Long-Run Growth and Economic Policy in Cameroon: A Cointegration Analysis

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Abstract

In order to investigate what drives long-term economic growth, it is necessary to isolate growth that results from accumulation of factors from that resulting from the quality of those factors, which in turn depends on government policies and human capital accumulation. This is critical in guiding the implementation of medium and long-term growth strategies of the country. This study has investigated the impact of economic policy on long-term growth in Cameroon. Specifically, the study sought to (1) examine the relationship between economic policy and economic growth in Cameroon, (2) investigate the impact of human capital on economic growth and (3) provide appropriate suggestions that will enhance the efficiency of government policies in promoting economic growth in Cameroon. In order to achieve this, we employed econometric techniques beginning with time series analysis, to determine the impact of economic policy on the stability of long run economic growth in Cameroon. The study covered a period of time when Cameroon's economic performance was mixed: a decline, then some recovery, albeit sluggish since the mid-1990s, hence the need to disentangle the contribution of policies to growth from that arising from factor accumulation. Before estimating the growth equation, the characteristics of the data was examined to determine whether the data is stationary or not, that is, whether it has unit roots and also to determine the order of integration. We then performed the Johansen cointegration test to determine the long term relationship between economic growth and the relevant policy variables. The results from the error correction model show that capital is a robust determinant of economic growth in Cameroon. The results further show that higher levels of inflation rates are harmful to economic growth in Cameroon. The implication for these results is that prudent policies, especially well implemented macroeconomic policies, can positively affect economic growth in Cameroon.

Keywords: Macroeconomics, Econometric and Statistical Methods, Economic Growth, Cointegration

1. Introduction

This study analyses the determinants of economic growth in Cameroon using the recent theory of endogenous growth spurred by the works of Romer (1986) and Lucas (1988). According to this theory, economic growth can be affected by economic policy which contrasts sharply with the Solow-Swan neoclassical model in which long term growth depends on exogenous technical progress and therefore invariant to policy (Solow 1956; Swan 1956). The extent to which economic policy contributes to output growth depends on country specific features especially within the African context, where growth was found to be considerably unstable than country characteristics (Easterly, 1993).

Following the endogenous growth theory, we attribute long-term economic growth not only to factor accumulation but also to the productivity of factors, which are drawn by efficiency gains in the use of factors and technological progress. In addition to economic policy, the quality and quantity of human capital can contribute significantly to economic growth. Human capital tends to improve the quality of labour and productivity of labour, which in turn engenders economic growth. Economic policies and the quality of institutions on the other hand, affect the efficacy of resource use; contribute to growth in total factor productivity thus contributing to sustainable growth.

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Total factor productivity is simply a catch-all variable that captures all influences on changes in output for given levels of factor inputs. The productivity concept incorporates factors such as technical progress, efficient allocation of resources, institutions and economic policies. This study is an attempt to disentangle economic growth into its constituent parts. An Estimation of the influence of these factors can provide valuable insights on the influence of economic policy on output growth in Cameroon. Economic growth in Cameroon has been quite uneven since independence in 1960 beginning with a period of rapid growth, followed by a decline between the mid-1980s and mid-1990s and a resurgence of growth since 1995. The economic policies implemented to address prevailing economic problems have differed depending on the economic circumstances. While these economic policies were implemented with the belief that good policy could be decisive for growth, the policies being promoted during the crisis and adjustment decade from 1986-1995, were inspired by the Bretton-Woods institutions, with its emphasis on market-oriented economic policies, openness to foreign trade, and minimal government restrictions. This study is an attempt to determine the extent to which these policies affect economic growth in Cameroon. The result from this study should suggest guidelines policies that promote output growth and development. Thus the central objective of this study is to investigate the impact of economic policy on long-term growth in Cameroon. Specifically, the study seeks to (1)examine the relationship between economic policy and economic growth in Cameroon. (2) Investigate the impact of human capital on economic growth and (3) suggest appropriate policies that enhance the efficiency of government policies in promoting economic growth in Cameroon. In trying to investigate what drives long-term economic growth, it is necessary to isolate growth that results from accumulation of factors from that resulting from the quality of factors, which in turn depends on government policies and human capital accumulation. This is critical in guiding the implementation of medium and long-term growth strategy of the country.

