

*Full Length Research Paper*

# The determinants of long-term economic growth in Ghana from 1960-2007

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## Abstract

The study sought to discover the determinants of long term economic growth in Ghana. Co integration and an Error-correction model were used to estimate the time series data from 1960 to 2007. The study found that, there was a long run relationship between growth and inflation, government consumption, export and human resource development. While, inflation and government consumption had negative effect on growth, export and human resource development influenced economic growth positively. Government must squarely address macroeconomic imbalances through cutting back on public spending and redefining spending priorities. In addition, inflation must be further reduced, monetary policies tightened and export diversification and value addition should be encouraged. Finally, there is the need to improve the human capital capacity through education and health.

**Keywords:** Co integration, error-correction model, Ghana, long-term growth.

## INTRODUCTION

Economic growth is the key to the prosperity of nations. Countries that have sustained strong economic growth have been able to reduce poverty, strengthen their democratic principles and political stability, improve the quality of their environment, and reduce conflict, crime

and violence ((Barro 1996; Barro 2002; Easterly 1999; Dollar and Kray 2002). Understanding the determinants of past growth, removing the constraints to present growth, and maximizing the prospects for future growth for a country must therefore be a central aim for policymakers.

## LIST OF ACRONYMS

ADF-Augmented Dickey-Fuller, ARD-Auto Regression Distributed Lag, ERP-Economic Recovery Programme, GDP-Gross Domestic Product, HDI-Human Development Indicator, HDR-Human Development Report, ISSER-Institute of Statistical, Social and Economic Research, MoH-Ministry of Health, NHIS-National Health Insurance Scheme, SAP-Structural Adjustment Programme, SSA-Sub-Saharan Africa, UNICEF-United Nations Children Fund

Over the last 40 years, Africa has lagged behind other regions in GDP and per capita income growth particularly since the 1970s. Africa's failure to achieve convergence with the global economic growth and to keep up with the developing world as a whole is captured by the declining share of Africa's GDP in total world output from the already low 1.25 per cent in 1960s to 1.1 per cent in 1997 ( World development report 2000).

The growth record of Ghana has been one of unevenness. With a reasonably high GDP growth in the 1950s and early 1960s, the Ghanaian economy began to experience a slowdown in GDP growth in 1964. Growth

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was turbulent during much of the period after the mid-1960s and only began to stabilize by 1984. In 1966, 1972, 1975-1976, 1979, 1980-1983, the growth rate was negative. The economic status of the country steadily deteriorated in the mid 1970s through to the early 1980s, culminating in the inception of the Economic Recovery Programme (ERP) in April, 1983, with implementation over 1983-1986. The ERP, a market-oriented programme, was intended to halt the downward economic spiral. Starting in 1986, the second phase of reform saw ERP being supplemented with the Structural Adjustment Programme (SAP), geared toward correcting a number of structural imbalances in order to engender a sustained healthy economic growth.

As reported in ISSER (2010) in November 2010, the Ghana statistical service announced the rebasing of the national accounts estimates from the year 1993 to 2006, which called for a revision of GDP in 2006 from GH ₵ 22.598 billion (about US \$16 billion) to GH ₵36.867 billion (about US \$ 25 billion) and also classified the nation as a middle-income country. Thus in 2010, under the rebasing, the economy of Ghana was computed to have grown at 7.7%, as opposed to the 6.5% estimated rate prior to the rebasing (ISSER, 2010). However, it must be noted that Ghana is at the lower level of the middle-income status, which means that a lot more needs to be done. It has been argued that the economy of Ghana could and should grow faster than it has performed if the growth we have realized over the years is to translate into development. Currently, as noted by ISSER (2010), despite the positive growth rates, there are serious problems such as high poverty levels (though there are marginal decreases), acute unemployment and environmental degradation, among others. These are all within the context of a deteriorating external environment (International Development Agency, 2009). Against this background, there is the need for an investigation into the factors that can bring about an appreciable level of economic growth that would ensure that these developmental problems are solved. This study aims at finding out the determinants of long-term growth in Ghana.

