THE IMPACT OF PUBLIC EXPENDITURE ON ECONOMIC GROWTH IN GHANA (1970-1998)

BY

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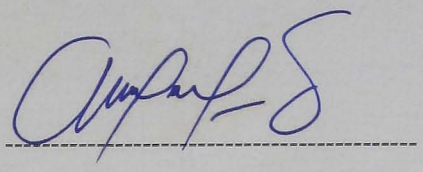
DECLARATION

I, EDWARD NKETIAH-AMPONSAH, hereby declare that with the exception of references to other people's work which have been duly acknowledged, this thesis is entirely my own work and that no part of this publication or the whole has been presented for another degree elsewhere.



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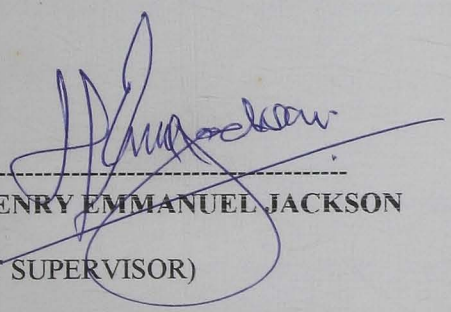

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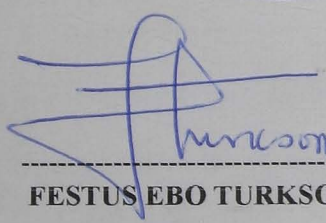

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DEDICATION

This thesis is dedicated to my mother and grandmother for the role they played in the formative years of my educational development.

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Incontrovertibly, I am bankrupt when it comes to indebtedness since many people have contributed directly and indirectly to the successful completion of this work. Among the lot, however, the contributions of some indefatigable personalities cannot go without mentioning.

Firstly, I am most grateful to the LORD Almighty for bringing me this far. Life would have been endlessly hopeless had it not been the enduring mercies of the Most High God.

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I cannot forget the wonderful M.phil class of 2002 for their co-operation and love, which necessitated a peaceful academic co-existence. I also appreciate all the efforts of the staff of the General Office: Mr. C.K. Adomako, Mr. David Ampofo among others for the office support that created the enabling environment for the completion of this thesis.

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Finally, I humbly accept my imperfection and therefore assume responsibility for the errors that will inevitably remain in this work.

EDWARD NKETIAH-AMPONSAH

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TABLE OF CONTENTS

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LIST OF TABLES

LIST OF CHARTS

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ABBREVIATIONS AND ACRONYMS

AERC	African Economic Research Consortium
C.P.P.	Convention Peoples Party
DACF	District Assembly Common Fund
ERP	Economic Recovery Programme
FCUBE	Free Compulsory Universal Basic Education
GETFUND	Ghana Educational Trust Fund
GDP	Gross Domestic Product
GNP	Gross National Product
ICT	Information Communication Technology
MENA	Middle Eastern and North African
NBSSI	National Board for Small Scale Industries.
NCCE	National Centre for Civic Education
OECD	Organization for Economic Cooperation and Development
SAP	Structural Adjustment Programme.
SSA	Sub-Saharan Africa
VAT	Value Added Tax

ABSTRACT

The government's fiscal policy involves the use of its expenditure and taxation policies to achieve desired targets; this paper is however, based on the former.

Both the theoretical and empirical literature surrounding the relationship between government activity and economic growth remain controversial to this day. Empirical works including those of Ram (1986), Landau (1983, 1986) and Rubinson (1977) among others have produced mixed results.

This study analyses the contribution of government expenditure to the economic growth process in Ghana between 1970-1998. The results indicate that the aggregate government expenditure variable is negatively and significantly associated with economic growth. Although, the empirical results on the impact of government on economic growth is inconclusive, a negative association with Ghana's economic growth was unexpected but explicable. The choice of the size of government follows the approach adopted by Ram (1986). The composition of government expenditure also has mixed impact on Ghana's economic growth over the stipulated period. The growth rates of the expenditure components (incrementalist approach) were employed in this research.

The results indicate that education expenditure and expenditures on roads and waterways have the expected positive and significant impact on Ghana's economic growth over the period under consideration. It is also clear that in a labour surplus economy such as Ghana, the neo-classical labour force variable is not an important determinant of growth.

In addition, defence expenditure had a negative but insignificant impact on economic growth. The other growth variables introduced in the model such as investment and export had the expected positive signs in all the regressions undertaken. The study reveals that the most robust variable for Ghana's economic growth is investment.

The proxy for the labour force variable (the rate of growth of population) had the expected positive association with economic growth but insignificant. Interestingly, the two political economy variables- political instability and the nature of government (democracy or autocracy) are statistically insignificant in explaining Ghana's economic growth (especially as the last seven years of the data set is biased towards democracy).

CHAPTER ONE

1.1: INTRODUCTION

The alacrity with which most countries pursue rapid economic growth has been nominally manifested in the formulation and implementation of medium-term plans and the subscription of ideological positions considered as vital to economic growth and development. Todaro (1989) has amplified the zealousness with which politicians and economists seek economic growth:

" Economists and Politicians of all nations, rich and poor, capitalist, socialist, and mixed have worshipped at the shrine of economic growth. ------ 'Growthmanship' has become a way of life"

Diamond (1989) basing his argument on growth, which is the major goal of any government, says a policy maker needs to know the relative contributions of various components of expenditure to the country's economic growth and performance.

As a result of the enthusiasm attached to economic growth by voters, some politicians are able to win successive elections by persuasively enumerating their achievements in economic growth in democratic settings.

For the purpose of this study the definition for government expenditure used by Gillis et al (1992) is adopted.

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"Government expenditures are defined as all outlays from the government budget, including those for current expenditures such as civil service salaries, maintenance, military costs, interest payments and subsidies to cover losses by public enterprises, as well as capital expenditures such as outlays for the construction of irrigation canals, roads and schools and for the purchase of non-military equipments owned by government."

Governments in developing countries spend an average of 26% of GDP on goods and services. In 1991, the World Bank estimated that this figure has risen by 8 per centage points over the last 15 years (See also, Devarajan et al, 1995). The magnitude and growth of this figure has prompted the need to critically examine the relationship between the size of government spending and economic growth (Valenchik, 1991)[1]. The size of government both in absolute term and as a percentage of GDP has in the 1970s reached unprecedented high levels in all developed economies (Nutter, 1978).

Although, government expenditures in most economies have experienced substantial growth since World War II, it was only towards the end of the 1970s that the level of government activity reached such unprecedented proportions so as to cause alarming concern and discussion in the political arena and the academia.

Available data indicate that most developing countries have cut expenditures in recent times owing to severe fiscal deficits. In addition, there is enough evidence that such cutbacks tended to fall mostly on capital expenditure, especially infrastructure sectors,

while interest payments rapidly increased and defence spending only declined modestly (Osoro, 1993). Spending cutbacks in other sectors such as productive and social services have tended to fall between those extremes (Hicks, 1988). Although cuts in government expenditure may sometimes be necessary or desirable, it is the so-called social sectors of education, health, housing etc, which suffer from the cut. Many governments do not reduce expenditures on defence or other 'non-productive' sectors. The result is that cuts in government expenditures end up harming the welfare of the poor. In endogenous growth models, public sector investment is postulated to be positively related to economic growth. Thus, public investment cuts reduce total investment and in the same manner affect economic growth. Kouassy and Bohoun (1992) argue that reduction in public investment by way of fiscal reforms reduced growth in Cote d'Ivoire.

