

## “External Debt, Domestic Investment and Economic Growth in Cameroon” A system Estimation Approach

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**Abstract.** The feedback of external debt on economic growth through gross domestic investment has provided quite interesting results throughout the world especially in developing countries where external and internal borrowing have been a tradition. Based on a system estimation approach, using Two Stage Least Squares as an estimation technique in the case of Cameroon for a period of 34 years (1980-2013), the results reveal that while domestic investment increases economic growth, external debt retards economic growth in Cameroon, revealing the influence of debt overhang. It was therefore concluded that external debts adversely affect economic growth in Cameroon and thus, as a major recommendation, the authorities are expected to improve on the performance of external debt through proper debt management, a complete debt relief and using the debt in productive sectors for production of goods and services.

**Keywords.** External debt, Domestic Investment, Economic growth and productive sectors.  
**JEL.**

### 1. Introduction

Developing countries especially those of Sub-Saharan Africa averagely last witnessed significant and consistent economic growth in the early years of their independence (World Bank, 2004) when many of them succeeded in expanding basic infrastructure and social services among others. It was hoped that much progress will be achieved in terms of raising the average income per head and improving on the general welfare of Africa following the average growth in real per capita income of about 3.8 % per annum between 1967 and 1970 (Mbanga, 2008). However, this historical progress has in the recent past witnessed falling income per head, rising hunger, and accelerating environmental degradation (IMF, 2006). These are all indicators that the situation of economic growth and social welfare has changed from better to worse over time.

Many scholars have argued that the most serious problems confronting many developing countries, especially those of Sub-Saharan Africa (after the failure of the Baker and Brady plans) are the burdens of external debt. Africa's external debts are now widely acknowledged to be unsustainable, and these countries have been

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intensifying their search for durable solutions in which the contractual debt could prove sustainable growth. Over the years, African external debts have increased from \$289 billion in 1991 to over \$314 billion in 1995. Sub-Sahara African external debt alone rose from \$194.7 billion to \$223.2 billion over the same period, and from over 239 percent to almost 270 percent of the value of export earnings. Sub-Saharan Africa's arrears on external debt servicing have nearly doubled from \$32.6 billion to \$62.2 billion in the 1991 - 94 periods (UN, 1996). Given the above, a vicious cycle of over indebtedness, balance of payments deficit, and slow rate of economic growth are seen to be the dominating occurrence in all African economies giving rise to social and political tensions. This trend is not different in Cameroon.

After Cameroon's independence in the early 1960s, one of the objectives of the independent government was to ensure not only double digit annual real economic growth rate but one that can be sustained over a long period of time. To achieve this, the government designed the five-year economic and social development plan in 1961 to re-inforce and guarantee sustainable growth of the national economy in terms of increase in real Gross Domestic Product (GDP). The five-year Development Plan that was introduced in 1961 was terminated in 1985 although it was seen to have put the economy of Cameroon in a positive track over the period of its implementation. Replaced by the budgetary planning in the late 80s (Ministry of Economic Affairs and Planning, 1988) things have never been the same in Cameroon. For example shortly after 1985, precisely in 1988/1989 was the introduction of the Structural Adjustment Programme (SAP), followed by the devaluation of the FCFA in 1994 after the deduction of civil servants' salaries by 50%. Between 1989 till date, the balance of payments has maintained dominated years of deficit. This is matched by growing external debt or external debt servicing which have exerted significant burdens on export earnings among others (Forgha, 2010). In both the five-year development planning and the budgetary planning, the government needed sufficient funds for investment to ensure the growth of the domestic economy. This is in line with the complementary school who considered domestic savings to be inadequate for total domestic investment to effectively provide for the needed growth of the third world countries. According to this school, the short fall is complemented by financial resource from abroad either through external borrowing or aid from foreign governments, international donor organizations, international financial institutions and/or aid agencies (IMF, 2002).

The total external debt of Cameroon was seen to be unsustainable around the late 1980s following heavy dependence on external resources to run the economy (Mbanga and Sikod, 2008). This increased the burden on the economy and there was little or no funds to continue servicing the debt, not to talk of paying back the principal. The donors were left with no option than to reschedule and/or cancel most of the outstanding debt for countries that met some criteria set out by the donors such as establishing a track record of reforms aimed at reducing poverty in the heavily indebted countries (Ntangsi, 2008). It was also within this thinking that the International Monetary Fund (IMF) and the World Bank proposed structural reforms through the Structural Adjustment and Stabilisation Programmes as a better and long term solution to the problem of economic growth and development in the indebted countries, Cameroon inclusive. This policy package insisted on privatization and the liberalization of the economies of the indebted countries and gross reduction in public spending (ADI, 1996).