## **MATERIALS AND METHODS**

### **Theoretical framework**

Studies on economic growth can be traced back to 1776, when Adam Smith first published his famous treatise, "An Inquiry into nature and causes of wealth of Nations." That is, what determines long-term economic growth rate and hence the prosperity of nations? His contemporaries- the Classical Economists focused on the savings-investment nexus by capitalists, specialization and trade, institutions (property rights, the

market mechanism) as the main forces influencing the growth process. One of the models that recognize the role of savings and investment in determining the growth of a nation is the Harold Dormer model (propounded by two economists-Harold and Dormer). The Harold-Dormer model seeks to explain savings as a determinant of growth. It states that, an increase in savings will lead to an increase in investment (capital formation) and this further leads to growth. Thus, the Harold-Dormer growth model predicts that, the growth rate of national income is directly related to the savings ratio, but inversely related to the economy's capital-output ratio. Harold's original contribution to economic growth, cast the Keynesian short-run equilibrium condition in a long-run setting and asked, among other questions, what, if any mechanisms existed to allow us to suppose that a full employment balanced growth path was either possible or likely? Harold defined the warranted rate of growth ( $g$ ) as that growth rate in which the expectations upon which firms base their investment decisions are confirmed or warranted, by the spending and saving ( $s$ ) decisions of consumers. In order to discuss the issue of full employment in a growth model, Harold defined a natural rate of growth ( $n$ ) as "the maximum rate of growth allowed by population, accumulation of capital, technological improvement and work/leisure preference schedule, supposing that there is always full employment" (Harold, 1939, p. 30).

Solow (1956) criticized the Harold-Dormer model to analyze long-run problems with the usual short-run classical analysis. In his study, Solow, took all the assumptions as given in the Harold-Dormer model except the assumption of fixed proportions of input. At the heart of the neoclassical model lies an aggregate production function exhibiting constant returns to scale in labour and reproducible capital. A crucial property of the aggregate production function is that there are diminishing returns on the accumulation of capital. In other words, each additional unit of capital used by a worker produces a decreasing amount of output. When the marginal product of capital per worker falls to a sufficiently low level, gross investment will be just sufficient to maintain the existing stock of capital. In the steady-state equilibrium, output and the capital stock will both continue to grow, but only at the rate of population growth. The model's implication does not account for empirical evidence of long-term growth. Using this framework, Solow (1957) demonstrated that an attempt to account for decades of US economic growth produced an astonishing residual of approximately 85 percent. Solow attributed most of the residual to technological change. An obvious limitation of the Solow model is its failure in accounting for the causes of technological progress. Although the model shows that technological progress contributes to economic growth, it does not spell out why technological progress takes place. In

other words, technological progress needs to be endogenised. Another issue of the Solow-Swan model is its assumption of constant returns to scale. There is some evidence that suggests increasing returns in long-term economic growth.

The failure of neoclassical models to introduce technological progress in such a way to account for its causes (i.e. endogenise technological progress) is, in large part, due to technical difficulty in dealing with increasing returns in a dynamic general equilibrium framework. Attempts to understand increasing returns have sought their source in technological progress. However, the approach entails technical difficulty if it is to maintain the Walrasian framework of marginal product. More recent attempts to endogenise technological progress were spurred by Paul Romer's two seminal papers (1986 and 1990), by assuming that technology is a public good but the private investment in capital increases the level of technology available to all firms. The externality associated with investment overturns the assumption of diminishing marginal returns to investment. In this model therefore, economic policies that alter the investment rate will affect economic growth.

### Empirical Literature review

The empirical growth literature is reviewed under cross sectional, regional and country specific studies.

Khan and Senhadji (2001) analyzed the inflation and growth relationship separately for industrial and developing countries. What made this investigation particularly interesting from a methodological point of view was the use of new econometrical tools. The data set included 140 countries (comprising both industrial and developing countries) and generally covered the period 1960-98. To test for the existence of a threshold effect, a log model of inflation was estimated. The estimation method used in their case was the non-linear least squares (NLLS). The empirical results presented in the paper, strongly suggested the existence of a threshold beyond which inflation exerts a negative effect on growth. Inflation levels below the threshold levels of inflation have no effect on growth, while inflation rates above the threshold have a significant negative effect on growth.

Dimkpah (2002) analyzed the impacts of export growth and the stage of economic development on economic growth. Multiple regression analysis was applied to estimate the relationship between export and economic growth at various stages of economic development. It was shown that labor investment and exports have varying impacts on economic development at different stages of economic growth.