The positive externality generated by capital expenditure notwithstanding, the brunt of expenditure cutbacks fall on capital expenditure. In fact, the World Bank has consistently argued that balanced budgets in developing countries could be achieved if African governments resort to expenditure cutbacks. However, developing countries especially Sub-Saharan Africa, despite the attempt to curtail public expenditure in recent times still contend that public expenditures do play an indefatigable role in the development process.

[1] In the empirical growth literature, the size of government is predominantly measured by the percentage change of government expenditure (Ram, 1986) or the ratio of government expenditure to GDP (Landau, 1983).

Also, the current atmosphere of structural adjustment, which implies, among other things, reduction in expenditure and/or expenditure switching coupled with liberalization, re-echoes the need to examine the role of public expenditure in the growth process. Thus the study of public expenditure is crucial for identifying which components to cut during fiscal restraints and expenditure switching policies.

Admittedly, when public expenditures are inefficiently injected, it could result in pervasive macroeconomic phenomenon such as fiscal deficits in both developed and developing countries. In developed countries for instance, the growth of U.S.A federal deficit provided the impetus for reassessment of the effects of fiscal deficit on economic activity (Islam and Wetzel, 1991).

In developing countries, fiscal deficits have been blamed for many of the crises that beset them in the 1980s over indebtedness and debt crises, high inflation and poor investment performance and low growth. The major source of fiscal deficit in many countries has been undeniably, the unmatched increase in government expenditure levels.

However, all societies, from those organized under free market principles to those under socialism, require an inevitable public sector. This is because even under the best of conditions, the market mechanism cannot perform all functions desired by households and other actors efficiently. The existence of public goods and other market failures such as externalities, information asymmetry, risk and uncertainty among others, have justified the role of the public sector. This is because the market mechanism alone cannot satisfy

all consumer wants, even when the society has a strong preference for decentralized decision making. For private goods, the signals provide the unfettered competitive market mechanism producers to satisfy consumer demand efficiently. For pure public goods such as defence and streetlights, the market mechanism or the private sector will inefficiently provide the desired quantities because of the traits of non-rivalness in consumption and non-excludability. Such a good is non-rival in consumption because one person's use of the good does not reduce the benefits available to others. Also it is non-excludable in that, it is either impossible or prohibitively expensive, to exclude anyone from the consumption of the good in any case.

Notably, dislike for government intervention in economic activity dates back to the classical times. Adam Smith's opposition to state interventionism stemmed from the gross inefficiencies and rampant corruption, which characterized public sector operations during his day. Nevertheless, classical activity view favoured public activity, which essentially and inherently enhanced market performance but could not either be efficiently produced or marketed by the private sector. Adolph Wagner observed in the 1880s that in the early stages of development, governments had the tendency to increase public expenditures because of the mounting political pressure for social progress. This has been commonly referred to as "Wagner's Law" although he did not logically and coherently organize his ideas into a law.

The relationship between government size and economic growth is increasingly gaining momentum in Public Finance literature. The relationship between government size and

economic growth has been examined in the works of Devarajan et al. (1995), Landau (1983), Ram (1986), Rubinson (1977) and Barro (1991) among others.

This study also sought to examine the relationship between government size and economic growth in Ghana within the period 1970-1998.

1.2: BACKGROUND

Since the inception of Ghana's independence in 1957, Ghana has sought numerous approaches to achieve appreciable economic growth in her bid to enhance social welfare. This necessitated the quest for rapid industrialization in the 1960s, control measures and state interventionist policies in the 1970s. This was consequently followed by a comprehensive reform Programme from the mid-1980s with emphasis on policy of liberalization (Structural Adjustment Programme).

Apparently, Ghana conspicuously bore all the features of under-development after the British had pulled out of the hitherto Gold Coast colony, the £240 million bequeathed it by the British Government notwithstanding. It was therefore, incumbent on the Nkrumah administration to lay the economic foundation to accelerate the development of the impoverished economy. There was the need to augment the provision of water supplies, sanitary facilities, lighting, telecommunication and agricultural industries for the enhancement of Ghana's development process. In addition, there was the need to provide modern medical institution to adequately train efficient medical staff to improve the health and sanitation of the people (Barfour, 1980).

Furthermore, the provision and expansion of existing educational institutions had become inevitable in accelerating the human (manpower) development for the emerging state. In other words, there was an obvious need to provide the basic infrastructure and social services for a modern economy to improve the standards of living. Invariably, the provision of this infrastructure and other social services constitute additions to the capital stock (investment) and thus contribute to economic growth. However, such additions to capital stock were achieved through huge injections of public expenditure. The quest for public expenditure to accelerate social development had become apparent prior to independence in 1957. The citizenry had recognized the role and the duty of the government in the provision of such goods and services. The roles played by the government in the development process could be summarized as the Allocative, Distributive, Stabilization and the Regulatory roles. These roles, which are inescapable, had often fuelled government expenditures.

Thus in trying to meet its commitment to the Ghanaian populace, the activities of the government have diversified in scope, scale and penetration with a development oriented focus. From a meagre total government expenditure of approximately ¢467.9 million in 1970, government expenditure had increased to over ¢964.6 million (in 1970 constant prices) in 1998 representing an increase of approximately 106 per cent. Between 1994 and 1998 alone, government expenditure almost tripled recording an increase of approximately 293 per cent. However, the average growth rate of GDP between 1970 and 1998 was approximately 2.8 per cent (Table 1 summarises the performance of some key macroeconomic indicators in the Ghanaian economy between 1970-1998). These huge

outlays of government expenditure not withstanding, there is an unflinching cry for the government to build more schools, houses, hospitals etc.

Considering the huge outlays of government expenditure in the economy, the question that economists and policy makers pose is whether government expenditure has a positive or negative association with economic growth. Which expenditure component influences economic growth most? Is it education or infrastructure expenditure?

The outcome of the study is imperative in answering the questions posed above and worthwhile in forming an objective consensus on which component of public expenditure to cut during fiscal restraint and expenditure switching policies.

Table 1: The performance of some key macroeconomic indicators between 1970-1998.