One of the major aims of SAP was to establish a long run sustainable economic growth path for the economies concerned. By 1988, this program was still to yield the expected results as the economy's continued to contract external debt

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drastically with -2.8% growth rate of GDP (Forgha, 2008). The progress towards improving the wellbeing of the population and more especially meeting their basic needs were highly compromised and many doubted the effectiveness of SAP in reducing poverty as more than 40% of the population remains below the poverty line (Molem et al, 2009).

By 1996, Cameroon was admitted into the Heavily Indebted Poor Countries (HIPC) Initiative designed by the World Bank and the IMF in which some of her bilateral and multilateral debts were cancelled. After the implementation of the IMF and World Bank supported economic and governance programs, Cameroon reached the decision point (D.P) by 2006 and the completion point in 2006 in which more debt relief were granted. Canada and the United Kingdom agreed to cancel 100% of debt owed them by Cameroon. The IMF and the World Bank significantly reduced the external debt and debt burden of Cameroon by 1997 (PRSP, 2005).

Between the period 1970 and 2003, the total external debt of Cameroon increased from 14.23% to 96.3% of Gross Domestic Income (World Bank, 2012). As from 2005, and following progress in the debt reduction, rescheduling and cancellation initiative by the donor community, the total debt of Cameroon began to reduce gradually. In 2008, the external debts Cameroon owed the respective donors were only about 1.438 billion US dollar, close to 50% reduction from the 1980s levels. The average Gross Domestic Product (GPD) of Cameroon in real terms has been on the increase since 1970. The real Gross Domestic Product by 1980 was 1410 billion FCFA and by 2008, it stood at some 2840 billion FCFA (Statistical yearbook, 2008).

After benefiting from all the various relief efforts such as Toronto (33%), London (50%) and Naples (67%), amongst others, the economy is still growing at an infinitesimal rate, implying high rate of poverty and inequality. The World Bank group promised to reduce Cameroon's external debt by US\$179 million over a 12 year period. In late 2006, Cameroon finally reached the completion point of the HIPC Initiative and expectations were really high as many Cameroonians believed their average income per head were to significantly increase.

A careful examination of the economy of Cameroon alongside external debt, and economic performance is a paradox. It is clear that Cameroon has been borrowing externally for more than thirty nine years and, more than 40% of Cameroonians are still living in abject poverty as a result of low investment leading to slow economic growth and development (Molem et al., 2009). Their real per capita income since 1970 has either declined or remained relatively stagnant. The Cameroon government has also joined the international communities in an attempt to facilitate economic growth and development in Cameroon through enacting several laws and degrees to encourage domestic investment and foreign capital inflow which includes the Structural Adjustment Programme (SAP) of (1988/1989), the 1990 investment code, amended in 1994 and, the convention of Investment Guarantee Agency of April 12th, 1988. Bilateral investment treaties for the protection and promotion of investments signed in Italy 1996 and the HIPC initiative. Evidence drawn from the economy of Cameroon shows an inconsistent link between external debt, domestic investment and economic growth. While there are years which report increased external debt simultaneously with domestic investment and economic growth, others reveal a mixed conclusion. For example in 1992, external debt increased by 7.5% where real per capita income at constant 1980 prices increased by 6.4% through 1.8 increase in domestic investment. This same external debt in 1998 increased by 11.3 percent with domestic investment increasing only by 1.79 percent and real per capita income falling by 1.2 percent taking 1980 as the base year. Numerous studies have been conducted in Cameroon

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and other countries in the areas of external debt and debt related issues among which are those of Forgha (2010), Forgha et al (2009), Mbanga and Sikod (2008), Karagol (2008), Folorunso and Felix (2008), Molem et al (2009), Ntangsi (2009), Dobdinga (2004), Ramesh et al (2008) Andrea (2007) e.t.c. While some of the above listed studies have adopted the descriptive approach to the study of external debt, some have employed quantitative approach of single equation approach. Therefore the expected outcome of this study is unique. It has not only adopted the system estimation approach, it has also tested the causality between the variables under investigation. While this work has cited just few, there are many years between 1980 to date that this inconsistency exists. It is based on the above that this work is designed to provide answers to the following questions; what are the determinants of economic growth, external debt and domestic investment in Cameroon? What is the nature of the impact of external debt on domestic investment and economic growth in Cameroon within our period of study? Finally but not the least, what is the nature of the causality between external debt, domestic investment and economic growth in Cameroon within our period of study?