Dewan and Hussein (2001) used a sample of 41 middle-income developing countries, including Fiji, to

develop an empirical model for growth. Both cross-country and time variation specifics were used in an attempt to explain determinants for sustained economic growth in developing countries. The panel data models were estimated using fixed and random effect techniques. It was found that apart from growth in the labour force, investment in both physical and human capital, as well as low inflation and open trade policies (less trade barriers), were necessary for economic growth. Furthermore, the ability to adopt technological changes in order to increase efficiency was also important.

Fosu (1996) tested the relationship between economic growth and external debt with an empirical study for the sample of sub-Saharan African countries over the 1970-1986 periods by employing the OLS method. This study examined to which degree debt had a negative impact on economic growth of sub-Saharan African (SSA) countries. The study also estimated the direct effect of debt hypothesis and indirect debt hypothesis. The direct effect of debt hypothesis proposed that if debt service payments do not decrease investment and saving levels considerably, then debt negatively affects growth directly by reducing productivity. It was also argued that the direct effect of debt hypothesis suggests that both debt service payments and debt outstanding may affect GDP growth rate negatively even if debt outstanding and debt service payments do not affect investment levels. The results showed that by using a debt-burden measure, direct effect of debt hypothesis reveals that GDP growth is negatively influenced via a diminishing marginal productivity of capital. The study found that on average a high debt country faces about one-percentage reductions in GDP growth rate annually. This explains one-third of all reduction of growth rate in sampled countries.

The study by Block (1998), aimed at investigating whether African countries "grow differently" from those in other regions. He considered whether in Africa the "mechanisms of economic growth operate differently. Using an augmented reduced form growth regression, his growth regression included initial per capita income, life expectancy at birth, a dummy for land lockedness, a political risk index, the overall budget deficit including grants, real investment and the growth rate of the population. Like Sachs and Warner, he concluded that countries in SSA did not grow differently from other countries elsewhere. He found, however, that the factors influencing growth were weaker in SSA. He also found that their effects had been undercut through inappropriate policies and institutional barriers. Blocks concluded that weak institutions (that perpetuate uncertainties and instabilities) and poor policies in SSA had been far more costly in terms of growth than in other regions.

Anaman (2004) analyzed the factors that have

influenced long-run economic growth in Brunei Darussalam using available data from government's archives and publications.

The estimated long-run relationships derived from the optimal ARDL model indicated that total export, government size, government size squared and government size cubed were all statistically significant in influencing GROWTH. As expected for Brunei, annual economic growth rate was strongly influenced by growth of total exports. With total exports largely dominated by oil exports and the relatively constant amount of oil produced in Brunei over the study period due to the conservation policy of the Government, the impact of oil and total exports on economic growth was mainly through world oil prices. All three-government size variables were strongly significant confirming the hypothesized cubic shape of government size impact on economic growth. Very high government sizes led to negative economic growth while moderate government sizes led to increased growth.

Karikari (1995) examined the role of government in economic growth in a developing nation. The analysis was based on data from Ghana, between 1963 and 1984. The model used in this paper distinguishes between the potential positive effects, and the negative effects of government on economic growth, as in Grossman (1988). The empirical results showed that government expenditure was negative and highly significant. This implied that the larger role of government has had negative effects on total output. The variable for the degree of openness of the economy,  $E$ , had a positive effect, which suggest that an open economy was favourable to economic growth. The effect of population used as a proxy for the labour force was negative.

Musila and Belassi (2004) used time series technique to investigate the relationship between government education expenditure per worker and economic growth in Uganda during the period 1965 – 1999. The model used in this paper was based on the aggregate production function. Using logarithmic transformation, the growth of output was a function of growth in capital stock, employment, and average education expenditure per worker. The results indicated that average education expenditure per worker is positively correlated with economic growth. The results have shown that investment matter for economic growth at least in the long run.

Danquah (2006) investigated the sources of economic growth (and decline) in Ghana during the 1960 -2004 period using the growth accounting method. The study showed that capital input and TFP are highly variable factors and both made important contributions to economic growth, thus investment should be directed towards physical capital, human capital and technological development.

Other studies investing specific aspects of economic growth performance in Ghana include Ewusi (1987), Aryeetey et al., (1990), Jebuni et al., (1990), Jebuni et al., 1992 and Barimah (unpublished thesis, 1997)). This present study is superior because of the time frame, the model as well as the method used in analyzing the data.