Year	Growth in Real GDP	Inflation Rate	Government Expenditure (% of GDP)	Budget Deficit (% of GDP)	Private Investment (% of GDP)	Public Investment (% of GDP)	Growth Rate of Population
1970	6.76	3.0	21.0	-3.1	7.9	4.1	2.01
1971	5.56	8.8	21.0	-4.0	7.5	4.9	2.9
1972	-2.49	10.7	19.3	-5.4	5.3	3.4	2.6
1973	15.25	17.0	15.7	-4.4	4.1	3.6	3.30
1974	3.39	18.7	16.2	-7.7	6.9	5.0	3.34
1975	-12.86	24.5	21.7	-11.8	6.4	5.2	2.71
1976	-3.52	62.1	22.7	-13.3	5.3	4.5	4.46
1977	2.26	116.5	19.1	-13.2	4.6	4.6	0.97
1978	8.48	73.1	15.1	-9.1	3.3	3.1	3.27
1979	-3.17	54.4	15.2	-5.8	4.7	1.2	-2.51
1980	0.00	50.1	10.9	-10.4	4.2	1.9	2.58
1981	-1.79	116.5	10.6	-5.9	3.0	1.7	2.98
1982	-7.20	22.3	11.0	-4.6	2.6	0.9	3.61
1983	0.70	122.8	7.9	-2.5	3.0	0.8	3.92
1984	2.64	39.6	9.8	-1.5	5.2	1.6	3.94
1985	5.09	10.4	13.3	-1.6	7.3	2.2	2.66
1986	5.20	24.6	13.8	0.6	7.1	2.2	2.59
1987	4.79	39.8	13.7	1.2	6.7	3.5	2.61
1988	6.23	31.4	13.7	0.9	7.1	3.7	5.5
1989	5.10	25.2	13.9	1.3	8.5	4.9	3.75
1990	3.30	37.2	12.5	0.6	7.5	4.7	3.14
1991	5.3	18.0	14.1	2.0	8.7	8.2	3.17
1992	3.9	10.1	17.8	-3.3	4.7	9.1	3.20
1993	5.0	25.0	21.0	-2.5	12.7	11.1	3.23
1994	3.8	24.9	22.1	2.1	9.3	13.3	3.07
1995	4.5	27.9	22.0	0.9	7.1	14.0	2.98
1996	5.2	46.2	22.2	-3.0	7.3	13.3	2.83
1997	4.2	27.9	20.6	-2.1	10.8	12.4	2.81
1998	4.6	17.7	26.1	-6.1	10.9	11.3	2.7

Sources: AERC Research Paper 100, IMFs International Financial Statistics (Various issues), African Development Indicators (various issues) and Ghana Statistical Service's Quarterly Digest of Statistics (various issues). Where necessary, computations were undertaken by the researcher.

1.3: STATEMENT OF THE PROBLEM

Recently, privatisation has become an important policy option for improving the allocation of resources, mitigating budget deficits and encouraging the development of the private sector in both developed and developing countries.

The assertion that a larger government will impede economic growth is based on the following premises.

1. Many government operations are inefficient and not in line with the true public interest. The bureaucracy of decision-making in the public sector, the political practices of promoting the interests of cohesive minorities at the expense of the populace and the behaviour of interest groups who lobby for the diversion of resources into rent-seeking activities (monopolies, tariffs, quotas etc) for the purpose of redistribution of income to their advantage, all have the potential to cause inefficiencies in the provision of government output.
2. The regulatory process imposes excess burdens and cost on the economic system.
3. Many of the government's fiscal and monetary policies tend to distort economic incentives and lower productivity of the system (Ram 1986). In this context, taxes and transfers are viewed as distorting market prices and thus reduce incentives for employment and investment.

A critique of this position is that since taxes and transfers redistribute income from the rich, who tend to save a reasonably large fraction of their earnings, to the poor who spend all they can, government expenditures and taxes stimulate economic activity.

Conversely, the proponents of the public sector argue that the public sector plays a pivotal role and that a large government size is likely to be a more powerful engine for economic growth. The main argument is that government can efficiently and effectively correct imperfections in the market and reconcile the conflicting private and social interests. Also, in cases where the government is more efficient than the private sector, a larger government size can provide significant spillover effects on the latter.

Grossman (1988) underscores some of the main features of government decision-making that facilitate growth: provision of legal and social framework, defence, police services, judiciary, enforcement of property rights, correction of the inadequacies of an unrestrained market place, development of economic infrastructure, regulation of externalities and transfer payments for maintaining social harmony and improving the productivity of the labour force. In addition, when public capital formation and private capital formation are truly complementary, government projects may stimulate entrepreneurs and enhance private investment and hence promote economic growth (Taylor, 1988).

Despite some theoretical and empirical studies showing a stringent negative relationship between the government expenditure variable and economic growth, a positive and significant relationship should not be ruled out (Ram, 1986).

Thus, the basic problem the study seeks to address is to ascertain the impact of the aggregate government expenditure variable (which is inconclusive both theoretically and

empirically) alongside specified components of government expenditure on Ghana's economic growth process over the period 1970-1998.

In as much as taxes and transfers could be used to redistribute income and therefore contributes to the economic growth process, I am inclined to believe that the use of expenditure to redistribute income is better than taxes. Expenditure, if efficiently spread over pro-poor projects such as primary health care and Free Compulsory Universal Basic Education will have a far-reaching impact than the use of taxation. Although some economists agree that a large public sector may stifle economic growth, it is also evident that a large public sector, which is efficiently managed, will boost economic growth. The positive relationship between a large public sector and economic growth is partly supported by the Development Model (theory), which stipulates that the role of the public sector increases as the economy is transformed from the agrarian to the industrialized state. However, the level of development (industrialization) that warrants an increase in private sector activities relative to the public sector has not yet been achieved by less developed countries such as Ghana. Although the Development Model does not state the critical level of development at which the private sector dominates the public sector, the rule of thumb is that an economy should graduate from the agricultural sector to the industrial sector and finally to the services sector. When an economy is dominated by the services sector, the bulk of its economic activity is in the hands of the private sector (the case of U.S.A. and Western Europe). This is in sharp contrast with the Ghanaian economy where the agricultural sector contributes about 60% of GDP.

No doubt, a large public sector, which is efficiently managed, will be growth enhancing.

1.4: OBJECTIVES OF THE STUDY

The fundamental objective of this study is to examine the impact of government activity on the economic growth of Ghana. More specifically, it is aimed at:

1. Investigating the relationship between aggregate government expenditure (government size) and economic growth in Ghana over the period 1970-1998.
2. Analysing the structure and composition of government expenditure (with reference to specific variables) in Ghana over the period 1970-1998 in order to determine the relative importance of each component and its contribution to total government expenditure overtime.
3. Examining how each type of expenditure profile influences the growth process in Ghana over the period 1970-1998.
4. Analysing the results in (1), (2) and (3) with the view to recommending appropriate policies that will enhance efficiency in the quest for robust economic growth.

1.5: SIGNIFICANCE OF THE STUDY

This study is of significance for four main reasons:

1. At the aggregate level, there are conflicting results regarding the influence of government expenditure on economic growth such as the works of Landau (1983), Rubinson (1977) and Rati Ram (1986) among others. For example, Landau (1983,1986) found government consumption expenditure to have adversely affected economic growth in his study of 65 developing countries over the period 1960-1980. Barro (1991) using a sample of 98 countries (developed

and developing) reported a similar empirical finding. Conversely, Ram (1986) and Rubinson (1977) reported a positive and significant relationship between government expenditure and economic growth. Yet still, studies like Conte and Darrat (1983) reported no clear verdict on the relationship between government expenditure and economic growth. However, the majority of the existing literature on the relationship between government expenditure and economic growth is based on cross-section data, which may be suspect due to a variety of reasons, the most important among them being the fact that the countries pooled differ markedly in their economic structures. Consequently, Ram (1986) recommends the use of time series data, a task undertaken in this paper. The outcome of this country-specific study will make interesting comparisons with earlier works in this area.

2. The outcome of the study will be imperative in forming an objective consensus on which components of the government expenditure to cut during fiscal restraint and expenditure switching.
3. Thirdly, the results of the study will be useful in assessing the complementarity or otherwise between government expenditure and private investment.
4. Finally, the outcome of the study will be useful for policy recommendation and also add to the existing literature on government expenditure.

