpha_0 + \alpha_1 InREXch_{t-1} + \alpha_2 InTrad_{t-1} + \alpha_3 InGExp_{t-1} + \alpha_4 InGExpm_{t-1} + \alpha_5 FDI_{t-1} + \\ \alpha_6 InRemit_{t-1} + \alpha_7 InSave_{t-1} + \sum_{i=1}^{p} \beta_i\, \Delta InREXch_{t-i} + \sum_{i=0}^{q_1} \gamma_i\, \Delta InGExp_{t-i} + \sum_{i=0}^{q_2} \gamma_i\, \Delta InGExpm_{t-i} + \\ \sum_{i=0}^{q_3} \delta_i\, \Delta InTrad_{t-i} + \sum_{i=0}^{q_4} \sigma_i\, \Delta FDI_{t-i} + \sum_{i=0}^{q_5} \vartheta_i\, \Delta InRemit_{t-i} + \sum_{i=0}^{q_6} \vartheta_i\, \Delta InSave_{t-i} + \varepsilon_t \quad (1.3)\end{aligned}$$

Where Δ denotes the first difference operator and α_0 represents the intercept. In the long run, where everything is at equilibrium, that is, $X_t = X_{t-1} = X_{t-2} = X_{t+1} = X_{t+2}$. Equation (1.3) ignores the lag 1 the process becomes and dividing both sides by $-\alpha_1$.

$$REXch_t = \frac{1}{-\alpha_1}[\alpha_0 + +\alpha_2 Trad_t + \alpha_3 GExp_t + \alpha_4 GExpm_t + \alpha_5 FDI_t + \alpha_6 Remit_t + \alpha_7 Save_t + \varepsilon_t \dots (1.4)$$

Thus, the long-run real exchange rate equation becomes:

$$\begin{aligned}InREXch_t = \theta_0 + \theta_1 InTrad_t + \theta_2 InGExp_t + \theta_3 InGExpm_t + \theta_4 FDI_t + \theta_5 InRemit_t + \alpha_6 InRemit_t + \\ \theta_7 InSave_t + u_t \quad (1.5)\end{aligned}$$

Where $\theta_0 = \frac{-\alpha_0}{\alpha_1}$ and $\theta_j = \frac{-\theta_{j+1}}{\alpha_1}$, where j=1, 2, …, 7.

To determine the long-run relationship between the variables, we used the Bounds F statistic (Bounds test for co-integration). In practice, testing the relationship between the forcing variable(s) in the ARDL model leads to hypothesis testing of the long-run relationship among the underlying variables. The null hypothesis of the non-existence of a long-run relationship is:

Ho: $\theta_1 = \theta_2 = \theta_3 = \theta_4 = 0$ against Ha: $\theta_1 \neq \theta_2 \neq \theta_3 \neq \theta_4 \neq 0$.

The next step is to compare the calculated F-statistic with the lower critical bound (LCB) and the upper critical bound (UCB) values reported in Pesaran et al. (2001). If the calculated F-value is greater than the UCB then the null of no cointegration is rejected, however, if the calculated F- statistic is smaller than the LCB then the null of no cointegration is not rejected and if the calculated F- statistic lies between the LCB and UCB then statistical evidence with respect to the existence of a valid long-run relationship between the variables is inconclusive (no conclusion can be drawn).

If the underlying variables are cointegrated, the following error correction model (ECM) representation of the ARDL (p, q_1, q_2, q_3, q_4) is used to capture the dynamics of the model.

$$\begin{aligned}\Delta \mathrm{In} REXch_t = \pi_0 + \sum_{i=1}^{p} \pi_i\, \Delta InREXch_{t-i} + \sum_{i=0}^{q_1} \pi_i\, \Delta InGExp_{t-i} + \sum_{i=0}^{q_2} \pi_i\, \Delta InGExpm_{t-i} + \\ \sum_{i=0}^{q_3} \pi_i\, \Delta InTrad_{t-i} + \sum_{i=0}^{q_4} \mu_i\, \Delta FDI_{t-i} + \sum_{i=0}^{q_5} \pi_i\, \Delta InRemit_{t-i} + \sum_{i=0}^{q_6} \pi_i\, \Delta InSave_{t-i} + \pi_{11} ECM_{t-1} + \varepsilon_t \dots (1.6)\end{aligned}$$

Where π_0 = the intercept, π_{11} = the speed of adjustment towards equilibrium. ECM_{t-1}= a one period lagged error correction term derived form the cointegration Equation (3). The above steps are assumed for the other objectives. So, in what follows for each objective (model), we present the implicit form, the long-run equation and the error correction representation of the cointegrating equation. To access the short- and long-run effects of real exchange rate on private sector investment in Cameroon, we assume the following implicit functional relationship.

PSI=f(RExch, ConsExp, GExpm, Remit)……..(2.1)

Expressing into econometric form, we have;

$$InPSI_t = \theta_0 + \theta_1 REXch_t + \theta_2 InConsExp_t + \theta_3 InGExpm_t + \theta_4 InRmit_t + + u_t \dots\dots\dots\dots (2.2)$$

Correspondingly, we have the sixth equation as follows.

$$\begin{aligned}\Delta \mathrm{In} PSI_t = \pi_0 + \sum_{i=1}^{p} \pi_i\, \Delta InPSI_{t-1} + \sum_{i=0}^{q_1} \pi_i\, \Delta REXch_{t-i} + \sum_{k=0}^{q_2} \pi_k\, \Delta InConExp_{t-k} + \sum_{j=0}^{q_3} \pi_j\, \Delta InGExpm_{t-j} + \\ \sum_{h=0}^{q_4} \pi_h\, \Delta InRemit_{t-1} + \pi_{11} ECM_{t-1} + \varepsilon_t \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (2.6)\end{aligned}$$