Furthermore a lot of studies have been conducted in this area in Africa and beyond with mixed conclusions, some of which include the works of Abid et al. (2008), Pinto (2005), Karagól (2006), Maureen Were (2001), Ramesh (2008), Augustin (1996), Geske and Niels (2001), Andrea (2005) and Athanasios (2007). However, from the foregoing we observed a series of limitations, with these previous studies which drew their conclusion from the use of OLS, pair wise correlation, non linear Co-integration, and panel data, the dynamics expected from external debt and economic growth have not been clearly examined. Some of the studies are also cross sectional which failed to provide specific information of the countries. Apart from the policy contents of such studies, a study on external debt, domestic investment and economic growth is challenging in its own right in the sense that it is like searching for the unknown and finding out what is supposedly gained by a country from debt cancellation. This study should therefore, be seen as an important attempt to fill the gap in the empirical literature. Therefore, this work is expected to add value to the existing work in the sense that we have used the Two Stage Least Squares (2SLS) technique in estimating the parameters of the coefficient because this technique is suitable for data analysis in developing countries and Cameroon in particular. The rest of the paper is organised as follows; the second section looks at the empirical and theoretical literature, followed by the methodology in section three, section four deals with the summary of empirical results and section five involves policy recommendations and conclusion.

## 2. Literature Review

The relationship between external debt, investment and economic growth has been established in many studies. That is over the years studies have established mixed conclusions either positive, negative, mixed and inconclusive results linking external debt through investment to economic growth. Abid et al. (2008) in a study of the impact of external debt on economic growth in Pakistan observed that excessive debt can improve on the economic growth of a country by increasing the productivity of labour and capital resources especially in the short run. However, they commented that debt servicing resulting from excessive debts is negatively related to the economic growth of Pakistan. Other research findings with similar effect such as Indermit and Pinto (2005), Karagól (2006), Maureen Were (2001), Ramesh (2008), Augustin (1996), Geske and Niels (2001), Andrea (2005) Athanasios (2007), Mbanga & Sikod (2008), Henrik (2001), and Eduardo (2007) have also participated in the debate.

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Mbanga et al, (2006) equally observed that excessive debt affects a country's economic development in a number of ways. Firstly, the large debt service requirements dry up foreign exchange and capital, because they are transferred to lenders to payback principal and interest. A country benefits only partially from an increase in output or exports because a growing fraction of the increase gets used to service the accrued debt. Secondly, when the debtor countries are unable to fulfil their debt service obligations promptly, they are considered high risk countries and they find it difficult to borrow. As a result, they have to pay high interest rates to obtain new credit. Thirdly, the accumulation of debt causes a reduction in an economy's efficiency, since it is difficult to adjust efficaciously to some shocks and international financial fluctuations. Finally, to save more foreign exchange so as to meet debt obligations, many debtor countries cut down on imports and restrict the quantity of goods available for citizens.

Folorunso and Felix (2008) examined the impact of external debt on economic growth in Nigeria and South Africa and came out with mixed results. Using annual data for the two countries and based on regression analysis, observed that while debt service ratio aided output growth in Nigeria, it compresses output growth in South Africa. Their explanation was that while Nigeria was repaying only a tiny portion of her external debt, South Africa was repaying its debts conscientiously. They, however, made it clear that although debt service seems to have a positive link with output growth in Nigeria, the more serious the debt, the more likely it is to compress output growth. Other mixed results are as follows; Tito et al. (2005) and Pushpa (1994).

Studies investigating the link between external debt and growth place a strong emphasis on the role of investment. Large debts are typically expected to lower growth through the channel of reduced investment which is usually described by the debt overhang hypothesis. Claessens (1990) shows that the burden of large debt sooner or later can lead to extreme scarcity in liquidity, negatively impacting upon capital formation, economic growth. The incentive effect of this hypothesis refers to the low public and private investment because large share of the resources is transferred abroad for debt servicing. Also, Agenor and Montiel (1996) show another stand of the debt overhang theory by emphasizing the fact that large debt increase expectation that debt services tend to be financed by distortionary measures. Serven (1997) explained that under such uncertainty, private investors prefer to exercise their option of waiting and may choose to invest less or resort to transfer their money abroad.

In an attempt to have an in-depth knowledge of the place of external debt and domestic investment in Cameroon economic growth, and beyond requires the critical examination of some external debt, investment and economic growth theories. This include the Augmented Harrod Domar model which attempts to measure the rate of growth of income that is capable of equating aggregate demand to aggregate supply in an economy. It also attempts to determine the rate of investment necessary to make the increase in income equal to the increase in the productive capacity so as to keep the economic resources fully employed. In putting forward this model, Harrod – Domar assumed that; there are no time lag between investment and the creation of productive capacity and that the market works automatically. This means an instant increase in investment is translated directly to increase in productive capacity. The general price level is fixed, and therefore the nominal and the real income are equal. There is no depreciation, implying that capital goods have constant return to scale. Interest rate remains stable and savings and investment relate to the same period, that is, the amount saved today is invested today. The theory also assumed two sector economy on the

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bases of which the equilibrium condition establishes that aggregate demand is equal to aggregate supply thus

$$I = S \quad (1)$$

Where S is savings and I is investment

Equation 1 reveals that the amount of savings in an economy should be equal to the amount of investment in that economy for a stable growth. Harrod and Domar were, however, concerned with the rate of investment that is needed to translate the increase in income to productive capacity, so as to maintain full employment. To achieve this desired growth rate, the amount of saving must be made proportional to the change in the level of income.