1.6: HYPOTHESIS TESTING

The following hypothesis will be tested:

1. The size of government, that is measured by the growth rate of government

expenditure weighted by the ratio of government expenditure in GDP, is positively and significantly related to economic growth.

2. Government's expenditures on Education and Roads have positive and significant effects on Ghana's economic growth.

1.7: DATA SOURCES

1. Bank of Ghana Annual Reports
2. Ghana Statistical Service
3. The IMFs International Financial Statistics (IFS)
4. Various World Bank Publications
5. Ministry of Finance Various Bulletins
6. World Tables
7. Various Budget Statements
8. Government Finance Statistics: Various Year Books.

1. 8 :ORGANIZATION OF THE STUDY

The study is organized into six major chapters.

Chapter one encompasses the introduction, background, statement of the problem, objectives of the study, significance of the study, hypothesis testing and data sources.

Chapter two presents the theoretical underpinnings of the study and prior empirical work done in this area. An attempt is also made to explore the impact of some major expenditure components such as infrastructure on the economic growth process.

The classification of major government expenditures and a brief overview of government expenditure patterns in Ghana is the prime focus in the third chapter. Chapter four examines the methodological issues on which the study is based. Chapter five presents the detailed analysis and the main empirical findings. Finally, chapter six which is the concluding chapter highlights the results of the study and their policy implications as well as recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.1: INTRODUCTION

In order to appreciate the relationship between government expenditure and the economic growth process, a review of the determinants of growth in government expenditures vis-à-vis the relationship between government size and economic growth is imperative.

2.2: GROWTH OF GOVERNMENT EXPENDITURE

Government expenditure has grown throughout the last century and well into the 21st century but the most dramatic part of the expansion has been since 1945. Apart from, public provision of infrastructure, utilities, education and health services, most governments assumed direct control over production. In the major countries of Western Europe, government expenditure, which had on average only accounted for around 10% of GDP in 1870, accounted for some 30% in 1960 and over 50% by 1995 (Tanzi and Schuknect, 1995; World Bank, 1997).

In developing countries, government expenditures on average accounted for little over 15% of GDP at the commencement of the 1960s. At the peak in the mid-1980s this has increased to over 30% of GDP, before declining to around 26% in the mid-1990s. MENA countries as a group have the highest fiscal ratios in the world, most notably when government size is measured as Revenue-GDP and Expenditure-GDP ratios.

Total Revenue to GDP ratio in MENA countries averaged 31.5 per cent during

1980-1995 compared to 19 per cent in developing countries and 21 per cent in industrial countries during the same period (Jalali-Naini, 2000).

Invariably, part of the post-1960 growth in government expenditure can be attributed to state building in the aftermath of colonialism but volatility in international commodity prices is also to blame. The widespread growth in government expenditure has been accompanied by changes in the composition of government expenditure. In developing countries, both government consumption and investment have tended to decline since the 1970s. This notwithstanding, by the 1990s government consumption continued to account for about 40% of total expenditure in developing countries and accounting for over half of total government spending in Africa. In most SSA countries, interest payment and the wage bill took the chunk of government expenditure in the 1980s and the 1990s.

Most studies attempting to explain the growth of governments are cross-country studies. For instance, Castle and McKinley (1979) and Castle (1982) in their studies of 18 OECD countries underlined the importance of political factors in explaining the intra-country differences in government size. Cameron (1978) in his study covering 18 countries concludes that openness of the economy and socialist strength of governments are the major determinants of differences in government expenditure growth among countries. Mueller and Murrell (1986), on the other hand, underscored the importance of interest group activity as the cause of expenditure growth overtime. Other related studies in this endeavour include the works of Hicks and Swank (1984), Lane and Ersson (1984), Schmidt (1983) and Solano (1983). The various studies have been focused on different

places thus the findings frequently contradict when comparisons are made about the impact of a certain explanatory variable (Henrekson and Lybeck, 1988).

Some researchers have attributed the entire growth to a single source. For instance, Kau and Rubin (1981, p.262) argues that the growth of government size is a result of technical change that has reduced the administrative cost of tax revenues leading to increased supply of publicly provided services. Meltzer and Richard (1983 p.412) argue that the size of government changes with the ratio of mean income to the income of the decisive voter with the voting rule or the qualification for voting.

Several models have been used to explain the growth of the public sector. Three of these models have been briefly explained as following.

2.3: DEMAND SIDE MODELS

In the late 1880s, the German political economist, Adolph Wagner propounded his law of expanding state activity, which has come to be popularly known as "The Wagner Law". The thrust of Wagner's Law was that the relative size of the public sector in the economy has an inherent tendency to grow as per capita income increases. Although few fiscal economists accept Wagner's Law without several qualifications, it is nevertheless true that poor countries do have smaller public sectors relative to rich ones, when size of the public sector is measured as the ratio of government to GDP. It must be pointed out that Wagner, however, did not clearly specify the exact measurement of government activity.

The basis of this expenditure growth has social, political and economic underpinnings. Fabricant (1962) in his work in the U.S.A concluded that the government's expansion was a concomitant of economic growth and that most variation between states could be explained by variations in income, urbanization and population density.

Ideology has also played a crucial role in the demand side argument. While most governments tolerate high levels of expenditure; the tendency is for non market-oriented economies to maintain high levels of expenditure. In some African economies, the nature of the independence struggle and the urge to provide basic public goods and infrastructure soon after independence enlarged government expenditures. African socialism as practiced; for example in Ghana and Tanzania in the early 1960s influenced governments to assume the commanding heights of their economies with its effect of expenditure growth.

In Ghana, it is quite obvious that there is a strong relationship between the political process and increases in government expenditure. For example, there was rapid increase in government expenditure from 1955 by the pro-socialist form of government, which the Nkrumah administration adopted. This pro-socialist era, which involved the government more in state activities, ended in 1966 with the overthrow of the C.P.P. In its stead, the Western-oriented government of 1966, 1969 and 1971, emphasized private sector investment. During these periods, the government in a bid to accelerate private sector participation sold a number of public enterprises to the private sector. This practice

succeeded to some extent in cutting government subsidies to the state enterprises and thus, a reduction in public expenditure.

Population growth also exerts significant influence on government expenditure growth. It is apparent that a rapid rate of population growth will have obvious repercussions on the demand for roads, water supply, electricity, and public housing among others. Also the rapid increase in population will put pressure on the government to expand educational facilities and also exacerbate the rural- urban drift, as the standards of public services tend to be higher in the urban areas. Population growth in Ghana averaged 2.9% between 1970-1998 compared to the over 15% rate of growth of government expenditure during the same period.

Even though population growth might have been a contributing factor to the rapid growth in government expenditure, the average growth rate of 2.9% per annum by no means fully explains the significant variations in government expenditure, which have taken place over the period. The quantum of the dependency ratio of the total population also influences the growth in government expenditure. For instance, when the economy has a large number of the population less than 16 years and over 60 years, the demand for health care and pension will increase.

General price increases (inflation) has been an inevitable phenomenon since the monetisation of the Ghanaian economy. The increases in prices have often fuelled the demand for higher wages and salaries, a factor, which no doubt contributes to

government expenditure growth. In Ghana, the share of personal emoluments in total recurrent expenditure is about 67%. Therefore, decisions to maintain the current labour force or perhaps increase it will have a daunting effect on government expenditure if price increases lead to the agitation for higher wages and salaries, which is often the case in Ghana.