A priori expectation: $\pi_{11} < 0$, $\alpha_i \, \forall i \, 1, \ldots 5, and \, \gamma \, are \, paramters \, to \, be \, estimated, \varepsilon_t$=stochastic term where, PSI=private sector investments, RExch=Real exchange rate, Save = Domestic Savings, RGDP= Real Gross Domestic Product, $ECMt =$error correction term, A priori expectation, $\pi_i > 0$. To explore the influence of government spending on the short and long-run relationships between real exchange rate and private sector investment in Cameroon, we assumed the following functional relationships.

$$PSI = f(RExch, GExp, RExch * GExp, GExpm, FDI, Remit) \quad \ldots\ldots\ldots\ldots\ldots\ldots (3.1)$$

Expressing it into econometric form, we have:

$$PSI_t = \theta_0 + \theta_1 InREXch_t + \theta_2 InGExp_t + \theta_3 InGExP * GREXch + \theta_4 InGExpm_t + \theta_5 FDI_t + \theta_6 InRemit_t + u_t \quad (3.2)$$

Correspondingly, we have the sixth equation:

$$\Delta PSI_t = \pi_0 + \sum_{i=1}^{p} \pi_i \, \Delta InPSI_{t-1} + \sum_{i=0}^{q_1} \pi_i \, \Delta InREXch_{t-i} + \sum_{j=0}^{q_2} \pi_j \, \Delta InGExp_{t-j} + \sum_{r=0}^{q_2} \pi_r \, \Delta InREXch * GExp_{t-r} + \sum_{k=0}^{q_3} \pi_k \, \Delta InGExpm_{t-k} + \sum_{g=0}^{q_4} \pi_g \, \Delta \mathrm{FDI}_{t-g} + \sum_{h=0}^{q_4} \pi_h \, \Delta \mathrm{InRemit}_{t-1} + \pi_{11} ECM_{t-1} + \varepsilon_t \quad (3.5)$$

3.2 Estimation Technique

To investigate the dynamic relationship between government spending, real exchange rate and private sector investments, we employed the Autoregressive Distributed Lag (ARDL) Approach. One of the major reasons for the adoption of the model above was because it permits us to investigate the long-run relationship between variables. When one co-integrating vector exists, Johansen & Juselius (1990) co-integration procedure cannot be applied. Hence, it became imperative to explore Pesaran & Shin (1995) and Pesaran et al. (1996) proposed Autoregressive Distributed Lag (ARDL) approach to co-integration or bound procedure for a long-run relationship, irrespective of whether the underlying variables are I(0), I(1) or a combination of both. In such a situation, the application of the ARDL approach to co-integration should give realistic and efficient estimates.

Unlike the Johansen and Juselius (1990) co-integration procedure, the Autoregressive Distributed Lag (ARDL) approach to co-integration helps in identifying the co-integrating vector(s). That is, each of the underlying variables stands as a single long-run relationship equation. If one co-integrating vector (that is the underlying equation) is identified, the ARDL model of the co-integrating vector is re-parameterised into ECM. The re-parameterised result gives short-run dynamics (i.e., traditional ARDL) and long-run relationships of the variables of a single model. The re-parameterisation is possible because the ARDL was a dynamic single model equation and of the same form with the ECM. Distributed lag Model simply means the inclusion of unrestricted lag of the repressors in a regression function. This co-integration testing procedure specifically helps us to know whether the underlying variables in the model are co-integrated or not, given the endogenous variable. However, when there are multiple co-integrating vectors ARDL Approach to co-integration cannot be applied. Hence, Johansen and Juselius (1990) approach becomes the alternative. The ARDL representation of the child health outcome, land pollution, air pollution, water pollution and school enrolment rate relationship can be constructed as.

Granger (1988) demonstrates that causal relations among variables can be examined within the framework of ECM, with co-integrated variables. While the short-run dynamics are captured by the individual coefficients of the lagged terms, the error correction term (ECT) contains the information of long-run causality. The significance of the lagged explanatory variable depicts short-run causality while a negative and statistically significant ECT is assumed to signify long-run causality. The short-run causality is thus determined from the following ARDL model.

4. Presentation of Results

4.1 Trend Analysis

The trend analysis of key variables helps us to understand the nature of the various variables over the period under study. It helps us to know whether the trend is stochastic or deterministic.

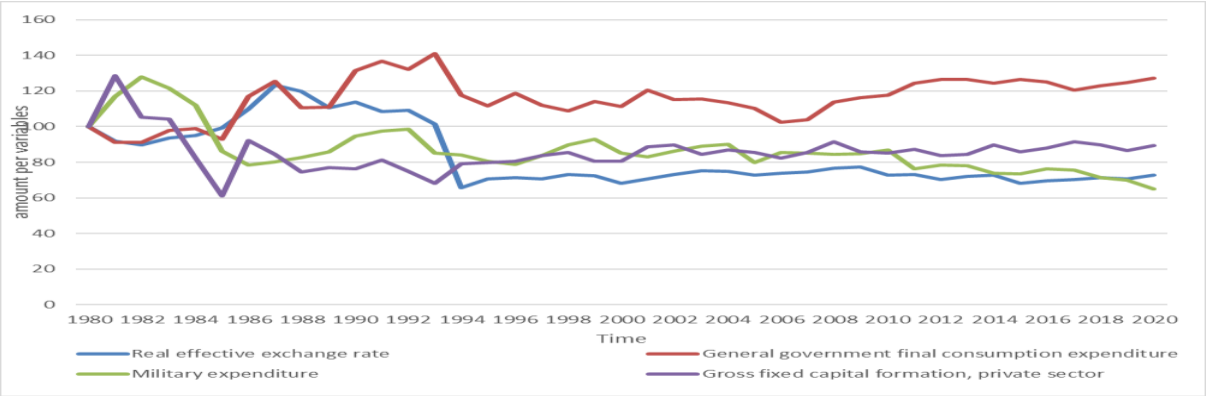

Figure 1. Trend analysis of the key variables

Source: Constructed by author from data (2024).