$$\zeta = \Delta Y \quad (2)$$

Where  $\zeta$  = the national saving ratio or the marginal propensity to save and  $\Delta$  stands for change. Since new stock or investment is translated to productive capacity (capital), it means that

$$I = \Delta K \quad (3)$$

Since K, which is the capital stock has a direct link with the level of income, it means that  $K/Y = K$  and consequently,

$$\Delta K/\Delta Y = Y \quad (4)$$

Combining equations 1, to 4, which is not based on any mathematical logic Harrod–Domar arrived at  $I = \Delta K = K\Delta Y$  such as  $\zeta = \Delta Y = K\Delta Y = \Delta K = I = K$ . The Harrod-Domar (H-D) model derived as:

$$S_y = K\Delta Y \quad (5)$$

Dividing both sides of 5 by Y and K, we arrive at

$$\zeta Y/KY = K\Delta Y/KY = \zeta/K = \Delta Y/Y \quad (6)$$

hence

$$\zeta/K = \Delta Y/Y \quad (7)$$

Equation 7 says that the rate of growth of output is determined by the national savings ratio and the national capital output ratio. The rate of national growth in other words is directly and positively proportional to the national saving ratio and inversely proportional to the capital output ratio. In (7),  $\Delta Y/Y$  is known as the desired or warranted growth rate of the economy. This model reveals that the rate of growth of national output as seen in 7 is positively related to the saving ratio ( $\zeta$ ) and negatively related to the capital output ratio (k).

The theory suggests that for economic growth, the rate of savings must be positive and rising. Since most developing countries have a negative attitude towards savings, there is a need to borrow in order to complement the domestic savings for economic growth. This model assumes an initial full employment level of income, no government involvement and closed economy. Many nations today suffer from different forms of unemployment such as seasonal, structural or demand deficient amongst others. There are no closed economies in the real world today. Even crimes prone nations still find supporting partners in their crime. Nations are increasingly interrelated under the influence of ‘strong’ governance. However, a failing government like that of Sudan still borrows externally to finance projects that can generate economic growth which is sustainable. Hence the H-D model sees borrowing to be complementary to domestic savings all of which are seen as engine to economic growth. This theory like those of the Big Bush, Minimum investment requirement, Linear Stages of economic growth by W.W Rostow, Aurthor Lewis and Fei – Renis excess labour supply emphasised the role of investment through saving for development.

Next is the Two-Gap Model (2GM) which expands out of the adaptation of Harrod- Domar growth model to the open economy by planners. This two-gap comprises of the foreign exchange gap and the domestic savings gap. Hollis and others concur that domestic savings and foreign exchange gaps are separate and

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have independent constraints towards achieving growth in the LDCs. To fill these gaps, Chenery sees its expedients to source for foreign aid in order to achieve economy's target growth rate. To explain this phenomenon, the national income accounting identity is employed thus:

$$E = Y = I - S = M - X = F \quad (2)$$

Where; E = National Expenditure, Y = National Output or Income, I = Investment, S =Savings, M =Import, X = Export and F =Capital inflow.

Hence, foreign aid eliminates foreign exchange gap by allowing new investment project, importing plant and machineries, technical assistance and intermediate goods. In the long run, the foreign aid needs to be equals the difference between increase in investment and savings increase caused by increasing income. The elimination of savings gap brings about sustained growth rate. The vital issue is how beneficial or detrimental foreign aid is to the growth of LDCs. Appropriate utilization of foreign aid enhances rapid growth of a debtor country. This reflects through increase in investment level at a faster rate than it could otherwise have been, if the source of investible funds were to be domestic savings of the recipient country. Also, the size of the rate of investment increases depending on the assumed savings function.

On the other hand, foreign loan could be detrimental if it is spent on unproductive investment like political campaign, buying and maintenance of luxuries cars, houses etc at the expenses of necessities and consumption not likely to raise enough funds for debt servicing.

The theory of deficit financing was developed by W.W. Rostow who made emphasis on the structural changes needed to create the conditions necessary for economic growth to occur. He made it clear that the industrialised countries have reached the stage of high mass consumption and to arrive at this stage nations need to go through a series of stages of growth, the most important of which is the take-off stage. For this take-off stage to be attained, sufficient amount of resources are required. Developing countries where Cameroon belongs lack the sufficient financial and technical resources needed for the take-off stage into the self sustaining growth stage. In this theory Rostow recognises the need for these countries to borrow from external community in order to attain the self sustaining growth stage which will go a long way in reducing poverty. According to him external debt and other forms of external financing are needed only in the period prior to the take off stage.