In addition, economic growth has been cited as influencing the growth of government expenditure. It is argued that as a nation experiences economic growth (i.e. growth in national income), increases occur in the activities of the state. This simple correlation between growth in government expenditure and national income is largely driven by demand factors. This essentially is Wagner's Law. In the original formulation, it was hypothesized that industrialization would lead to growth in demand for income elastic services, while the greater complexity of an industrialized economy would require a larger role for government.

Lastly but inexhaustibly, "fiscal illusion" has been cited as one of the main determinants of growth in public expenditures. According to Buchanan and Wagner (1977), federal deficits increase federal spending because they reduce the perceived price (illusion) of federal services to the current generation of voters. This reduction in the perceived tax price of federal services in turn would induce voters to increase federal spending if there is any negative elasticity of demand for federal services as a function of the perceived tax price. Federal spending would increase even if the (absolute) elasticity were less than unity because spending is a product of a unit cost of federal services; which is invariant

with the perceived tax price, (Osoro, 1997). This phenomenon is called an "illusion" since the voters inevitably and unnoticeably pay the true prices of public goods in the long run.

2.4: SUPPLY SIDE MODEL

Another possible explanation for government expenditure growth is the "displacement effect" proposed by Peacock and Wiseman (1961) in their study on public expenditure growth in the U.K. The displacement effect hypothesis considers the supply side constraints provided by public revenues. They showed that the rise in public expenditure relative to GNP was irregular in the United Kingdom, with peaks and troughs in the expenditure pattern. Under normal circumstances, increases in taxes could only be perpetuated at the expense of "political suicide." Peacock and Wiseman found that these peaks were associated with social and political disturbances such as wars, drought, earthquake and the Great Depression.

In times of social upheaval (war, drought etc), the constraints imposed by the 'tolerable tax burden' would be relaxed to permit governments to handle the situation efficiently. Once normality was restored after the upheaval, public expenditure will decline but not completely towards its previous level, remaining permanently higher as new expenditures displace those contingents upon the disturbance itself (inspection effect).

It must be noted however that, Ghana cannot be said to be invulnerable to social upheavals because her experiences in expenditure shift as a result of social, political and

economic characteristics are peculiar to her and different from the experience of Britain. Periods of instability and social upheavals lead to increases in defence expenditure at the detriment of 'productive' sectors such as education and infrastructure.

2.5: DEVELOPMENT MODELS

The basic proposition of the development models is that as the market system becomes complex, the extent of market failures (externalities) intensifies and government expenditure has to increase to correct these external diseconomies or distortions. Under several circumstances, the government through its numerous machinery can help internalize externality efficiently relative to private sector solution. Some of these models, developed in the late 1940s are the Big Push, Balanced Growth and the Basic Needs Model.

Arndt (1987) suggested more government involvement to internalize such externalities due to the perceived efficiency of the public sector relative to the private sector.
In the same manner, Denison (1962), Schultz (1961) have suggested more government involvement to help solve the problem of externalities as human activities become more complex.

2.6: RELATIONSHIP BETWEEN GOVERNMENT EXPENDITURE AND ECONOMIC GROWTH.

Since government expenditures are a component of GDP, a logical consequence is the expectation of positive correlation between the two variables. However, on both theoretical and empirical grounds, the contribution of the public sector to growth may exceed or fall short of the change in government size. Hence, the theoretical underpinning surrounding this relationship is being challenged.

2.7: THEORETICAL UNDERPINNING

There are no generally accepted economic theories capable of explaining, with any degree of success, the process of economic growth. As in research on other aspects of growth, empirical research on the relationship between government expenditure and economic growth is not supported by economic theory. It appears as Carr (1989) notes that theory is unable to settle the debate concerning the precise role that the government sector plays in the economic growth process. Consequently, the issues involved have been increasingly viewed as empirical with inconclusive outcomes.

Basically, economic theory postulates a rationale for government provision of goods and services based on the failure of markets to provide desired level of public goods and services; internalize externalities and cover cost when there are significant economies of scale (Stiglitz, 1988). In the traditional Keynesian macroeconomic model, growth theory maintains that many kinds of public expenditure particularly of the recurrent nature contributes positively to economic growth. For instance, a high level of government

consumption is likely to increase employment, profitability and private investment through the multiplier effect on aggregate output. Government spending raises aggregate demand, leading to an increase in output, depending on the size and effectiveness of the expenditure multiplier (Branson, 1989).

In a simple open macro-economy, the Keynesian aggregate output accounting framework is represented as follows:

$Y = C + I + G + (X-M)$ (1)

Where Y= aggregate output

C = Consumption which consist of an autonomous and induced part, i.e.

$C = a + bY$ (2)

Substituting equation (2) into (1), we obtain (3)

$Y = a + bY + I + G + (X-M)$ (3)

Where a = autonomous consumption

b = Marginal Propensity to Consume

Y = Disposable income

G = Autonomous Government expenditure

X = Exports

M = Imports

(X-M) = NX, Net Exports

Totally differentiating (3)

$dY = da + bdY + dI + dG + d(X-M)$

$dY - bdY = da + dI + dG + d(X-M)$

Since da, dI and d (X-M) are constant,

$$dY = (\frac{1}{1-b})\ dG,$$

$$\frac{dY}{dG} = (\frac{1}{I-b}) = m$$

'm' is the basic expenditure multiplier. It tells how much aggregate output changes as a result of a change in government expenditure. Thus according to the Keynesian framework, the impact of changes in government expenditure on aggregate output can be summarized in three propositions.

(a) An increase in government expenditure will raise aggregate output. However, the size of the increase will be determined by the quantum of the expenditure multiplier.

(b) An increase in tax will decrease aggregate output by the size of the expenditure multiplier.

(c) Either an increase in government expenditure or a reduction in taxes 'ceteris paribus' will increase aggregate output by the size of the expenditure multiplier.

The argument in favour of increases in expenditure as compared to tax cuts is that expenditure injections such as government consumption or investment expenditures will give impetus to other economic activities such as employment creation. The basic rule for growth promoting public sector is that its activities should complement rather than compete with those of the private sector (crowding-in effect). Thus an important role for the government is to provide certain investments in human capital such as education, public and primary health care and infrastructure. In addition, certain expenditures on the

legal system, public order and civil administration is necessary to ensure a stable environment in which investment with higher payoffs could be encouraged (Mackenzie, et al, 1997).

At the analytical level, there is also some controversy regarding the influence of government expenditure on economic growth. Some scholars agree that, all government expenditures whether it is current or capital has a retarding effect on economic growth. This perception is based on the contention that government investment with its inherently centralized decision-making, absence of profit motive and lack of competition is inefficient when compared with the private sector. Assuming the lower productivity of government investment, "any increase in government expenditure by increasing the share of productive resources used by the government, would slow economic growth in the economy as a whole and may impede the accumulation of human and physical capital and the pace of innovation in the private sector" (Diamond, 1989). In other words, the nature of capital markets in developing countries limits the financing of private investment to the use of retained profits, bank and foreign borrowings.