The purple line which represents the private sector investments above shows that the trend of private sector investments in Cameroon over forty years is positive and deterministic as it is almost linear though we observe a sharp rise and subsequent decrease in the early 80's. The trend has a positive drift as the value of fixed capital formation of the private sector in 1980 which is the start year is positive. Relating the trend to economic happenings in Cameroon we realise that there was a positive economic performance in Cameroon at the beginning of the 80s arising from the oil boom of the late 70's and subsequently the 80's. The downturn of private investments in Cameroon was a result of the economic crises which hit the nation in the mid 80's immediately after the oil boom. The private sector investment started picking up from there rising slowly in the late 80s but was again hit by the structural adjustment program in the 90's and the devaluation of the FCFA which led to an overall decline in aggregate demand in Cameroon. Since the mid 90's private sector investments in Cameroon have been very slow and inconsistent in growth.

The red line representing the trend of government expenditure is positive, deterministic and almost linear over the period under study. The trend shows a steady increase in government spending in the early and mid-80s which reflects a period of significant intervention of the government in every sector of the economy. The government's increase in spending was sponsored by the economic boom otherwise referred to as oil boom. The drop in the late eighties was simply due to the fluctuations in the economic cycle. It continued again up to around 1992 which was the peak of government expenditure in Cameroon and there was a significant fall in its spending. This decrease in government spending reflects the time of economic liberalisation through the Structural Adjustment Program and stabilisation program proposed by the World Bank and International Monetary Fund. The trend continued in a fluctuating manner to around 2005 when we saw some increase implying more intervention in the economy which can be attributed to the debt cancellations through the Highly Indebted Poor Countries Initiative Fund for which the nation benefitted and other funds from bilateral and multilateral debt cancellations.

The green trend shows the trend of military spending in Cameroon. From the trend, we see a sharp rise in the early 80s' probably because it was a time of political transition from the former president to the current one and a lot of military activities and security tightening. It was within this time that the planned coup failed. We observe that it starts falling again from 1984, but immediately starts rising again in the early 1990s and peaks in 1992. This was the time multipartyism was introduced in Cameroon and there were a lot of military activities to subdue the activities of the opposition. After that, there was a fall again in the late 90s and early 2000s' a time of elections. We find another increase between 2008 and 2010 which was the period of Boko haram insurgence. From then we have had an almost linear trend downward with a bit of upward movement between 2016 and 2018 probably due to the Anglophone crises.

The last but not the least is the trend of real exchange rate. From the starting year we find a sharp decrease before subsequent increase in the real exchange in the 80's. The early 80s' was a time of political instability in Cameroon following the political transition and coup that happened which affected the economic activities in the country and hence low real exchange rate. In the mid-80s' we see a rise in the real exchange rate which can be attributed to the time of oil boom and overall good economic performance of the nation. We again experience a fall around 1994, and our currency was at its lowest. This a period of global economic crises, devaluation of our currency and many economic reforms which rather harmed the economy. Since the mid-90s to date the trend has been almost linear, implying no major explosion or shocks in the economy.

It is observed that the leading diagonals of all the variables give the values 1.0000 showing perfect collinearity between each explanatory variable and itself. It can be observed that there is a low level of correlation between

the independent variables of the different models and therefore we have very low chances of multicollinearity. Since the application of co-integration technique requires that all the variables should be integrated of the same order, we start the analysis by examining the unit root properties of the variables. The table below presents the Dickey-Fuller unit root test for the variables employed in the in our work. Recall that the Dickey-Fuller unit roots test was conducted to determine the level of integration of the variables used for the study. Results of the stationarity test are summarised in Table 1.

Table 1. Dickey-Fuller unit root test

Variable	P-value	Decision
Rexch	0.0000	I1
ConExp	0.0000	I1
MilitExp	0.0000	I1
Saving	0.0000	I1
Trade	0.0000	I1
FDI	0.0000	I1
Remit	0.0000	I1
PSI	0.0076	I1

Source: Constructed by author from data (2022).

From the table all variables were stationary at first difference. We can therefore employ an ARDL model.

4.2 Regression Results

Before turning to the regression effects of government spending on real exchange rate, it is important to determine whether there exists a long-run equilibrium relationship amongst the variables employed. The table below present the ARDL Bound Test for Cointegration to investigate if there is a long run relationship between variables.

Table 2. ARDL Bound Test for Cointegration

Null Hypothesis: No long run relationship exists		
Test Statistics Value k		
F- Statistics 4.213 6		
Critical value bound significance	Lower Bound, I(0) P-value= 0.0000	Upper Bound, I(1) P-value= 0.0000
10%	2.12	3.23
5%	2.45	3.61
1%	3.15	4.43

Note: K = Number of explanatory variables.

Source: Constructed by author from data (2024).

The F-test in Table 2 is used to test if cointegration exists between the variables. The F-test statistics is compared to the critical values bound. If the computed F-Statistics is above the upper bound, the null hypothesis of no cointegration rejected and if it is below the lower bound the null hypothesis is not rejected. Moreover, if the F-Statistics is between the upper and the lower bound, the results are inconclusive about cointegration (Pesaran et al., 2001). The computed F-Statistics for the bound is 4.213 which are greater than the upper bound critical values at 10%, 5%, and 1% significant levels using unrestricted intercept and no trend. We reject the null hypothesis of no long run relationship. Therefore, the bound test shows the existence of cointegration or long run relationship among the variables. After existence of cointegration, both long run and short run model of ARDL are estimated as seen in table below.