### Empirical Model for the study

A model similar to that employed by Anaman (2004), in his study of the Brunei's economy is used. In the simple model that is employed in this study all factors of production can be accumulated, which implies that long run growth effects are both from the overall incentive to accumulate capital and from distortion of resource allocation. Thus, fiscal, monetary, exchange rate, trade, financial and political instability variables can affect the steady growth rate. This approach makes it easier to investigate simultaneously the role of various variables that a number of the new growth theories have identified as potential and important determinants of growth. Adapting the neoclassical growth model to the Ghanaian situation and assuming a Cobb–Douglas functional form, the economy-wide production function is stated as follows:

$$Y_t = \beta_0 \exp\left(\beta_1 \frac{G^2}{2} + \beta_2 \frac{G^3}{3}\right) (TEXPORT)^{\beta_3} (TLABOUR)^{\beta_4} (TCAPITAL)^{\beta_5} (INF)^{\beta_6} (DEBT)^{\beta_7} \exp(\beta_8 (POLINS)) \quad (1)$$

where "exp" denotes the exponential operator;  $G$  refers to government size defined as total government expenditures divided by GDP;  $TEXPORT$  is the total annual level of exports;  $TLABOUR$  is the total annual level of labor inputs;  $TCAPITAL$  is the total annual stock of capital inputs;  $POLINS$  is a dummy variable which is a measure of political instability);  $\beta_i$  ( $i = 0, 1, 2, 3, 4, 5, 6, 7$ , and 8) are the parameters to be estimated.

Taking the natural logarithm of equation 1, and then differentiating the derived equation, an economic growth (GROWTH) equation can be derived as shown in equation (2):

$$GROWTH = y = \beta_0 + \beta_1 G + \beta_2 G^2 + \beta_3 (GTEXPORT) + \beta_4 (GTLABOUR) + \beta_5 (GTCAPITA) + \beta_6 (INF) + \beta_7 (DEBT) + \beta_8 (POLINS) \quad (2)$$

Where GROWTH is the annual growth of real gross domestic product; GTEXPORT is the annual growth rate of the real value of total exports; GTLABOUR is the annual growth rate of total labor force; and GTCAPITA is the annual growth rate of the real value of total capital stock.

The empirical model used in the study is described in equation (3) as follows:

$$\begin{aligned}
 GROWTH = & \beta_0 + \beta_1(GOVSIZ) + \beta_2(GOVSIZ2) \\
 & + \beta_3(GTEXPORT) + \beta_4(GTLABOUR) + \\
 & \beta_5(INVGDP) + \beta_6(INF) + \beta_7(DEBT) + \beta_8(POLINS) \\
 & + U \quad (3)
 \end{aligned}$$

$U$  is the error term assumed to be normally distributed with zero mean and constant variance.

From neoclassical growth theory, an increase in investment is expected to have a positive effect on the growth of GDP. Government size measured as the ratio of government consumption to GDP is expected to affect growth rate negatively. Human capital and Openness of the host economy to trade are expected to have direct relationship with growth. Political risk, external debt and inflation are expected to have an indirect relationship with economic growth.

### Data Estimation Procedure

Annual data covering the period 1960 – 2007 from IMF's International Finance Statistics, World Bank's World Tables, Ghana Statistical Service's Quarterly Digest of Statistics and Bank of Ghana's Quarterly Economic Bulletin were used for the study. The data excludes 2008 due to its unavailability at the time of commencing the study. Future work will consider those.

The growth models were estimated using time-series methodology that allows for explicit testing of stationarity of the variables, long-run relationships and short-run dynamics of growth in response to short-run changes of the independent variables. Stationarity of the variables in the growth models were estimated based on the Augmented Dickey Fuller (ADF) test. The first differences of the variables were also subjected to test for stationarity using the ADF tests. The null hypothesis for both tests was that, there was a unit root in the time series. Co integration analysis was also undertaken to determine whether the non-stationary variables had valid co integration relationships among themselves. This analysis is discussed in the next section.