2. Cameroon's Economic Performance

Cameroon's economic performance during most of the 1970s and up to the mid-1980s was impressive. Output growth during this period was boosted by exports of agricultural products and petroleum. GDP growth was estimated at 7 percent per annum on average and was propelled and sustained by an investment of 25 percent of GDP. The economic decline that began in 1986 was accompanied by sharp declines in public revenue and expenditure. Budget imbalances became severe and inflation rose reaching 10 percent. Domestic savings and investments plummeted with investment flooring to 13.3 percent of GDP in 1992. The nominal exchange rate could not adjust to meet up with the appreciation of real exchange rate. This in addition to the deterioration in the terms of trade contributed to unsustainable external payment position. The degradation in both the internal and external equilibriums in addition to structural constraints led to an unprecedented decline in GDP growth(See Table 1). In order to correct both internal and external imbalances, Cameroon implemented measures to restrain aggregate demand, which engendered cutbacks in investment expenditures, and this contributed to declines in investment and saving rates. Because of the failure of the internal adjustment measures to correct the imbalances, Cameroon supported by the World Bank and the IMF implemented structural adjustment and stabilization programmes that emphasized increases in medium and long term growth. Despite these policies, the imbalances widened as Cameroon's exports remained less competitive relative to those of her major trading partners due to the overvaluation of the local currency, the CFA franc.

Table 1: Macroeconomic Indicators of Cameroon: Selected Years

Indicator	1985	1990	1995	2000	2005	2010	2012	2014
Current account balance (% of GDP)	-6.9	-4.9	1.0	-2.3	-3.0	-3.6	-3.6	-2.2
Debt service (% of exports of goods, services and primary income)	11.9	13.0	17.2	12.4	10.0	0.9	1.7	
Domestic credit to private sector (% of GDP)	22.9	26.4	8.2	8.2	9.9	12.5	14.1	15.6
Domestic credit provided by financial sector (% of GDP)	22.2	30.9	17.5	14.4	13.8	10.3	14.4	16.3
Exports of goods and services (annual % growth)	8.9	-9.8	13.9	1.0	1.4	7.8	-1.3	10.0
Exports of goods and services (% of GDP)	33.4	20.2	23.6	23.3	20.5	17.3	18.8	21.7
GDP growth (annual %)	8.1	-6.1	4.1	4.2	2.3	3.3	4.6	5.9
Gross capital formation (% of GDP)	24.9	17.8	13.3	16.7	19.1	19.0	19.4	20.7
Gross capital formation (annual % growth)	11.7	1.5	-6.1	9.2	0.6	5.6	1.9	13.5
Inflation, GDP deflator (annual %)	11.2	1.6	8.6	2.9	2.6	2.6	3.0	2.4
Inflation, consumer prices (annual %)	8.5	1.1	9.1	1.2	2.0	1.3	2.9	1.9
Interest payments on external debt (% of GNI)	2.3	2.3	2.6	3.3	1.5	0.2	0.2	0.5

Sources: World Bank World Development Indicators 2016

However, the CFA franc was devalued in 1994 and trade and fiscal reforms implemented within the Central African Economic and Monetary Community (CEMAC), helped in restoring macroeconomic stability. This has contributed to a steady growth in output. The real annual growth of GDP is estimated at the rate of 4.5 percent and real per capita GDP growth averaged 1.6 percent annually in 1998-2000. Fiscal surpluses averaged 5.9 percent of GDP per year and were mostly devoted to external debt service. Inflation has stabilized at an average of 2 percent and external terms of trade recovered thus improving the external economic environment. For example, the current account deficit of balance of payments was only 3.2 percent of GDP in 1998-2000 due to the recovery of exports. (See Figure 1).In spite of this progress, the period 1994 to mid-1996 was not very successful for Cameroon's stabilization and adjustment efforts. Thus an enhanced structural adjustment facility was put in place in 1997 as an attempt to surmount these problems. These reforms which focus essentially on macroeconomic stability, tax policy, bank sector restructuring and administrative reforms encompass policy determinants of growth. However, reforms in sectors such as education, health, governance and government decentralization are inadequate and may hinder sustainable output growth. The implementation of the structural reforms under the Enhanced Structural Adjustment Facility (ESAF) has led to improved macroeconomic performance. Real GDP growth rate averaged 3.5 percent per annum between 1995 and 2010 and 4 to 5 percent since 2010 and this contrasts sharply with the negative growth rates of the previous decade.(See Figure 1).