Table 3 below presents the ARDL results. Both the short run and the long run results are presented. From the results we, can note that R-Square adjusted has a value of 0.9595 meaning that 95.95% of the variation in the real

exchange rate the dependent variable is explained by variation in the exogenous variables included in this model. The coefficient of the error correction term is negative and significant at 10%. This confirms the establishment of a long run relationship between the variables.

Table 3. The short and long-run effects of government spending on real exchange rate

	D.LogRER	Coeficient	Standard Error	t	P>t
	ADJ LogRER L1.	-.3511701	.1039882	-3.38	0.012
LONG-RUN	LogGExp	-0.906265	-0.1856991	-4.88	0.002
	logMilitaryExp	1.896894	0.2619696	7.24	0.000
	LogTrade	-0.4223741	0.1665597	2.54	-0.039
	FDI	-3.99e-10	1.25e-10	-3.20	0.015
	LogRemit	-0.4202875	0.1085238	-3.87	0.006
	LogSav	-0.0671247	0.1398355	-0.48	0.646
SHORT-RUN	LogGExp				
	D1	0.3917063	.077653	5.04	0.001
	LD	0.283834	0.1072205	2.65	0.033
	L2D	0.2174722	0.0655583	3.32	0.013
	L3D	0.0814093	0.0685754	1.19	0.274
	LogMilitaryExp				
	D1	-0.1670941	0.1947536	-0.86	0.419
	LD	-0.3367621	0.1440441	-2.34	0.052
	L2D	-0.2572534	0.14065	-1.83	0.110
	L3D	-0.2964074	0.1065467	-2.78	0.027
	LogTrade				
	D1	0.0002226	0.0568425	0.00	0.997
	LD	0.1245731	0.0667299	1.87	0.104
	FDI				
	D1	1.64e-10	5.24e-11	3.12	0.017
	LD	1.74e-10	4.83e-11	3.61	0.009
	L2D	8.07e-11	4.03e-11	2.00	0.086
	L3D	4.70e-11	2.50e-11	1.88	0.102
	LogRemit				
	D1	0.1437181	0.0699921	2.05	0.079
	LD	0.1231992	0.0611087	2.02	0.084
	L2D	0.0670212	0.0392311	1.71	0.131
	L3D	0.0319155	0.0201189	1.59	0.157
	LogSav				
	D1	-0.1398348	0.0345746	-4.04	0.005
	LD	-0.0905027	0.0488702	-1.85	0.106
	L2D	0.0322197	0.0259453	1.24	0.254
	L3D	0.1421027	0.0389276	3.65	0.008

	-cons	-0.6808447	1.356463	-0.50	0.631
Sample	= 1984-2020		R-squared	= 0.9921	
Number of obs	= 37		Adj R-squared	= 0.9595	

Source: Constructed by author from data (2022).

From the long run results above, government expenditure with the proxy of government consumption has a negative and significant effect on real exchange rate with coefficient -0.9062653. This means that a percentage increase in government expenditures will lead to a decrease in real exchange rate by 0.9062653 percent. In the short run, the government consumption expenditure has positive effect on real exchange rate and are statistically significant at all levels except at lag three which is statistically insignificant.

Military expenditure has a positive and significant effect on real exchange rate with coefficient 1.896894 in the long run. This means that a percentage increase in military expenditures will lead to an increase real exchange rate by 1.896894 percent. In the short run, governments military expenditure negatively affects private sector investments at all levels but statistically significant at lags one and three and insignificant at the present value and lag two.

Trade openness has a negative and significant effect on real exchange rate with coefficient .422 in the long run. This means that a percentage increase in trade openness will lead to a decrease in real exchange rate by -.422 percent. In the short run, trade openness has a positive and insignificant effect on real exchange at the present value and lag one. Foreign direct investment also has a negative and significant effect on real exchange rate with coefficient -3.99e-10 in the long run. This implies that if foreign direct investment increases by 1% real exchange rate will decrease by 3.99e-10%. In the short run, Foreign direct investments have positive effects on real exchange rates at all levels and these effects are significant at the present value and at lags one but insignificant at lags two and three.

The effect of remittance is found to have a negative and significant effect on real exchange rate with the coefficient being -0.4202 in the long run. Remittance has a positive effect on real exchange rate all levels in the short-run and statistically significant at the present value and at lag one but insignificant at lag two and three. Savings has negative and insignificant effect on real exchange rate in the long-run with a coefficient of -0.0671. This implies that a percentage increase in savings will lead to a decrease in real exchange rate by 0.0671%. In the short-run, savings has negative effects on real exchange rate at the current value and lag one and positive effects at lags two and the three. The effect is statistically significant at the current value and at lags three but insignificant at las one and two.

Next, we examine the long-run and short-run stability of the coefficients. We performed the stability tests for the ECT model, which were described in the previous chapter. The tests were applied to the residuals of the ECT model. To test the stability of parameters, the cumulative sum of squares of recursive residuals (CUSUMSQ) was used. As shown in Figure 2 in the appendix, except for a very few values, the remaining values lie within critical bounds of 5 percent. This asserts the stability of short run and long run parameters. In the same light we also presented the short and long-run effects of real exchange rate on private sector investments in Cameroon. The table below present the ARDL Bound Test for Cointegration to investigate if there is a long run relationship between variables based on the second objective.