For a country like Ghana, the liberalization of interest rates has further increased the cost of investible funds. There is no doubt that public sector investment can crowd-out private investments if it uses scarce physical and financial resources that would otherwise be available to private investors. Alternatively, public investment can crowd-out private investment if the public sector produces marketable outputs that competes with private output. In addition, the financing of public sector investment either through taxes, debt issuance or inflation reduces the resources available to the private sector (Chibber and

Dailami, 1990). In Ghana, Private investment as a percentage of GDP has been fluctuating in response to the dynamics of the interest rate because of the competition between the private sector and the demand for Government Treasury bills. Theoretically it could be said that, the high interest rates driven by the incentive to purchase the government security or treasury bills have crowded out private investment. The truism of this proposition will however be borne by empirical evidence.

Incontrovertibly, there have been series of concerns regarding the efficiency of governments in the provision of public goods. The theory of Buchanan and Tullock (1962) and Downs (1957) of how public decisions are made raises crucial questions with respect to efficiency of the outcome. Since the participants in the political process are motivated by self-interest, combined with rational ignorance of voters, decisions made in the political arena tend to favour the interest of the small cohesive and vocal minority at the expense of the general public.

Tullock (1959) in his model of majority voting with logrolling illustrates the potential for inefficiency in the provision of public goods. Niskanen (1971), in his theory of bureaucracy provides a further example. Niskanen argues that utility maximizing bureaucrats receive utility from the size of the budget they manage whereas politicians generally maximize votes. Since the bureaucrats lack the incentives of the profit maximizing firm and absence of explicit objectives or instructions, due to the nature of public goods, the bureaucrat is likely to seek the budget size that maximizes his/her utility. In the same manner, the utility maximizing politician lacks the incentive of profit

maximization and thus may cite a factory in a geographical location, which is economically not feasible, provided the project, is vote maximizing.

This Niskanen shows to be greater than the efficient levels/size. In both cases, the goods, provided enhance private sector productivity; the actors in the political arena operate under constraints and incentive system that permits them to supply the goods in a manner that increases their personal utility. This phenomenon is prevalent in Sub-Saharan African countries and other developing countries and it is partly manifested in the commissioning of "political" projects few weeks or even days prior to general elections.

2.8: EMPIRICAL LITERATURE REVIEW

What are the consequences of government size for growth? Given the enormous disparity in economic growth rates in the period 1970-1998, it is imperative to know to what extent such disparities can be attributed to differences in the size and actions of government.

Since empirical work in this area is undermined by the lack of good economic theory and the fact that neither economic theory nor empirical evidence provides a clear-cut answer, most of the empirical outcome has been inconclusive. Most empirical work on public spending focus on the nature, objectives, growth and role of public expenditures and thus lack adequate treatment on the relationship between public expenditure and economic growth.

Again, public finance economists have traditionally focused most of their research on the revenue side of the government budget, especially on tax and tariff policy. Less consideration has been given to the level and composition of public spending as a

determinant of economic growth and development. Heller and Tait (1982) have analysed patterns and trends in government spending and the relationship between level and composition of public expenditure and the rate of economic growth have been studied by Landau (1986), Ram (1986, 1987) and Balassa (1988). However, these studies have remained inconclusive in determining whether large or more rapidly growing public spending will be beneficial or detrimental to economic growth. Therefore, there is no general agreement as to the exact relationship between government spending and economic growth.

In recent studies, Devarajan et al (1995), Landau (1983), Ram (1986), Rubinson (1977) and Grossman (1988) among others have examined the relationship between government size and economic growth. These studies have recognized that total output may respond both positively and negatively to increases in government expenditure.

Using a sizable cross-country sample, Rubinson (1977) found that increased government expenditure measured by the ratio of government revenue to GNP contributes positively to economic growth especially within poorer, less developed contexts. This is especially noted in less developed countries, since government spendings reduce their dependence on foreign countries.

Using a sample of 115 developing countries, Rati Ram (1986, p.202) concluded that there exist a positive relationship between the growth of output and the rate of growth of government expenditure. She made use of pooled cross-country time-series data from

Summers-Heston for 115 countries from 1960-1980. It has been argued that an obvious drawback with Ram's empirical studies (1986, 1989) is the endogeneity of the government spending variable in the growth equation. Thus, government spending may increase as a result of economic growth, which is to be explained by government spending. Ram however, argued on empirical grounds that the endogeneity problem scarcely exists.

Kormendi and Meguire (1985) in their study on 47 countries in the post-World War II period using a different measure of government size also concurred with Ram's basic findings of positive relationship between government size and economic growth. They measured the impact of the average growth rates of government share of consumption spending (including defence and education expenditures) in GDP on economic growth. They found no evidence that government size (averaged roughly over 20 year periods for each country) adversely affected the average growth rates of real GDP.

Grossman (1988) has also found a positive relationship between government spending and economic growth in his study on the Australian economy. In addition, Martin and Farmanesh (1990), in a more recent study obtained a positive relationship between consumption expenditures and economic growth. In a related development, Gould (1983), Singh and Sahni (1984), Holmes and Hutton (1990) also concluded that government expansion has a positive effect on economic growth.

Contributing to the debate, Musgrave and Musgrave (1980) rightly maintained that continuous expansion in the public sector should be expected as income rises. The finding by Musgrave and Musgrave re-echoes the issue of causality; whether growth in governments cause economic growth or vice versa. Ghali (1998) discovered that government size Granger-Caused economic growth in ten OECD countries while Cheng and Tin (1997) found a bi-directional causality between government expenditures and economic growth in South Korea.

The conclusion by Ram and other related findings showing a positive relationship between government size and economic growth fall within the Wagnerian expectation. In contrast to Ram's findings, Landau (1983,p.790)[2] using a sample of 96 developing countries from the Summers-Heston data concluded that a negative relationship exists between the share of government consumption expenditure in GDP and the rate of growth of per capita GDP.

Using a sample of 65 developing countries over the period 1960-80, Landau (1986,p.68) confirmed his earlier findings by asserting that government consumption expenditure adversely affects economic growth. On the impact of government expenditure on economic growth, Landau's conclusions are; "Government consumption expenditure excluding military and educational expenditure...appears to have noticeably reduced economic growth. Military and transfer expenditures do not appear to have had much

[2] Landau regresses growth in per capita output against the share of government consumption expenditure in GDP, GDP, investment in education, two climate-zone dummies and energy consumption per capita. Other studies that have shown this inverse relationship between government expenditures and economic growth include Barro (1989), Barth and Brady (1987).

impact on economic growth. Governmental educational expenditures seem to be inefficient at generating actual education... Governmental capital. Development expenditure appears to do nothing to accelerate economic growth."

Government consumption spending refers, here, to federal, state and local government spending, which excludes transfer payments and public investment. It includes most expenditure on education, defence and health. The name consumption spending may be misleading because substantial portion of this consumption spending are in fact investment in the broader sense, especially in education and health care. In this study however, we follow the previous literature where items such as education and health are treated as public investment.