Figure1. Evolution of GDP, Inflation and Fiscal balance
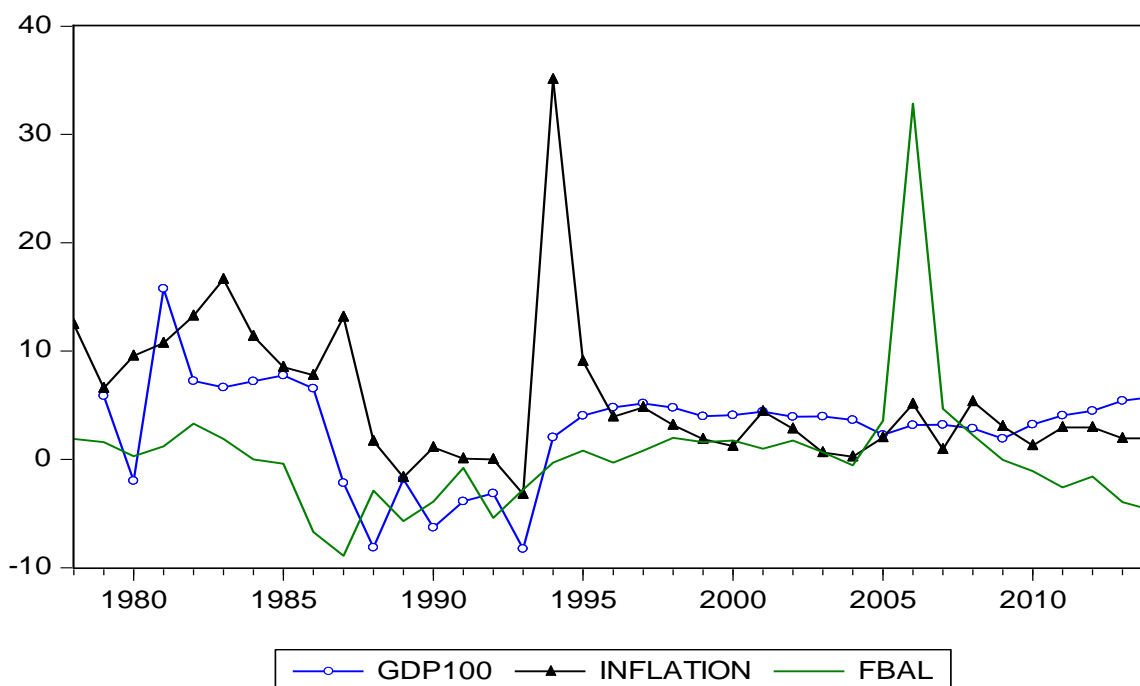
In order to promote macroeconomic stability, the fiscal position was strengthened through improved revenue mobilisation and prudent expenditure policies. Besides, significant progress has been made in improving governance and developing government auxiliary accounts.

2.1 Cameroon's institutions and Human capital development

The advances made so far in the reform efforts have been overshadowed by weaknesses in governance and inadequate attention to education and health services. Besides, accountability and transparency in public sector resource use is insufficient. Corruption is on the rise and high transaction costs in the use of public resources are a hindrance to efficiency in the public sector. The regulatory framework and investment climate are less conducive to the development of the private sector and output growth. In order to foster and sustain its medium-term growth, Cameroon has resolved to implement new generation economic and social reforms - strengthening human resources, improving the institutional framework, reform of the legal and judiciary system to protect property rights and enforce contracts, improve competitiveness by creating a business friendly environment and implement policies that promote private sector development and good governance. All these policies are gradually being implemented as the government pursue its goal to transform the country into an emerging economy by 2035.