Table 4. ARDL Bound Test for Cointegration

Null Hypothesis: No long run relationship exists		
Test Statistics Value k		
F- Statistics 10.485 3		
Critical value bound significance	Lower Bound, I(0) P-value= 0.0000	Upper Bound, I(1) P-value= 0.0000
10%	**2.26**	**3.35**
5%	**2.62**	**3.79**
1%	**3.41**	**4.68**

Note: K = Number of explanatory variables.

Source: Constructed by author from data (2022).

Therefore, the computed F-Statistics for the bound is 4.922 which are greater than the upper bound critical values at 10%, 5%, and 1% significant levels using unrestricted intercept and no trend. We, therefore, reject the null hypothesis of no long run relationship. The bound test shows the existence of cointegration or long run relationship among the variables. After the existence of cointegration, both the long run and short run models of ARDL are estimated as seen in table below.

Before the interpretation of our results, it is important to investigate if our model respect the classical linear hypothesis regarding the second model. From table in the appendix, we can note from the Durbin-Watson d-statistic and Breusch-Godfrey LM test for autocorrelation since their p-values are significant at 1%, we can therefore conclude that exist no serial correlation. More so, the p-value of the Breusch-Pagan/Cook-Weisberg test for heteroscedasticity is insignificant showing that there is homoscedasticity (Durbin & Watson, 1950; Breusch & Godfrey, 1981; Breusch & Pagan, 1979). The p-value of the Ramsey RESET test is insignificant and therefore model has no omitted variables (Ramsey, 1969).

Table 5. The short and long-run effects of real exchange rate on private sector investments

	D.LogPSI	Coeficient	Standard Error	t	P>t
	ADJ LogPSI L1.	 -0.754	 0.110	 -6.880	 0.000
LONG-RUN	RER	-0.014	0.001	-13.430	0.000
	LogGExp	1.307	0.116	11.280	0.000
	logMilitaryExp	-1.613	0.254	-6.340	0.000
	LogRemit	0.442	0.066	6.730	0.000
SHORT-RUN	LogPSI LD L2D L3D	 0.135 -0.132 0.267	 0.115 0.113 0.090	 1.170 -1.170 2.980	 0.258 0.258 0.009
	LogRER D1 LD L2D L3D	 -0.004 0.011 0.008 0.007	 0.003 0.003 0.002 0.002	 -1.440 4.220 3.450 3.620	 0.168 0.001 0.003 0.002
	LogGExp D1 LD L2D L3D	 0.032 -0.056 -0.120 -0.259	 0.135 0.134 0.101 0.096	 0.240 -0.420 -1.180 -2.710	 0.814 0.680 0.255 0.015
	LogMilitaryExp D1	 1.150	 0.155	 7.400	 0.000
	LogRemit D1 LD L2D -cons	 -0.347 -0.305 -0.096 -0.18.392	 0.043 0.035 0.030 2.131	 -8.140 -8.780 -3.190 8.630	 0.000 0.000 0.006 0.000
Sample =1983-2020			R-squared		

Number of obs = 37	Adj R-squared = 0.901

Source: Constructed by author from data (2024).

Table 5 above presents the ARDL results of model 2. Both the short run and the long run results are presented. From the results we can note that R-Square has a value of 0.9012 meaning that 90.01% of variation in the private sector investment the dependent variable, is explained by variation in the exogenous variables included in this model. The coefficient of the error correction term is negative and significant at 10%. This confirms the establishment of a long run relationship between the variables. The coefficient of real exchange in the long run shows that real exchange rate has a negative and significant effect on private sector investment with coefficient -0.0138. This means that if real exchange rate increases by 1 percent, private sector investment will reduce by 0.0138 significantly in the long run. Consumption expenditures have a positive and significant effect on private sector investment with coefficient 1.3074 in the long run. This means that if Consumption expenditures increase by 1 percent, private sector investment will increase by 1.3074 significantly in the long run. More so, military expenditures have a negative and significant effect on private sector investment with coefficient -1.6125 in the long run. This means that if military expenditures increase by 1 percent, private sector investment will decrease by 1.6125 significantly in the long run. Remittance is found to have a positive and significant effect on private sector investment with coefficient 0.4415. This means that if Remittance increases by 1%, private sector investment will increase by .4415%. In the short run, the present value, first and third lags of Remittance has a negative effect on private sector investments while lag two has a positive effect on private sector investments. The effect is significant at the current value but insignificant at all the lags.

In the short run the lag values of private sector investment of have no statistically significant effect on its current values. This shown as the p values of real exchange rate is significant for lag 1 and 2 but become positive and statistically significant at lag 3. The current values of real exchange rate are negative and statistically significant effect on private sector investment. This effect become positive and statically significant at lag 1 and 2. Consumption has a statistically significant effect on private sector investment at level and at lag 1 and 2 but becomes negative and statistically significant effect on private sector investment. Military expenditures have no statistically significant effect on private sector investment. More so, remittance has a negative and statistically significant effect private sector investment in the short run as it is significant at level and at lag 1, 2 and 3.

The stability tests for the ECT model, which were described in the previous chapter is presented on the table below. The tests were applied to the residuals of the ECT model.

To test the stability of parameters, the cumulative sum of squares of recursive residuals (CUSUMSQ) was used. As shown in Figure 2 in the appendix, the values lie within critical bounds of 5 percent. This asserts the stability of short run and long run parameters. For the robustness or our results, we also used government military expenditures as a proxy for government expenditures. We also had similar results which is as presented below.

The table below present the ARDL Bound Test for Cointegration to investigate if there is a long run relationship between variables based on the second objective.