### Co integration analysis – Johansen Approach

Co integration indicates the presence of a linear combination of non-stationary variables that are stationary. In a case where co integration does not exist, it means the linear combination is not stationary and the variable does not have a mean to which it returns. The presence of co integration however implies that a stationary long-run relationship among the series is present. The procedure adopted in this study is a representation of the approach of analyzing multivariate co integrated systems developed and expanded by Johansen and Juselius (1990, 1992, and 1994). Unlike the Engle Granger static procedure, the Johansen

Vector Autoregressive (VAR) procedure allows for the simultaneous evaluation of multiple relationships and imposes no prior restrictions on the co integration space. The Johansen co integration approach tests for the co integration rank for a VAR process, estimates the TRACE and LMAX stats, the eigen values, and the eigenvectors.

### Data Analysis

The time series properties of the data will be established before tests of economic relationships are conducted. The first step will involve testing for stationarity of each data series. The order of integration of a time series is obtained by applying the Augmented Dickey-Fuller (ADF) unit root test and the order of co integration of a vector of a time series by applying the Johansen Co integration procedure.

### RESULTS

The ADF unit root test results in Table 1 indicate that, all the variables are integrated of the order 1 and they are all I (1) variables. This means that, they are non stationary at levels but stationary when the first difference was taken.

The Johansen Co integration tests in Table 2. suggest three co integrating equations at the 5 percent level of significance, meaning that there is a long run relationship among the variables. Usually, when the Johansen Co integration procedure points to multiple co integrating relations, the selection of the co integrating equation to be included in the error correction model (i.e., short run model) is based on the vector that has the right signs as predicted by economic theory.

The estimation of the long run determinants of economic growth through the application of Johansen Co integration test is shown in Table 3.

The result from Table 3 above shows that, investment in human capital development, proxied by total government spending on education and health has a positive effect on growth and was a highly significant determinant of growth in the long run. A 100% increase in human capital development will increase the growth rate by 79.6%.

Inflation has the expected sign of negatively influencing growth rate at 5% level of significance. A 100% increase in inflation is likely to decrease growth rate by approximately 2.8%. A rise in investment as a ratio of GDP has positive effect on growth as would be expected but it is statistically insignificant.

The growth rate of total exports influenced long run economic growth rates positively and it is statistically significant at 10% level. A 100% change in total export

**Table 1.** Unit root Test results

Variable	ADF-Test	Prob.	Order of integration
GROWTH	-5.746	0***	I(1)
GCON	-4.568	0***	I(1)
GCONSQ	-5.608	0***	I(1)
DEBT	-6.512	0***	I(1)
INV	-5.242	0***	I(1)
EXPORT	-6.446	0***	I(1)
HCD	-6.746	0***	I(1)
INFLATION	-7.265	0***	I(1)

\*\*\*Significant at 1% level of significance

**Table 2.** Co-integration test results

Null	Alternative	Statistic	5% critical value
$r = 0$	$r = 1$	100.8771	42.77219
$r \leq 1$	$r = 2$	52.47104	36.63019
$r \leq 2$	$r = 3$	35.00256	30.43961
$r \leq 3$	$r = 4$	19.68055	24.15921
$r \leq 4$	$r = 5$	11.62197	17.79730

**Table 3.** Long run Determinants of Economic growth

Variable	Coefficient	Standard error	t- ratio
HCD	0.7964***	0.14386	5.53594
INF	-0.0281***	0.00321	-8.75389
INV	0.0052	0.01468	0.35422
EXPORT	0.0203*	0.00957	2.12121
GCONSQ	0.0065**	0.00229	2.83843
GCON	-0.1168*	0.05237	-2.23028

would lead to 2% increase in growth rate.

Total government consumption is another measure of distortion in the economy. This has a negative effect on growth in the long run and highly significant. A 100% rise in total government consumption would lead to 11.7% decrease in growth rate. The negative sign as posited by theory is the result of government spending putting upward pressure on wages in the private sector thereby reducing returns to private production and retarding economic growth. The ordinary least square estimates for the error correction model are reported in Table 4.

The estimates for the error correction model show that the coefficient (-0.656) of the error correction term is correctly negatively signed and it is significant at 1% level of significance. It has a high value of about 66% indicating high speed of adjustment to the long run equilibrium after a short run shock.