3. Contribution of Economic Policy to Growth

Recent development in the growth literature emphasizes that economic conditions and the implementation of appropriate macroeconomic policies can influence long-term growth rates. This revival of the growth literature focuses on endogenous growth models. A hallmark of the new literature is the demonstration that distortions and policy interventions that can be shown to have no real effect on long-term growth can affect steady state growth rate in endogenous growth models. The role attributed to government policy in the Solow-Swan framework is to ensure that the market works well with rapid adjustment of prices. This implies that any deviation of the warranted rate of growth from the natural rate of growth would quickly be corrected through the necessary changes in capital output ratio[i]. This tends to be associated with minimum level of government interventions, which creates no price rigidities in the economy. The rapid growth of East Asian economies since the 960s is attributed to a combination of determinants including human and physical capital, openness to foreign trade and foreign direct investment, effective government policies that accompany technological progress and factor accumulation (World Bank 1993).

Output growth has been defined as a function of capital and labour weighted at the respective factor shares in value added. Abramovitz (1956) and Solow (1956) identified that part of output growth that was not associated with growth in factor inputs to be the result of a residual that accounts for the difference in the growth of output and the contribution of inputs. This residual referred to as total factor productivity (TFP) or the Solow residual captures several variables including institutions and economic policies. The latter enhances the efficiency of inputs and alters the endogenous rate of technological change that can boost productivity growth (Easterly and Levine 2002). This study is not concerned with the polemics that surrounds the interpretation of total factor productivity but regards it as a residual that explains changes in output growth arising not from factor accumulation but also from the efficacy with which resources are used which depends essentially on government economic policies.

The relevance of considering the growth effect of economic policies should be predicted on the basic proposition that policy matters for the long run growth of the economy. This is an alternative to the neoclassical growth theory of Solow-Swan in which long-run growth is determined by exogenous technological progress and productivity and therefore invariant to policy. Beginning with fiscal policy, expansionary fiscal policies can significantly affect both the level of output and also per capita growth rate. Fiscal policy responses are often directed to fiscal dimensions such as high unemployment, inadequate domestic savings, severe budget deficits and public debt burdens, and looming crisis in the financing of health care systems and education. Policy debates have been focused on issues relating the appropriate scope, nature and conduct of fiscal policy within the context of limiting macroeconomic instability in the short run and fostering growth in the long run.

Opinion on effect of openness on growth has been quite divided. Trade liberalization sceptics like Krugman (1994) and Rodrik (1995) have argued that the effect of openness on growth is indeed doubtful. This viewpoint contrasts sharply with earlier persuasive support for growth effect of openness led by the pioneers of the new endogenous theories of growth (Romer 1986 and Lucas 1988). Barro and Sa-i-Martin (1995) and Edwards (1997) have argued that countries opened to the rest of the world have greater capacities to absorb technological advances. They maintained that, innovation taking place in advanced nations are easily imitated by countries that are open to foreign trade. Rodrik (1995) attribute the doubtful evidence to poor measure of the indicator of trade regime, which he argued is often confused with macroeconomic aspects of the policy regime.

The role of human capital in economic growth is well expounded in the growth literature. Although it is a relatively new formulation, it has been shown that human capital creates knowledge, which affects productivity and consequently economic growth. A number of economists have presented models that allow for significant effect of human capital on output growth (Uzawa 1965, Lucas 1988, Romer 1989). These models highlight the role of human capital and education in particular in enhancing the productivity of both the recipients of such capital and that of the society. Endogenous growth models suggest that government policies to promote education and human capital formation can have large impact on long-run economic growth, which should be taken into account by policy makers. Education facilitates the acquisition of new skills and knowledge that increase productivity and output. Besides, investment in human capital has benefits that are external to the individual. Because these benefits accrue to the society as a whole, such investment will lead to increasing returns to scale.

Based on the recent endogenous growth models that output growth and economic policies are positively correlated, several studies have been conducted to determine how economic policies can influence output growth. Fischer (1993) studied the effects of macroeconomic indicators such as inflation rate, budget surplus or deficit and

black market exchange premium on growth. His results indicated that each of these variables is individually significantly correlated with growth thus showing a positive link between growth and macroeconomic stability.