Table 6. ARDL Bound Test for Cointegration

Null Hypothesis: No long run relationship exists		
Test Statistics Value k		
F- Statistics 4.266 4		
Critical value bound significance	Lower Bound, I(0) P-value= 0.0000	Upper Bound, I(1) P-value= 0.0000
10%	2.45	3.52
5%	2.86	4.01
1%	3.74	5.06

Source: Constructed by author from data (2024).

Therefore, the computed F-Statistics for the bound is 4.266 which are greater than the upper bound critical values at 10%, 5%, and 1% significant levels using unrestricted intercept and no trend. We, therefore, reject the null hypothesis of no long run relationship. The bound test shows the existence of cointegration or long run relationship

among the variables. After existence of cointegration, both long run and short run model of ARDL are estimated as seen in table 7 below.

From the analysis above, in the long run real exchange rate has a positive effect on private sector investments with a coefficient of 2.2423. This implies that a percentage increase in real exchange will lead to an increase in private sector investments by 2.2423%. The effect of real exchange on private sector investment is statistically significant. In the short run the effects are negative at the current value and at the three lags and statistically significant all the lags except lag 3. The effect of government consumption on private sector investments in the long-run is equally positive with a coefficient of 2.227936 and it is statistically significant. This implies that a percentage increase in governments spending on consumption will increase private sector investments by 2.2423%. In the short run, the effects are negative at the present value and all the lags, and all the lags are significant statistically except for lag two whose effect is insignificant. The effect of the interactive term of consumption expenditures and exchange rate on the relationship between real exchange rate and private sector investment is negative with a coefficient of -3.706084 and is statistically significant. This implies that a per centage increase in the interaction of real exchange rate and government spending will lead to a fall in private sector investments by 3.706084%. In the short run the influence of the interactive variable on private sector investment is positive at all the lags and equally statistically significant at all levels. The effect of government military expenditure on private sector investments is negative in the long run with a coefficient of -1.833337 and is statistically significant. This shows that a percentage increase in government's military expenditure will lead to decrease in private sector investments by 1.833337%. In the short run, government's military spending has a positive effect on private sector investment at its current value and it is statistically significant at that level.

Table 7. The influence of government spending on the short- and long-run relationships between real exchange rate and private sector investment

	D.LogPSI	Coeficient	Standard Error	t	P>t
	ADJ LogPSI L1.	-0.9884702	0.1338	-7.39	0.001
LONG-RUN	LogRER	2.2423	0.7534409	2.98	0.031
	LogGExp	2.227936	0.2346534	9.49	0.000
	LogRER.GExp	-3.706084	0.66417	-5.58	0.003
	LogMilitaryExp	-1.833337	0.2702965	-6.78	0.001
	FDI	-9.67e-11	1.88e-10	-0.51	0.629
	LogRemit	0.9504771	0.4230709	2.25	0.075
SHORT-RUN	LogPSI				
	LD	0.5541929	0.1815053	3.05	0.028
	L2D	-0.0616605	0.1666483	-0.37	0.727
	L3D	0.2422002	0.1236071	1.96	0.107
	LogRER				
	D1	-4.259595	0.8643049	-4.93	0.004
	LD	-1.676893	0.6631575	-2.53	0.053
	L2D	-2.968899	0.6944744	-4.28	0.008
	L3D	-0.6546939	0.4237848	-1.54	0.183
	LogGExp				
	D1	-0.500497	0.1904373	-2.63	0.047
	LD	-1.290186	0.3494543	-3.69	0.014
	L2D	-0.3925255	0.2999792	-1.31	0.248
	L3D	-0.7975144	0.3366863	-2.37	0.064
	LogRER.GExp				
	D1	2.706565	0.5445194	4.97	0.004

	LD	3.741335	0.714485	5.24	0.003
	L2D	2.654228	0.6225314	4.26	0.008
	L3D	1.612096	0.4860364	3.32	0.21
	LogMilitaryExp				
	D1	1.448962	0.2388372	6.07	0.002
	FDI				
	D1	3.56e-10	1.63e-10	2.18	0.081
	LD	4.95e-10	1.60e-10	3.10	0.027
	L2D	3.12e-10	1.15e-10	2.72	0.042
	L3D	1.68e-10	7.26e-10	2.31	0.069
	LogRemit				
	D1	-0.4419331	0.3218655	-1.37	0.228
	LD	-0.0187692	0.2547943	-0.07	0.944
	L2D	0.5481649	0.2042089	2.68	0.044
	L3D	0.5103853	0.1523033	3.35	0.020
	Cons	30.2866	4.310789	7.03	0.001
Sample = 1984-2020			R-squared = 0.9857		
Number of obs = 37			Adj R-squared = 0.8969		

Source: Constructed by author from data (2024).

Foreign direct investments also have negative and insignificant effect on private sector investments in the long run with a coefficient of -9.67e-11. This implies that a unit increase in foreign direct investments will insignificantly lead to a decrease in private sector investments by 9.67e-11%. In the short run, foreign direct investments have a positive and significant effect on private sector investments at the present value and all the three lags. Remittances has a positive and significant effect on private sector investments in the long run with a coefficient of 0.9504771. This implies that a unit increase in remittances will lead to an increase in private sector investments by 0.9504771%. In the short run remittances have a negative and insignificant effect on private sector investments at their current values and at lag one and positive and significant effect at lags two and three.

The Figure 3 in the appendix presents the stability tests for the ECT model, which were described in the previous chapter of the third objective. The tests were applied to the residuals of the ECT model. To test the stability of parameters, the cumulative sum of squares of recursive residuals (CUSUMSQ) was used. As shown in Figure 3 in the appendix, the values lie within critical bounds of 5 percent. This asserts the stability of short run and long run parameters.