There is a strong positive correlation between current GDP growth and the previous year's GDP growth as indicated by the t-value. This implies that the rate at which an economy grows this year will determine the rate at which it will grow the following year. From the regression output, a 100 % change in the growth rate of government consumption (as a share of GDP) in the short run results in a 21.1% decrease in the rate of growth in real GDP at 1% significance level which has the same sign as the long run effect.

A three year lagged external debt has a negative effect on the current rate of economic growth, implying that debt accumulation does not augur well for economic growth. This result is in line with that of Fosu (1996). From the regression output, a 100 % change in the growth rate of human capital development (i.e. government expenditure on health and education as a share of GDP) results in a 58% increase in real GDP

**Table 4.** Error Correction Model

Variable	Coefficient	t-Statistic	Prob.
DGCONSQ	-0.027057	-2.515549	0.0175**
DGCON	0.706936	2.503461	0.018**
DINV	0.040536	1.66705	0.1059*
DGROWTH(-1)	0.558672	3.516566	0.0014***
DGCON(-1)	-0.211443	-3.284347	0.0026***
DHCD(-1)	-0.329413	-1.206591	0.237
DINFLAT(-1)	0.13998	1.58369	0.1238
DGCONSQ(-2)	0.002621	1.248493	0.2215
DHCD(-2)	0.584589	2.449385	0.0204**
DGROWTH(-3)	0.246588	1.880464	0.0698*
DGCON(-3)	-0.0714	-1.23185	0.2276
DINV(-3)	-0.04452	-1.656042	0.1082
DDEBT(-3)	-0.012797	-2.087732	0.045**
EC(-1)	-0.656	-4.105401	0.0003***

\* Significant at 10% level \*\*Significant at 5% level \*\*\*Significant at 1% level  
Adjusted R-squared= 0.485 F- statistic = 3.821

growth rate at 5% significance level. A two year lagged government expenditure on human capital development has a positive effect on the current rate of economic growth. Investment rate has a positive impact on growth in the short run; an increase in investment expenditure as a proportion of GDP by 100% has a positive growth effect of 4.1%. This is expected, since investment includes other outlays such as transportation, communication and energy. Investments of these kinds imply positive externalities to private producers since they raise productivity and ultimately enhance economic growth (Barro, 1990).

## DISCUSSION

The need for Ghana to achieve a faster rate of growth cannot be overemphasized, hence the numerous discourse on government's economic agenda. The current growth rates averaging around 5.5% is commendable, at least when compared with the past and experiences elsewhere in Africa. By the rebasing, Ghana has been upgraded to a middle-income status. However, this is at a lower level. There is still much to be done if the country is to get to the upper limit, or even go beyond it. The results of this present study give directions as to what variables must be targeted for policy formulation to ensure more sustained economic growth, and consequently development in the lives of Ghanaians. From the findings, the determinants of long-term economic growth of the Ghanaian economy were Government consumption, inflation, export and human capital development. While government consumption and inflation had negative effects on growth, export and

human capital development were positively related to growth.

As confirmed by our present study, human capital is one of the crucial contributors to the economic development of a country (Ghana HDR, 2007). Education and health are some of the important human development indicators. Musila and Belassi (2004) also found that education expenditure per worker had a positive and significant impact on economic growth, both in the short and long run. The importance of education to social and economic development lies in the fact that it does not only provide knowledge and skills, but it encourages new behavior and increases individual as well as collective empowerment (UNICEF, 2010). The micro and macroeconomic importance of education is well expounded by Hanushek and Wobmann (2007). Ghana is not doing badly in the educational sector; in fact, some analysts believe that the country is able to meet its Millennium Development Goals on education even before the deadline. The problem, however, is that it is only enrolments that have increased (ISSER, 2010) not necessarily the quality of education.

The other aspect of human capital that helps to sustain the economic development of a country is the health of its workforce and general population. A healthy workforce is more productive and can also contribute for a longer period to a country's economic development efforts. The broad goal of health care in Ghana is to improve the welfare of all the people living in the country through increased and sustainable productivity and growth (Ghana HDR, 2007). Since independence in 1957, the government of Ghana has implemented a number of policies aimed at improving the health status of its people. Some of these policies are the Health

Service Act of 1996, the Medium-Term Health Strategy, based on Vision 2020, and the National Health Insurance Scheme (NHIS) that was launched in 2003 (World Bank, 1997; MoH, 2000; GoG, 2003; Ghana HDR, 2007). The latest health policy in the country was launched in 2007. It was designed in the context of the nation attaining a middle-income status by 2015. It should be noted that at the time the rebasing had not yet been done to put the country at a middle-income status. Another feature of this policy is that it “places national efforts within the global context of health development and aims to provide a comprehensive and holistic framework that builds on progress made in previous years” ISSER, 2007, P.184). Thus, as stressed by ISSER (2007) it gives more recognition to health as a core socio-economic developmental factor.