Unfortunately for Rostow, many countries of the world have increase their rate of investment by over 30% of GDP and are today still languishing in abject poverty (World Bank, 2007). Thus increasing the level of investment is not a sufficient condition for economic take-off into sustaining growth. Here what matter is the nature of investment, who is making the investment and the purpose of the investment. If the investment is carried out by the government for political reasons (such as buying of party uniforms, importation of expensive cars, and celebrating weddings and birth day abroad just to name a few) such cannot impact significantly on economic growth. Investment through contract system where most of the contractors are foreign, the full gain of such contract are not home consumed.

The debt overhang theory or Hypothesis shows the link between the total amount of external debt and economic performance of an economy and hence increasing the poverty situation in the country. According to it, accumulated debt stock reduces economic performance through what the proponents called 'debt overhang' effect including tax disincentive especially on investment and macroeconomic instability. This hypothesis makes it clear that with very high level of external debt, the government has no incentive to carry out macroeconomic reforms and good policies as such the prevalence of poverty. Since the return of

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these reforms will only be used to repay outstanding debt. The proponent of the debt relief for the Heavily Indebted Poor Countries (HIPC) assumed that high levels of external debt may have a negative impact on economic growth as explained by the debt overhang hypothesis.

Several investments theories exist, though the neo – classical accelerator investment model have generally gained more acceptances among economists. According to this theory, investment occurs to enlarge the stock of capital to produce more output. Under this framework, the decision to invest is to correct any discrepancy between desired capital stock and actual capital stock.

$$k = a\theta Y_t - (1 - \theta) k_t - 1 \quad (9)$$

The above modification shows that the volume of investment is not only adjusted to current output, but it is also influenced by previous output with falling weight. Simplifying,

$$I_t = a_0 (\theta Y_t - k_t - 1) \quad (10)$$

Although this model has been widely applied in the developed countries, it is of little relevance to developing economies such as Cameroon because of its underlying assumptions (e.g., existence of perfect markets) and lack of reliable data on capital stock. Consequently, empirical determinants of FDI in developing countries have employed different variables (e.g., growth of real income, credit availability, cost of capital, investment expectations by investors and investment profitability, which reflect Keynesian and neo-classical theoretical insights.

### 3. Methodology

This study employs time series data over a period of 44 years between 1970 and 2013, inclusive. The reason for the choice this time frame is based on data availability and that the government of Cameroon has made significant effort between the late 1970s and the early 1990s to stimulate the growth of the economy through excessive borrowing caused by the economic crisis. Most of Cameroons external debts were contracted during this period. This study makes use of secondary data from World Bank statistics, African statistical yearbook, IMF publications, and the National Institute of Statistics and BEAC statistics, to capture the cause-effect relationship between the variables under consideration hence this study has adopted the ex-post factor research designed.

Given the behaviour of economic variables, it would not be appropriate to carry out a study of this nature with the help of a single equation. Thus, three equations are formulated which include; the economic growth, the external debt and the gross domestic investment equations. The choices of these three equations arise from the fact that most externally borrowed funds go for investment for economic growth purposes. These equations are presented thus;

*The Economic growth equation:* Theoretically, investment as well as purposeful borrowing is expected to improve on the economic growth of a nation. Continuous and regular servicing of debt has an effect on the rate of growth of real output through the crowding-out effect on investment. Growth in population, not leaving out the quality and quantity of manpower is a major source of growth in the modern economy. As times series data which are subject to trend, cyclical and seasonalisation variations, it is necessary to difference the time series if proved not to be stationary at level. We also intend to log the non-ratios variables in order to interpret them as elasticities. Given that export as well contributes significantly to promoting and sustaining the growth of output, the economic growth function can be presented thus;

$$GDP = f(GDI, POP, XDEBTEX, XDEBTS, XPORT)$$

The function in an econometric equation is given as



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$$\Delta LGDP = A_0 + A_1 \Delta LGDI + A_2 \Delta LPOP + A_3 \Delta LXDEBTX + A_4 \Delta LXDEBTS + A_5 \Delta LXPORT + U_1 \quad (11)$$

A priori:  $A_0 \neq 0$ ,  $A_1 > 0$ ,  $A_2 > 0$ ,  $A_3 > 0$ ,  $A_4 < 0$ ,  $A_5 < 0$ ,  $A_6 > 0$ .

*External debt function*

$$XDEBX = f(GDI, XCHR, FISDY, GDS, IR, TOT, GNPk)$$

In econometric form we have;

$$\Delta LXDEBX = B_0 + B_1 \Delta LGDI + B_2 XCHR + B_3 FISDY + B_4 \Delta LGDS + B_5 \Delta LIR + B_6 \Delta LTOT + B_7 GNPk + U_2 \quad (12)$$

A priori:  $B_0 \neq 0$ ,  $B_1 < 0$ ,  $B_2 < 0$ ,  $B_3 > 0$ ,  $B_4 < 0$ ,  $B_5 < 0$ ,  $B_6 < 0$ ,  $B_7 < 0$ .