4.3 Discussion of Results

The objectives of this study are to examine the short and long-run effects of government spending on real exchange rate in Cameroon, to assess the short and long-run effects of real exchange rate on private sector investments in Cameroon and the to explore the influence of government spending on the short- and long-run relationships between real exchange rate and private sector investment in Cameroon. To investigate the dynamic relationship between government spending, real exchange rate and private sector investments, we employed the Autoregressive Distributed Lag (ARDL) Approach.

In the short-run, government expenditures have a positive and significant effect on real exchange. In the long-run government expenditure with the proxy of military expenditures has a negative and significant effect on real exchange rate. This result is in line with the findings of Edward (1989) and is in agreement with the works of Ngimanang & Baye (2016), which showed that government spending appreciates real exchange rates.

On the effect of real exchange rate on private investment the results show a negative and significant effect in the long run. This result agrees with the findings of Nazar & Bashiri (2012) who investigated the relationship between real exchange rate uncertainty and private investment in Iran for the period of 1988 to 2008 and realised a negative and significant relationship.

On the effect of government spending on private sector investments, we found that consumption expenditure has a positive and significant effect on private sector investments in the short run and a negative and significant effect on private sector investments in the long run. Our results are in line with the findings of Njimanted & Mukete (2013) who considered the relationship between government expenditure and private investments in Cameroon and discovered that government expenditure insignificantly complements private investment. Is also in line with the findings of Monadjemi (1995) who used granger causality methodology with a sample of five African nations and the results revealed strong evidence that an exogenous increase in the federal spending reduces firms' capital investment, that is, a crowding-out effect.

5. Conclusion and Recommendations

From this study that explained the nexus amongst government spending, real exchange rate and private sector in Cameroon, the following conclusions can be drawn. Private sector investments are a very important aspect if not backbone of all economies and looking into its wellness is of great importance. As such looking into other major factors in the economy that affects this sector is of great importance. Also given the fact that the world has become a global village, and no economy can work in isolation the need to look at the real exchange rate is also quite important.

From our study the effect of government spending on consumption as a proxy for government spending on real exchange rate is negative and significant in the long run in Cameroon. This is in agreement with our alternative hypothesis. On the other hand, we found a positive and significant effect of the same variable in the short run and in this case the short run result does not tie with our alternative hypothesis.

In the case of case using military expenditures as a proxy for government spending, we have completely the opposite result as the long effect on real exchange rate was positive and significant and the short run was negative and significant. Hence, the short run agrees with our alternative hypothesis and the long run does not.

We found that real exchange rate has a positive and significant effect on private sector investment in Cameroon and a negative significant effect in the short-run. The long run results are in agreement with our alternative which states that real exchange rate is likely to have a positive effect on private sector investments in Cameroon. The short-run result however is not in conformity with our hypothesis as we found a rather negative significant effect.

Finally, the interactive term of consumption expenditures and exchange rate on private investment is negative and significant in the long and positive and significant in the short run. Therefore, government spending mitigates the short- and long-run effect of real exchange rate on private sector investment in Cameroon. Government spending is therefore an adequate mitigating variable between real exchange and private sector investments in Cameroon in the short run.

There is no doubt to the fact that the levels of private investments in Cameroon and remained relatively low over the years and the state of the exchange rate of the country has been inferior to that of other countries and as this tells us the strength of our economy. It is also worth noting that the government is very much involved in the economy and activities. Based on our findings the following policy implications can be drawn.

Government spending should be used as a tool to improve real exchange rate in the short run by increasing spending. In the long run, if the state of real exchange rate must be better, then government should reduce instead her spending. In the case of government military spending, it can be used as a toll to increase real exchange rates in the long run as it has a positive effect in the long run.

Also, concerning the state of private sector investments, real exchange rate positively influences private sector investments in the long run and negatively in the short run. As such if the goal is to increase private sector investments levels in the long run, governments should improve the real exchange rates. Real exchange rates therefore are a vital tool for improving private sector investments in the long run only.

We also find that if governments wish to significantly improve private sector investments in the short-run, she should increase her spending on consumption. In the long run it still improves consumption but insignificantly this time.

Government consumption spending reinforces the negative effect of the exchange rate on private sector investments in the long-run and mitigates it in the short-run. The implication of these findings is that government consumption spending is key in managing the overall macroeconomic competitiveness of the economy, which can incentivise or disincentivise private sector investments.

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Appendix A

Table 8. Descriptive Statistics

Variable	**Observations**	**Mean**	**Std. Dev**	**Min**	**Max**
InPSI	41	27.59948	0.7716943	26.11553	28.81388
InRER	41	4.719983	0.1889106	4.502186	5.130499
InExp	41	21.30941	0.64685	20.1859	22.33979
InMilitary~p	41	19.11676	0.4957494	18.36429	19.87904
FDI	41	-260e+08	3.11e+08	-8.99e+o8	1.28e+08
Remit	41	0.4121722	0.2735827	.0619723	0.8962488
Inrer.gce	41	7.133335	0.2098734	6.914948	7.628225
InSave	41	21.67202	0.6364589	19.67044	22.56039
InRemit	41	17.74402	1.265491	15.80853	19.68918
Intrade	41	3.796579	3.796579	3.264187	4.174766
Inrermil~y	41	23.83674	0.4576882	22.86648	24.46322

Source: Constructed by author from data (2024).