The author defined a stable macroeconomic framework as one in which the macroeconomic policy environment is conducive to growth. Recent evidence on the link between government expenditure and growth are mixed. Devarajan, Swaroop and Zou (1996) considered a sample of developing countries from 1970 to 1990. They found no positive or significant relationship between growth and the level of public expenditures. In contrast, they found a positive relationship between public consumption expenditures as measured by current outlays as a share of total expenditures and growth. These authors also found an inverse relation between public investment and growth suggesting therefore that governments may have been misallocating expenditures in favour of capital expenditures rather than outlays on sectors such as infrastructure. Barro (1997) arrived at a similar conclusion when he found that government consumption expenditure calculated by deducting defence and education expenditures from general consumption measured in proportion of GDP negatively correlated with growth.

As regards the effect of human capital on growth, Barro and Sala-i-Martin (1995) found a positive impact on growth of public spending on education. They interpreted the result to mean the growth effect of improved quality in human capital. Tanzi (1995) argues that public spending on education increases a country's ability to absorb technology from abroad and invest in new technologies. Amin (1998) studied the growth effects of fiscal policies in Cameroon and found that productive government spending enhances the efficiency and productivity of the private sector. He identified education, health and infrastructure as the sectors on which public spending crowd in private investment and thus growth. These results contrasted sharply with findings from cross-country regressions by Levine and Renelt (1992) that there was no robust correlation between public spending on education and growth.

De Gregorio (1993) Barro (1997), Kormendi and Meguire (1985) found a negative but significant relationship between the level of inflation, variability of inflation and growth in Latin America has equally found a negative but smaller effect of inflation on growth. Levine and Renelt (1992), after controlling for physical and human capital accumulation rates, that inflation rate is not significantly related to per capital output growth. This result could not be different because the authors controlled for capital accumulation on which inflation operates. Haslag (1997) however fails to find any evidence that shows a significant correlation between inflation and output growth.

In a study of private investment and endogenous growth in Cameroon, Dhaneshwar (1997) found that results that hold with cross-country data also hold for Cameroon. A specific finding from this is that, an increase in private investment/GDP ratio raises real GDP by 0.8 percent point. However, the effect of changes in government investment, although positive, is not strongly robust. The study concludes that as increases in private investment stimulate growth, government should formulate and implement appropriate policies that encourage private sector investment and growth. Acknowledging the role of human capital, the study suggests that a reallocation of government expenditure to investment in education and health would help raise human capital and contribute to growth. These conclusions have been supported by later results by Amin (1998) and by Dhaneshwar's whose study included control variables such as government size, monetary policy, terms of trade and external debt, which were found to be statically insignificant. McKinnon (1973) and Shaw (1973) argued that financial repression, and in particular depressed interest rates cause a slowdown in growth rates via low savings rates and inefficient allocation of investments. Easterly and Wetzel (1989) found negative real interest rates to be highly distortionary and has a significantly negative effect on growth. This suggests that policies to remove distortions in the financial markets are likely to raise long-run rate of growth. Different authors have used various indicators to measure trade liberalization. Sachs and Warner (1995) for example classified 117 countries as either open or close. They did this by employing a series of trade related indicators- tariffs, quotas coverage, black market premium, the existence of export marketing boards to construct a composite index which is an improvement over previous attempts. However, this indicator considers a country to be either opened or closed and does not allow for intermediate situations where countries are neither totally opened nor totally closed. Levine and Renelt (1992) argued that the black market premium for foreign exchange is a good proxy for the overall degree of intermediate situations.

This study unlike previous studies focuses on the role of economic policy on economic growth in Cameroon. The study comes up at a time when Cameroon's economic performance has improved though sluggishly since the mid-1990s. This study provides the need to disentangle the contribution of policies to growth from that arising from factor accumulation.