*Gross domestic investment function*

$$GDI = f(POP, XDEBTS, FISDY, RR, NFF, PPXP, TAX, INFLA)$$

Econometrically,

$$\Delta LGDI = C_0 + C_1 \Delta LPOP + C_2 \Delta LXDEBTS + C_3 FISDY + C_4 RR + C_5 NFF + C_6 PPXP + C_7 \Delta LTAX + C_8 INFLA + U_3 \quad (13)$$

A priori:  $C_0 \neq 0$ ,  $C_1 > 0$ ,  $C_2 > 0$ ,  $C_3 < 0$ ,  $C_4 > 0$ ,  $C_5 > 0$ ,  $C_6 < 0$ ,  $C_7 < 0$ ,  $C_8 < 0$ .

GDP is the economic growth, measured as increase in the real gross domestic product of the economy of Cameroon over time, XDEBTX is the external debt of Cameroon as a ratio of the GDP, GDI is the gross domestic investment of Cameroon between 1970 and 2013, POP is the growth rate of the population, representing the percentage of total trained labour that participate in formal production activities, XDEBTS is the external debt servicing of the economy over the period of study, XPORT is the volume of export of the economy, XCHR is the exchange rate of the FCFA in terms of the dollar, TOT is the terms of trade of the economy, FISDY is the Fiscal deficit, standing for the difference between government revenue and expenditure, GDS is the gross domestic savings of the economy, IR is the real interest rate of commercial banks, GNPk stands for the per capita income of the economy, NFF is the net financial transfer or flow as a ratio of the GDP of the economy, PPXP is the principal debt service payment as a ratio of the volume of export, TAX equals the rate of taxation in the national economy over the years, INFLA is the rate of inflation measured as changes in the consumer price index, and RR stands for the rate of return on investment project.  $A_0, B_0, C_0$  are the respective constant terms,  $U_1, U_2, U_3$ , the respective stochastic or error terms with the assumed normality.  $A_1$  to  $A_6$ ,  $B_1$  to  $B_7$  and  $C_1$  to  $C_8$ , are all coefficients of the parameters to be estimated, as stated by the Gauss-Makov theory.

Equation 11 is the economic growth equation which is rooted on the Augmented Harrod-Domar growth theory, the Two Gap model and other related theories (not specified due to space). It postulates that economic growth in Cameroon depends on the growth of domestic investment, the growth rate of the population, the labour force participation rate, and debt indicators like the debt to GDP ratio and the debt service ratio as well as export. Increase in external debt, according to the neoclassical debt growth theory, is expected to come with economic growth.

Equation 12 is the external debt equation with the proposition that external debt is influenced by the exchange rate, the level of investment, fiscal deficit, the saving rate of the national economy, the interest rate and the terms of trade of the economy.

Equation 13 is the gross domestic investment equation, relating the level of investment to the cost of capital, fiscal deficit, net financial flows, the tax rate, the population growth rate, the inflation rate as well as the principal repayment of debt as a ratio of the export of the economy and debt servicing.

In order to choose the method or technique for estimating equations 11, 12 and 13 above, the identification condition of the model was established. This identification is determined by exploring the relationship between the number of

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equations in the system (G), the total number of dependent and independent variables included in the model (K) and the number of variables in each equation (M) (Kutsoyiannis,1977). Based on the order condition for identification, the above structural equations are over identified. Technically,  $K - M > G - 1$ . This means that the system of equations cannot be systematically estimated using the Ordinary Least Squares or the indirect least square technique because it would not yield unique estimates of the structural parameters. The rank condition also confirms this over identified state of the structural equations above.

Thus in this study, the Two Stage Least Squares (2SLS) has been adopted as a technique for estimating the parameters. In this method, the classical Least Squares technique is applied to two types of function which include the reduced form and the transformed structural equations. These transformed equations consist of the replacement of the endogenous or explanatory variables by the estimated values obtained from the reduced form equation. However, the E-views package provides a direct way of estimation the Two Stage Least Squares results whereby the reduced form is generated automatically. For optimal result, the error term for both equations must have a zero mean, constant variance, zero covariance, the explanatory variables must not be perfectly multi-collinear and macro variables must be correctly aggregated. Kutsoyiannis (1977) also cautioned that the time frame for such study must be greater than the total numbers of explanatory variables and also that  $N-K$  must be greater than 30. Based on this, the result obtained from the Two Stage Least Squares technique is assumed to be asymptotically unbiased, that is, as the sample size increases, the bias reduces towards zero. Before running the two stage least square regression, the variables of each of the models are subjected to test of inclusion variable. The estimated parameters have also been validated based on economic theories, statistical criteria, and the econometric second order condition. Stationarity test has been conducted based on the proposition that the Cameroon economic terrain is unstable with large informal and irrational behaviours such as corruption, embezzlement, amongst others. While the economic a priori expectations relate the result to traditional economic theories, the econometric test is merely concerned with the reliability of the result, based on the signs and the magnitudes of the parameters estimated.