Table 9. Pairwise correlation

Variable	InPSI	InRER	InGexp	InMil~p	FDI	Remit	Inrer.gce	Insav	InRemi	InTrad	Inmil~y
InPSI	1.0000										
InRER	-0.7502	1.0000									
InExp	0.8924	-0.4530	1.0000								
InMili~p	0.8566	-0.3843	0.9418	1.0000							
FDI	-0.7433	0.5024	-0.6754	-0.7059	1.0000						
Remit	0.7998	-0.4877	0.7628	0.8716	-0.7841	1.0000					
Inrer.gce	-0.4720	0.8648	-0.0713	-0.1126	0.3320	-0.3623	1.0000				

InSave	0.8420	-0.4173	0.8898	0.8768	-0.5777	0.6773	-0.1471	1.0000			
InRemit	0.8677	-0.5157	0.8533	0.9301	-0.7599	0.9733	-0.3318	0.7668	1.0000		
Intrade	-0.0409	-0.1573	-0.2802	-0.0736	-0.0970	0.1493	-0.4658	-0.1508	-0.0736	1.0000	
InMil~y	0.6182	-0.0035	0.8332	0.9246	-0.5573	0.7427	0.2349	0.7775	0.7946	-0.1447	1.0000

Source: Constructed by author from data (2024).

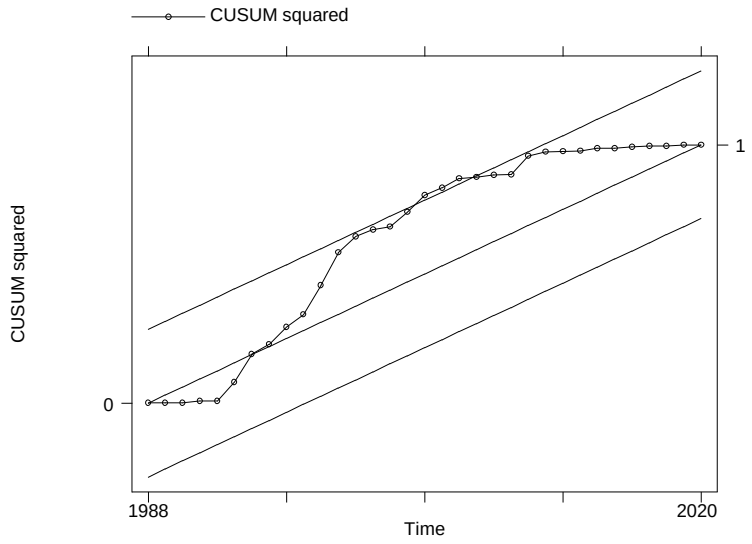
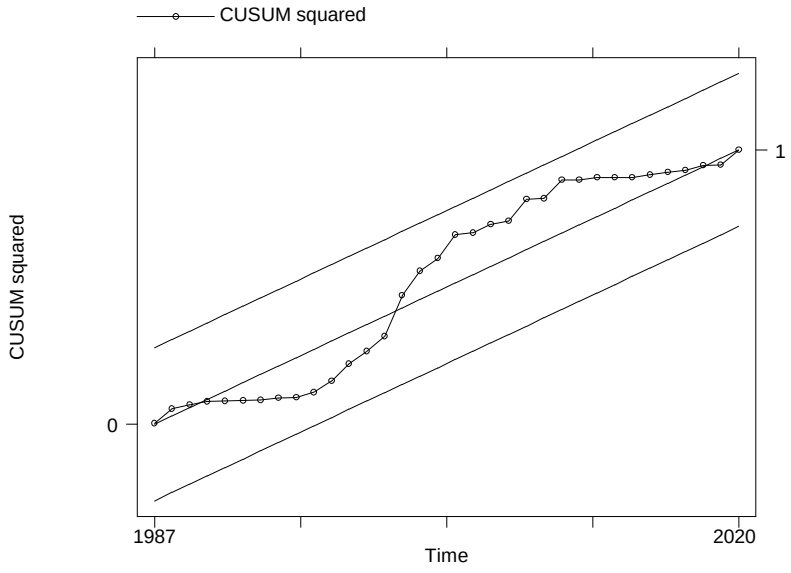


Figure 2.

Source: Constructed by author from data (2024).



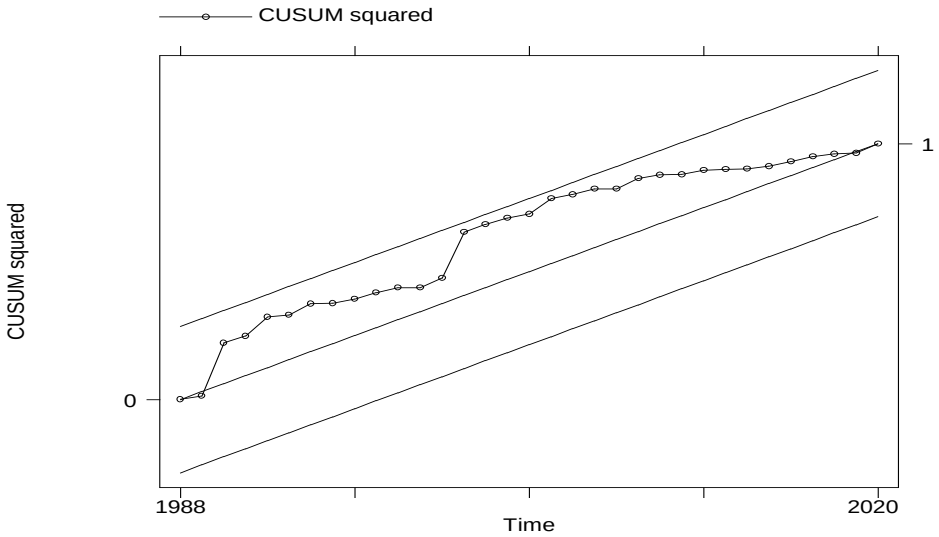


Figure 3.

Source: Constructed by author from data (2024).