4. Methodology

4.1 The Growth Model

Economic growth occurs from the accumulation of factor inputs and the rate of growth of aggregate productivity of these factors (TFP). TFP is an unexplained residual that captures technological change, improvements in institutions and the country's economic policies. An estimation of the TFP allows us to identify the channels through which economic policies affect growth. While human capital may influence total factor productivity (A), it may also enter the production function directly as a third input. Consequently, we augment the Cobb-Douglas production function by incorporating human capital. This is aimed at capturing the effects of human capital on the aggregate productivity of factors (Mankiw et al. 1992; Lucas 1998).

Following the proposed model by Nehru and Dhareswar (1993), and a specification of total factor productivity to policy variables by Ndiaye (1998), we estimate a function of growth rate derived from the Cobb-Douglas production and the logarithmic form of the production function. We equally estimate the elasticises of factors and the growth rate of aggregate productivity of factors for Cameroon for the period from 1980 to 2014.

The starting point for our analysis is the aggregate production function augmented to include human capital as follows:

$$Y_t = F(K_t, L_t, H_t, A_t) \tag{1}$$

where Y denotes real aggregate output or income, K represents physical capital, L is labour or number of workers, H is human capital and A is an overall efficiency factor that does not only include technology but also the quality of government economic policies[ii]. Aggregate output is produced through a constant return to scale Cobb-Douglas production function as follows:

$$Y_t = A_t K_t^{\alpha} L_t^{\beta} H_t^{\delta} \text{, with } \alpha + \beta + \delta = 1 \tag{2}$$

In the above specification, output is derived from four factors including human capital. Human capital is a key determinant of labour productivity as it creates knowledge, facilitates the absorption of new technology, and increases innovations. The framework allows the decomposition of economic growth into separate contributions from the variables expressed in the right hand side of equation (1). Taking logarithm of the Cobb-Douglas production function yields:

$$\log Y_t = \log A_t + \alpha \log K_t + \beta \log L_t + \delta \log H_t \tag{3}$$

Total factor productivity (A) or the Solow residual is assumed to grow according to the following function:

$$A_t = A_0 e^{\Sigma \theta X_{it}} \tag{4}$$

Where x is a vector of growth rates for the X_{it}[iii] variables and θ is a vector of coefficients related to x. Applying a logarithmic transformation to (4) and expressing the growth rate x as $\Delta \log x$, yields,

$$\log A_t = \log A_0 + \theta_1 \Delta \log X_{1t} + \theta_2 \Delta \log X_{2t} + \cdots\cdots\cdots + \theta_n \Delta \log X_{nt} + \eta_t \tag{5}$$

Substituting equation (5) into equation (3), we obtain an expression for aggregate output or income as follows,

$$\log Y_t = \log A_0 + \alpha \log K_t + \beta \log L_t + \delta H_t + \theta_1 \Delta \log X_{nt} \cdots + \theta_n \Delta \log X_{nt} + \eta_t \quad (6)$$

Given that $\Delta \log X_{i.t} = f(\log X_{i.t})$, equation (6) can be rewritten as follows,

$$\log Y_t = \log A_0 + \alpha \log K_t + \beta \log L_t + \delta \log H_t + \omega_1 \log X_{1t} + \cdots + \omega_n \log X_{nt} + \eta_t \tag{7}$$

Generally, changes in the logarithm of X ($\Delta \log X_{it}$) are interpreted as the effects of policies and institutions on the aggregate productivity of factors. The above specification forms the basis of our empirical analysis and thus has important implications on the roles of factor accumulation, human capital, institutions and economic policy for output growth.

4.2 Data sources and variable definition

The data that has been used for this study have been drawn from country reports and other useful publications on the country, the National Institute of Statistics, the World Bank and IMF databases. In the absence of data on current labour force participation rates in production, labour force is assumed to be the active population and is constant over time. The capital stock variable was measured as the gross capital formation.

Definition of Variables

In the following table, we define the variables used in the estimating the growth equation.