### 4. Presentation and Discussion of Results

Before presenting the result, we carry out a trend analysis of the entire variables understudy and observed that the variables have stochastic trend with drift over our period of study (1970-2013). Hence, testing for stationarity of the variables without trend but with drift strongly support the hypothesis that the variables used in our models are non stationary at levels but they achieve stationarity after their first difference as seen from the unit roots test (Augmented and Phillip Peron tests) not presented here because of space. As presented in the final equations, the variables are differenced in order to subject them to stationarity and we have equally applied partial logarithmic to non-ratio and non-negative variables in order to interpret their coefficients as elasticities.

$$\begin{aligned} \Delta \text{LogGDP} = & 43970 + 2.1782\Delta \text{LogGDI} - 16.462\Delta \text{LogPOP} - 0.00113\Delta \text{LogXDEBTS} + \\ & (0.004)^* \quad (0.0146)^{**} \quad (0.0032)^* \quad (0.8432) \\ & 0.1095\Delta \text{LogXDEBTS} + 1.5536\Delta \text{LogXPORT} \\ & (0.8432) \quad (0.0018)^* \\ \text{Adj } R^2 = & 0.6436 \quad \text{F-stat} = 16.53 \quad \text{Prob(F-statistics)} = 0.0000 \\ \text{DW} = & 2.2242 \end{aligned} \tag{14}$$

$$\Delta \text{LogXDEBTS} = 5.6527 + 0.00272\Delta \text{LogGDI} + 0.0074\text{XCHR} - 0.1037\text{FISDY} -$$

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$$\begin{aligned}
 & (0.0007)^* \quad (0.0418)^{**} \quad (0.0052)^* \quad (0.0482)^{**} \\
 & 0.0008\Delta\text{LogGDS} - 0.0639\Delta\text{LogIR} - 5.62\Delta\text{LogTOT} - 0.00228\text{GNPK} \\
 & (0.4719) \quad (0.240) \quad (0.005)^{**} \quad (0.6368) \\
 & \text{Adjus R}^2 = 0.42151 \quad \text{F-stats} = 8.0737 \quad \text{Prob(F-statistics)} = 0.00007 \\
 & \text{DW} = 1.1810. \tag{15}
 \end{aligned}$$

$$\begin{aligned}
 \Delta\text{LogGDI} = & -1016.4 + 38.167\Delta\text{LogPOP} + 0.0532\Delta\text{LogXDEBTS} + 14.265\text{FISDY} + \\
 & (0.000)^* \quad (0.000)^* \quad (0.7135) \quad (0.1865) \\
 & 18.0499\text{RR} - 7.1123\text{NFF} - 0.0019\text{PPXP} + 2.6216\text{TAX} - 7.9588\text{INFLA} \\
 & (0.2445) \quad (0.0066)^* \quad (0.3496) \quad (0.0000)^* \quad (0.5091) \\
 & \text{Adjust R}^2 = 0.8912 \quad \text{F-stat} = 45.0721 \quad \text{Prob(F-statistics)} = 0.00000 \\
 & \text{DW} = 1.5028 \tag{16}
 \end{aligned}$$

**Notes:** Computed by the authors from the two stage least square. Note that the values in parentheses are the probability t-statistics; \* = significant at 1%; \*\* = significant at 5%; \*\*\* = significant at 10%.

From equation 3.1 (the economic growth equation), GDI and export positively affects GDP over our period of study. This follows that a percentage increase in GDI and XPORT in Cameroon will increase GDP by 2.178 and 1.553 percent and this significant at 5percent and 1 percent respectively. It can also be infer from the economic growth equation that the rate of population growth (POP) negatively affects GDP in Cameroon. With a coefficient of negative 16.462, it denotes that an increase in the rate of population growth will reduce GDP in the country by 16.46 percent and this is significant at 1 percent. This implies that the increase in population has further deepened the social inequality in the country due to unemployment and under employment which has also increase the rate of brain drain. This makes it difficult for the population increase to influence economic growth positively. The adjusted  $R^2$  shows that 64 percent variation of GDP in Cameroon is accounted for by the variables used in the model while the remaining 36 percent is explained by the random term. The overall test for significant (F-statistics) shows that the variables in the model can be rely upon for policy making. The test for autocorrelation (DW-test) indicates that our result fall within the region of inconclusive autocorrelation. So we cannot say with certainty that the variables are autocorrelated.