Adding to the inconclusive debate, Barro (1990) argues that, at some low levels of government spending, growth may increase but will decrease when government grows too large relative to technical efficiency. The point made by Barro is plausible since the government may experience an unmanageable budget deficit in the long run if technical efficiency is not considered. In a follow up study, Barro (1991) modified the Summers and Heston (1988) data on government consumption by subtracting the ratios to GDP of government spending on defence and education from the ratios of government consumption spendings to GDP to form an independent variable of 'non-productive' government spendings. Barro's view is that expenditures on education and defence are more like public investment than public consumption in contrast with Landau's idea. Using a sample of 98 countries (developing and developed) for the period 1965-1985,

Barro reports a finding similar to that of Landau's and blames the significant negative effects of government expenditures (consumption) on allocative distortions.

Grier and Tullock (1987), found a significantly negative relation between the growth of real GDP and the growth of government share of GDP using the pooled cross-country time-series data of Summers and Heston (1984) for a time period averaged over 5 year intervals. It is worth mentioning that, the significant relationship was derived mostly from the 24 OECD countries. Similarly, Barth and Brady (1987) found a negative relationship between the growth rate of real GDP and the share of government consumption spending for 16 OECD for the time period 1971-83.

Saunders (1985), Smith (1985), Barth, Keleher and Russek (1990), in summary, also, found that government expansion tends to exert a negative impact on economic growth for many developed and developing countries. In a recent study on the Greek economy, covering the post-war period from 1948-1994, Damalagas (2000) found a negative relationship between government size and economic growth. He measured government size as the share of government consumption in GDP.

Yet still, other studies like Conte and Darrat (1983) and Levine and Renelt (1990) could not establish a firm relationship between economic growth and total government expenditure ratio and the ratio of government consumption expenditures to GDP or GNP. They have argued that while government expenditures have positive effects on economic growth in some countries, results from other countries confirm the opposite. The

empirical evidence of Lindauer and Valenchik (1992) also does not reveal any strong correlation between government expenditure and economic growth in developing countries. Contributing to the debate, (Engen and Skinner, 1991, p.1) assert that according to the neoclassical theory, 'taxation and government spending should have no impact on the growth rate of national output- in the long run, they affect only the level of output.'

The dichotomous empirical literature is partly due to the different measures of government size that are used. For instance, the conclusions of Ram and Landau are in sharp contrast to each other largely due to significant differences in their models and the specification of government size. In his study, Ram (1986) partly concluded that if the size of government is measured by the percentage change, then the size of government has a positive and statistically significant impact on economic growth. However, if it is measured by the ratio of government expenditure to GDP, as Landau and others did, then the impact of the size of government on economic growth is significantly negative.

In his recent study on the Saudi Arabian economy, Al-Yousif (2000) confirmed Ram's assertion by using both approaches in his regression models. In a related development, Tsikata (1996) in his study on the Ghanaian economy "Economic Growth in Ghana: Some Stylised Facts" a negative association with economic growth was obtained when the government expenditure as a ratio of GDP variable was employed. However, he obtained a positive and a highly significant correlation with growth when growth rate of government consumption expenditure was introduced. Tsikata's outcome makes

interesting comparison with the contrasting results obtained by Landau though Landau used the government Consumption as a ratio of GDP and not the growth rate. Could Landau have obtained the positive association of the government consumption variable with growth if he had employed the growth rate? The answer is certainly indeterminate since pooled data (as in the case of Landau) is markedly different from a country-specific study. Although the appropriate measure of government size may seem unresolved and the debate will continue unabatedly, one has to make do with Conte and Darrat (1983) assertion that the significance or otherwise of government size on economic growth will be determined by the country in question.

One major deficiency in most of the earlier works was the use of the aggregate positive or negative influence of government expenditure on economic growth without attempting to assess at least the effects of two components of government expenditure on economic growth. Although this may not be a weakness vis-à-vis the objectives of their studies, the approach is however, not useful in studying disaggregated expenditure.

Devarajan et al (1995) in an attempt to solve this weakness used the disaggregated government expenditure to examine their relation with growth. His work no doubt made significant contribution to the growth theory although some of the results were unexpected.

The work of Grossman (1988) utilized a simultaneous equation model making allowance for a non-linear relationship between growth in government expenditure and total

economic growth while that of Ram (1986) was based on a production function approach. Diamond (1989), in a more recent study, used a sample of 42 developing countries and discovered that social expenditure does exhibit a significant impact on growth in the short-run while infrastructural expenditures showed little influence. In addition, he found that capital expenditure exert a negative influence on the growth process. However, Diamond's work reaffirmed the significance of export in the growth process. This is however at variance with that of Kouassy and Bohoun (1992) who argued that; public investment such as infrastructural development is positively correlated with growth. Also, Eichengreen (1995) have reiterated the importance of infrastructural expenditure. In his work, he asserted that where transportation, communication, and power generation are inadequate, increased supplies could do much to boost productivity and growth.

Aschauer (1989) finds that 'core infrastructure'- streets, highways, airports, mass transit, and other public capital has the most explanatory power for private sector productivity in the United States over the period 1949-1985. Based on a set of cross-country regressions, Easterly and Rebelo (1993) found that public investment in transport and communications in developing countries leads to higher economic growth.

On his part, Aschauer (2000) asserts that the indication of a negative empirical influence of government spending on economic growth may be due to the means of financing; higher government spending acts as a proxy for a higher rate of taxation, which may stifle economic growth. Recent studies document that public investment in infrastructure such as roads; communications and utilities stimulate private investment and thus stimulate

economic growth. Blejer and Khan (1984) using a cross-country data set find that public investment in infrastructure complements private investment.

Greene and Villanueva (1991) using a panel of 23 developing countries and Solimano et al (1993) using a panel of 15 countries similarly found that public investment in infrastructure "crowds" in private investment. Many infrastructural investments have characteristics of public goods- non-exhaustive and non-exclusive in consumption and thus will be undersupplied by the private sector. Many infrastructural investments facilitate private investment by lowering private production cost and opening new opportunities for profit. For example well laid-out roads reduce transportation cost and ports facilitate international trade by reducing transaction cost.

2.9: HOW DIFFERENT THIS STUDY IS FROM PREVIOUS ONES

It is worth mentioning that most of the works on public expenditure and economic growth were based on cross-country analysis. Ghana, though a developing country, may be quite different when compared to developed or other Sub- Saharan African economies. For example, it is not uncommon for Ghana to suffer an oil shock relative to Nigeria.

In addition, it is necessary to decompose the components of government expenditure not only into the usual capital and recurrent but also into social (education, health, welfare), productive, defence etc categories, if any empirical study is to make sense (Ekpo, 1999). Tanzi and Zee, (1997) also reiterated that the composition of government expenditure has important implications on economic growth. In this regard, this study sought to examine

UNIVERSITY OF GHANA

the effect of government expenditure on education, roads and waterways and defence in addition to the impact of the aggregate government expenditure on Ghana's economic growth process.

CHAPTER THREE

A BRIEF OVERVIEW OF GOVERNMENT EXPENDITURE IN GHANA OVER THE PERIOD (1970-1998)

3.1: INTRODUCTION

This section explores the pattern and the trend in both aggregate government expenditure and some selected expenditure items within the stipulated time frame. Before we proceed with our analysis, however, we start with a presentation and an examination into the actual statistics and variations in government expenditure as a whole. This procedure is intended to give a numerical as well as a graphical picture of the pattern of public expenditure during the period.