RGDP	=	Real GDP (a measure of output)
CAP	=	Gross capital formation is used as a proxy for physical capital accumulation
LAB	=	Labour force growth (Economically active pop.)
Exports	=	Exports of goods and services
Fbal	=	Fiscal balance
HCAP	=	Human capital measured by education expenditure
CBAL	=	Current account balance
INFL	=	Inflation rate

5. Empirical Results

In this study, we examine a set of factors that determine long-term economic growth in Cameroon using data ranging from 1978 to 2014. The productivity of factors into the production function is assumed to be captured by total factor productivity, which in turn depends on exogenous factors such as economic policy, and the quality and quantity of human capital available in the country. Human capital tends to improve the quality of labour and the productivity of labour, which in turn engender economic growth. Given the paucity of data on human capital development, secondary enrolment was used as a proxy variable for human capital. Furthermore, the study retains current account balance, inflation and interest rate as measures of economic policy and export of goods and services as a control for openness. Gross capital formation was taken as a proxy for capital input. Before estimating the model, it is of interest to examine the time series properties of the data. The stationary of the variables is determined using the testing strategies recommended by Perron (1988). The unit root hypothesis is tested using the Augmented-Dickey-Fuller (ADF) test, which is equivalent to running the following set of regressions for each of the variables.

$$\Delta X_t = \beta + \lambda t + \alpha X_{t-1} + \sum_{i=1}^{k} \delta \Delta X_{t-1} + \varepsilon_t \qquad (8)$$

Where X_t is the relevant time series, β is a constant, λt is time trend and ε is the residual error term. The test is performed separately for each level variable as well as on its difference with the aim of establishing the order of integration. The lag length (K) in the ADF regression is selected using the Schwartz criterion.

5.1 Unit root test

Before the estimation of our growth equation, the characteristics of the data need to be examined. This is done to determine whether the data is stationary, that is, whether it has unit roots and also the order of integration. The tests used are the Augmented Dickey-Fuller (ADF) and the Phillips-Perron (PP) tests. The results indicate that RGDP, and LAB both have unit roots and are therefore non-stationary.

Table 2:Test Results for Unit Roots

	Augmented Dickey-Fuller (ADF)		Phillips-Perron (PP)	
Variables	Level	First Difference	Level	First Difference
lnGDP	-2.612	-10.584*	-3.48	-10.126*
lnK	-2.57	-6.295*	-3.747	-9.874*
lnLAB	-2.806	-6.488*	-2.804	-6.504*
HCAP	-2.829	-5.819**	-2.260	-8.294*
INF	-3.809	-8.809*	-3.809	-9.451*
Exports	-2.196	-5.778*	-2.260	-5.783*
Fbal	-3.906	-8.118*	-3.894	-11.917*
CBAL	-4.222	-8.587*	-4.189	-17.274*

Note: *Indicates significance at 1%, **Indicates significance at 5%, *** Indicates significance at 10%
They are integrated of order the rest of the variables are integrated of order zero according to ADF and Phillips Perrontests. Using both tests, we can see that all of variables are stationary after first difference Implying the absence of unit roots.

The results of the unit root tests are presented in **Table 2.**The ADF and the Phillips Protests for the first difference rejects the hypothesis of non-stationary at the 5 % level for level for all variables. Given this evidence, it is logical to treat all variables as integrated of order one, or I (1) in accordance with the model.

5.2 Co integration Test

Given the non-stationary variables, we investigate if these variables are cointegrated or have any long-term relationship. We do this by adopting the Johansen Procedure and particularly the trace test. Using the Johansen method, we test whether there is a long term relationship between RGDP, Capital, labor force, and human capital. The test is conducted with the assumption of linear deterministic trend in the data series.

Table 3: Cointegration analysis: Assumption of Linear deterministic trend

H_0	Eigenvalue	Likelihood ratio (Trace Test)	5 Percent critical value	Hypothesized number of CE(s)
r = 0	0.716	85.703	47.856	None*
r ≤ 1	0.574	42.953	29.797	At most 1*
r ≤ 2	0.275	13.962	15.495	At most 2
r ≤ 3	0.085	3.024	3.842	At most 3

Note: *, **, and *** imply the variables are statistically at 1%, 5%, 10%, respectively