The Ghana HDR (2007), however, laments that despite the considerable investments in the provision of health care facilities, a significant proportion of the people lack access to quality health services and most of the indicators show that health status of the Ghanaian, have not improved significantly. For instance life expectancy at birth has increased from 55 years in 2003 to only 57.9 years in 2006 compared to the world average of 64.3 years in 2006. The Ghana HDR (2007) identifies the factors that affect life expectancy in Ghana as follows: access to affordable and quality health care; access to good drinking water; adequate sanitation; and HIV/AIDS and infant mortality, among others.

In our present study the positive relationship between exports and long-term growth in Ghana is confirmed by Dimkpah (2002) who found that export growth was a positive contributor to economic development both in low-income and middle-income countries. “Ghana’s trade policy objectives since 2004 have been to, among other things, become increasingly involved in regional and global markets, diversifying and strengthening the country’s export base, and promoting agricultural processing” (ISSER, 2007, p.97). This is because, like other Sub-Saharan countries the main problems with Ghana exports have to do with low prices (because of lack of little or no value added) and limited diversification. For instance, between 1986 and 1990 while exports of goods and non-factor services grew at an average rate of over 8% annually, the expected current account surplus of US\$110 million per year was not realised due to deterioration in terms of trade, and especially the steep fall in the international prices of cocoa. Also because of lack of diversification export volumes in 2007 were stagnant. There is the need for more value addition and investments in the non-traditional exports. The discovery of oil should be a big boost, but the contribution from the oil sector would even be greater if efforts are made to do the refinement here in Ghana and the finished product, rather than the crude form, is exported.

Like our study, Khan and Senhadji (2001) also found a negative relationship between inflation and long-term growth. By implication the sharp decline in real GDP in the 1970s and the early 1980s can be attributed in part to the high inflation rates recorded during that period. Inflation has remained one of the intractable problems the Ghanaian economy has faced for a very long time. Having registered low rates of inflation in the years immediately after independence, the country had its first taste of double-digit inflation in 1964. This was followed by a brief period of respite during 1967-71, with inflation below 10% per annum. Between 1972 and 1983, however, inflation was generally high, rising to 123 percent in 1983. Since then, there have been moderate rates of inflation. Since 1992, when the inflation rate was 8.4%, it was in December 2010 that single digit inflation rate of 8.58% was recorded. The fall in inflation is due in part to lower growth in food prices (2010). As per our findings, the consistent fall in inflation in recent times, explains the relative increases in the growth rates. It should be noted that in our study, while the coefficient of inflation is significant that of investment is statistically insignificant. This result indicates that inflation exerts a negative effect on growth primarily through its rate of accumulation rather than through the productivity of capital. The rate of inflation must continually be checked to induce higher economic growth.

The negative relationship between government spending and long-term growth is confirmed by Karikari’s (1995) study. In Ghana, like many developing countries, government expenditure has often been high, far above revenue, resulting in large budget deficits. Consequently, over 70% of the budgets have been financed through external borrowing. Since 2003, government expenditure to GDP was on the rise to over 40% in 2007. However, the percentage in 2010 was 27.6 (ISSER, 2010). As ISSER (2007) suggests, government expenditure programmes for sustained economic growth must include a strategy on how finances will be generated to fund it programmes. This is to prevent the emergence of large budget deficits that will create economic instability and dampen economic growth.

## CONCLUSION

This study has provided empirical evidence to the determinants of long-term economic growth in Ghana. Currently, the country is at the lower level of a middle-income status, which implies that a lot more needs to be done to raise the level of growth. To realize this, government must squarely address macroeconomic imbalances through cutting back on public spending and redefining spending priorities. In addition, inflation must be further reduced, monetary policies tightened and export diversification and value addition should be

encouraged. Finally, there is the need to improve the human capital capacity through education and health.

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