Looking at the external debt equation (12), GDI and XCHR indicates a positive significant impact on XDEBT over our period of study. On the other hand FISDY and TOT negatively affect XDEBT in Cameroon. A unit increase in FISDY and TOT reduce XDEBT by 0.103 units and 5.62 units respectively. The coefficient of multiple determination shows that only 42.3 percent variation in XDEBT is accounted for by the included in the model and 57.7 percent is captured by the stochastic term. The significance of the adjusted  $R^2$  as depicted from the F-statistics confirm that the result is reliable and good for policy making. The DW-test with a coefficient of 1.502 indicates that our result is free from autocorrelation. In terms of model 13 that is GDI equation, it can be infer from the result that POP and TAX has a strong positive significant effect on GDI over our period of study. Specifically, a percentage increase in POP and TAX over our period of study will increase GDI by 38.16 and 2.621 percent respectively. The rise in population is translated into productive labour through adequate training and targeted education system. The NFF shows a significant negative impact on GDI. With regards to its coefficient, a unit increase in NFF will reduced GDI by 7.1123 units. The non-explanatory variables such as political will of the government, level of entrepreneurship, availability of business funding, trust from business partners' e.t.c negatively affect GDI in Cameroon. This implies that these variables not included in this study together have the ability to influence the level of gross

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domestic investment negatively in the economy of Cameroon. Such variables may include the political will of the government, the level of entrepreneurship, availability of business funding, trust from business partners, etc. The adjusted  $R^2$  connotes that 89 percent variation of GDI is explained by the variables in the model and this result is significant as depicted from the probability F-statistics. Again with respect to DW-test, our result is auto correlation free.

The economic growth equation shows that external debt is found not to significantly support economic growth in Cameroon. External debt requires adequate management as it impede on the level of economic growth in Cameroon. This result is consistent with the work conducted by Mbanga G.N. and Sikod F. (2008) and Forgha (2008) in the economy of Cameroon, Maureen W. (2001) in Kenya, Augustin K (1996) in Sub-Saharan Africa, Henrik (2006) and Geske and Niels (2001) in heavily indebted poor countries, Tito C. (2005), Andrea F. (2005), Malese (2005), Athanasios (2007), Ramesh D. (2008) in Africa, Folorunso S. and Felix O. (2008) in South Africa amongst others.

### 5. Recommendation and Conclusion

The major problem with the effectiveness of external debt in Cameroon is that they are not employed in the productive sectors for the production of goods and services that can contribute to the growth of the economy. These resources are either embezzled, or remitted back to the donor country through capital flight and foreign direct investment. Even the little amount that remains in the economy is invested into sectors that do not significantly influence the aggregate level of production such as sports. A lot is spend on man power training which is equally match with high rate of unemployment, underemployment and brain drain.

From empirical evidence, most investment projects in the economy of Cameroon are not properly appraised. This is justified by the many abandoned projects in the economy especially those of the public sector. According to the result, investment affects economic growth positively. Thus, carefully and well appraisal of investment project will reduce the rate of abandonment and consequently increase the country's economic growth of Cameroon.

The government should limit the contraction of new debts while investing the already contracted debt as well as debt relief funds in the real sector of the economy. While proper management of existing debt is required, a complete debt relief is necessary for the economy of Cameroon if sustained economic growth is to be achieved.

The government should focus on investment in real sector of the economy such as the industrial, agricultural, infrastructure, education, energy and health which will act as catalyst for the national development. In fact industrial development should attract more than 25 percent of the national budget followed by infrastructure with 20 percent and education with 19 percent as observed from the results. In this case, expenditure on excessive control needs to be reduced in favour of utility created activities.

Investment in education is quintessential given that the coefficient of trained labour force participation rate is positive and highly significant. Education that provides the technical know-how should be encouraged as this contributes significantly to the growth of the economy. Therefore, investment in technical education and certainly the creation of Universities for science and technology in all the ten regions of Cameroon alongside polytechnics are strongly recommended.

The result equally shows that export is a vital factor in promoting the growth of the economy. Therefore, the encouragement of export producing industries either through direct subsidies, tax relief, or the liberalization of the export sector is

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necessary for the economy of Cameroon. More foreign markets should be sought for the sale of our local products. In order to increase the value of our export earning, the primary commodities that constitute more than 60% of our export should at least be processed before exportation. Thus investment in the industrial sector should be taken more seriously. The development of the Douala stock exchange market into a viable financial market is also strongly recommended.

### 6. Conclusion

External debt, domestic investment and economic growth are related to each other. It is expected that when external debt is contracted and invested in the real sector of an economy the resultant outcome is accelerated growth. The contradiction of the results in this work is obvious. However, all hope are not still dampened. There is the need to restore the economy of Cameroon through mental revolution. In this direction development oriented research should attract immediate need and should be complemented by not only external borrowed fund. Thus to stimulate the growth of the economy, attention should be given to the improvement of the gross domestic investment, the level of domestic savings, and exports.

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