The trace test shown in **Table 3**indicates that there are 2 cointegration equations of cointegration at 5%. In effect, on the 'none' column of the table, the trace is greater than the critical values at 5% implying that the series are cointegrated. Engle and Granger (1987) have shown that any cointegrated series has an error correction specification. The error correction model can lead to a better understanding of the nature of any non-stationary among the different component series and can also improve longer term forecasting. It ties the variables together in the long run and they cannot move apart too far over time. Table 4 shows the summary results of the error correction model for Cameroon. As the results indicate, a policy variable such as inflation is an important determinants of economic growth in Cameroon. The coefficient of inflation is negative and   significant indicating that an increase in inflation will dampen GDP growth. The results also reveal that capital stock is positively and significantly related to long term economic growth. This finding is quite realistic and supports the theoretical postulation that capital accumulation is critical for economic growth in Cameroon which like other countries of its economic strength lack access to foreign capital markets.

Table 4: ECM Estimates of GDP Growth for Cameroon. Dependent Variable is LnRGDP

Variable	Coefficient	t-statistic	Prob.
D(LNCAP)	0.168823	8.780012	0.0000
D(LNLAB)	-3.291177	-2.222767	0.0355
D(LNEXPORTS)	0.020712	0.802253	0.4300
D(INFLATION)	-0.001363	-3.134137	0.0044
D(FBAL)	0.000493	0.976629	0.3381
D(CBAL)	-0.000230	-0.137255	0.8919
D(HCAP)	0.928584	1.416028	0.1691
DUM	-0.012834	-1.423641	0.1669
U(-1)	-1.179052	-6.722050	0.0000
C	-0.015402	-1.163761	0.2555
R-squared	0.871944	Mean dependent var	-2.92E-05
Adjusted R-squared	0.825843	S.D. dependent var	0.047757
S.E. of regression	0.019930	Akaike info criterion	-4.758243
Sum squared resid	0.009930	Schwarz criterion	-4.313858
Log likelihood	93.26926	Hannan-Quinn criter.	-4.604841
F-statistic	18.91406	Durbin-Watson stat	2.138707
Prob(F-statistic)	0.000000		
Normality Test (JarqueBera	0.872	Probability	0.647
Heteroskedasticity Test: Breusch-Pagan-Godfrey	Obs*R-squared =11.58502	Prob. Chi-Square(9)	0.2377

As we can infer from the results in Table 4, a short increase of capital stock by 1 percent causes GDP to rise by 16.8 percent. Similarly, a 1 percent short run increase in inflation causes RGDP to decrease by 0.13 percent. The rest of the variables are not significantly related to real output growth.

The findings also show labor factor has a significant on growth although this impact is negative perhaps due to the saturated labor market. As least expected, the effect of human capital on GDP growth is not significant but remains positive highlighting the fact that higher spending on education can boost human capital formation which in tend can improve growth outcomes. The non-significance of this variable could also be explained by the fact that the type of investment undertaken works though a feedback mechanism such that there is no significant direct impact. The error correction models is significant and have the expected negative sign and a coefficient of -1.179 indicating that the error correction term converges to equilibrium at the speed of 11.8 percent.

6. Conclusion

In this paper, we have employed econometric techniques beginning with time series analysis to determine the impact of economic policy on economic growth in Cameroon. In particular, we examine the stability of long run growth in Cameroon. We perform the test by ADF and PP and then a cointegration test is conducted and the error correction model is estimated. The study finds two interesting results. First, capital stock and economic growth are positively related. Second, higher levels of inflation rates are harmful to economic growth. The policy implications are that although some level of inflation is needed for growth, keeping it steady and low could lead to faster economic growth in Cameroon. Also policies that increase current account balance could significantly promote output growth.

7. References

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8. Foot notes

[i] The growth rate is dictated by the natural growth rate, which depends in turn on the growth of labour supply and technical change. Labor supply is principally a function of the growth of the population and technical change that may result from fortunate discoveries and inventions.

[ii] Human capital is incorporated in the production function on the assumption that worker productivity can grow without bound in the absence of technical progress. Also, based on the theory of endogenous growth, it is hypothesized that technological progress with growth rate expressed as $G_A = \Delta log A_t$, is driven by economic policies and also the average level of human capital.

[iii] Xit comprises variables such as inflation rate, government expenditure as a share of GDP, fiscal balance, b current account balances and all other economic and institutional variables embodied in A.