By inspection of Table 2 (page 44), there has been a consistent increase in nominal government expenditures in current prices throughout the period. There was no point in time in which nominal government expenditure decreased from its previous levels. From a level of ¢ 467.9 million, in 1970 nominal government expenditure had increased to an unprecedented level of ¢4,513,200 million by 1998. The absolute and sustained increase in successive nominal government expenditures is further buttressed by its positive growth rates throughout the period. The highest growth rate in nominal government expenditure of 80.9% occurred in 1984 probably due to high productivity and increase in government consumption precipitated by the 1983 drought. The lowest growth rate of nominal government expenditure of approximately 1% was recorded in 1973. The sustained increase in the nominal government expenditures and their respective growth

rates give credence to the incrementalist approach to budgeting. Under this approach, the current year's budget is a function of the previous years' value. Thus a certain percentage or adjustment is made to the previous values to obtain current budgetary expenditures. As a result, current nominal government expenditure is expected to increase.

Conversely, the analysis of the government expenditure pattern and growth rates changes when they are converted to real values. The real government expenditure values were obtained by deflating the various nominal expenditures by the Consumer Price Index for the various years (base year, 1990's CPI=100). The real value, unlike the nominal necessitates effective comparison. The highest real government expenditure value of ¢742,000 million was recorded in 1976 while the lowest value of ¢89,426.1 million was obtained in 1983. It is interesting and worth mentioning that real government expenditures from the periods 1970-1977 were on average higher than the average values for the period 1979-1991 (refer to table 2). For example, the real government expenditure value of ¢ 467,900 million in 1970 is about five times higher than the real value for 1983 (¢89,426.1 million).

As expected, the growth rate of real government expenditure over the period has been fluctuating, recording negative growth rates in 11 out of the 29 data set. This is in sharp contrast with the robust growth rates of nominal government expenditures over the same period. The highest nominal growth rate of approximately 81% in 1984 was only translated into a real growth of 29%, though positive. In 1981, whereas, the nominal growth rate of government expenditure was 65.4%, that of real growth rate was –24.1%.

In the sectoral classification of government expenditure into Recurrent and Development expenditures, as presented in the Central Government accounts, the recurrent expenditure as a percentage of total has taken the lion's share relative to capital or development expenditure. Over the period, recurrent expenditure averaged about 80% of total government expenditure. It is against this background of the quantum of recurrent expenditures that most public finance economists seek to ascertain the impact of these expenditure components on economic growth. This study will partly contribute to the debate.

Later on in this chapter, some components of government expenditure variables have been discussed in depth.

Table 2: Some Measurements of Government Size

Year	Nominal Gov. Exp (current prices)	Growth Rate of Nom. Gov. Exp	Nom. Gov. Exp (% of GDP)	Real Gov. Expend.	Real Government Expenditure Index (1990=100)	Growth of Real Gov. Exp	Recurrent Exp. (% of total)	Development Exp. (% of total)
1970	467.9	18.4	21.0	467900	183.9	18.4	-	-
1971	523.8	12.0	21.0	523800	181.6	11.9	64.0	36.0
1972	543.1	3.7	19.3	543100	141.4	3.7	56.2	53.8
1973	548.5	1.0	15.7	548500	117.0	1.0	71.2	28.8
1974	754.1	37.5	16.2	377050	70.0	-31.0	73.5	24.5
1975	1146.2	52.0	21.7	573100	109.3	52.0	69.3	30.7
1976	1484	29.5	22.7	742000	143.7	29.5	67.2	32.8
1977	2136.6	44.0	19.1	712200	148.3	-4.0	77.0	23.0
1978	3164.8	48.1	15.1	263733.3	40.6	-63.0	81.4	18.6
1979	4295.7	35.7	15.2	226089.5	88.8	-14.3	87.3	12.7
1980	4668.0	8.7	10.9	166714.3	57.8	-26.3	82.0	18.0
1981	7719.3	65.4	10.6	126545.9	33.0	-24.1	89.5	9.5
1982	9530.0	23.5	11.0	128783.8	27.5	1.8	90.4	10.6
1983	14755.3	54.8	7.9	89426.1	15.9	-30.6	90.8	10.2
1984	26694.0	80.9	9.8	115558.4	22.0	29.2	85.0	15.0
1985	45763.0	71.4	13.3	180169.3	34.9	55.9	84.0	16.0
1986	70660.7	54.4	13.8	222904.4	46.4	23.7	86.1	13.9
1987	102135.0	44.5	13.7	2305.53	35.5	3.4	78.9	21.1
1988	143897.0	40.9	13.7	247245.7	97.1	7.2	77.1	22.9
1989	196466.0	36.5	13.9	269500.7	105.9	9.0	75.7	24.3
1990	254473.0	29.5	12.5	254473.0	100	-5.6	77.9	22.1
1991	340262.0	33.7	14.1	288357.6	113.3	13.3	77.5	22.5
1992	498813.0	46.6	17.8	38399.7	133	33.2	74.8	25.2
1993	760911	52.5	21.0	468829.3	122.1	22.1	78.4	21.6
1994	1141312	50	22.1	563054.8	120.1	20.1	73.5	26.5
1995	1698700	48.8	22.0	525587.9	93.3	-6.7	71.8	28.2
1996	2446279	44.0	22.2	516419.5	98.2	-1.7	75.0	25.0
1997	2908965	18.9	20.6	480185.7	93.0	-7.0	78.1	21.9
1998	4513200	55.1	26.1	649942.4	135.4	35.4	76.3	23.7

Note: Nominal and Real Government expenditures are in million of Cedis.

Source: Ghana Statiscal Service and Authors own Computations

Figure 1: Growth Rate of Real Government Expenditure

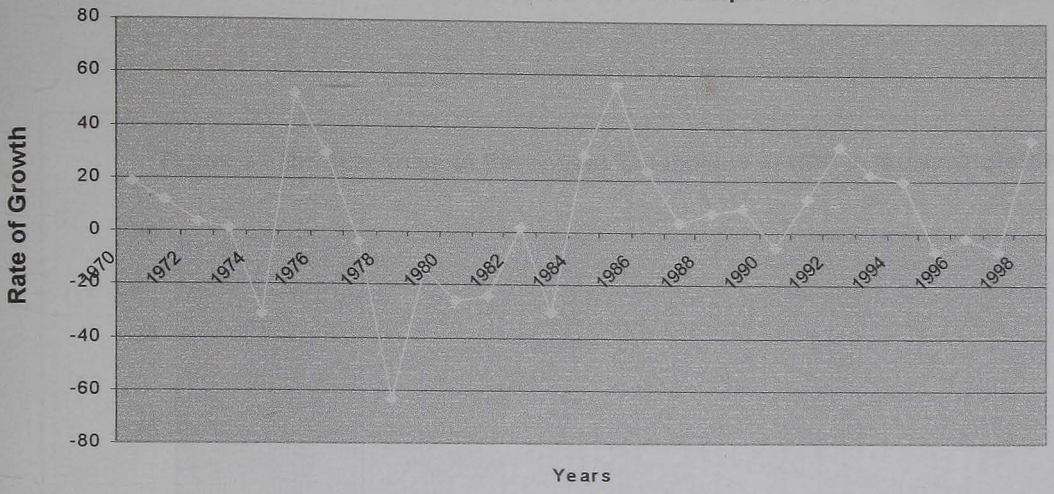


Figure 2: The Growth rate of nominal Government Expenditure

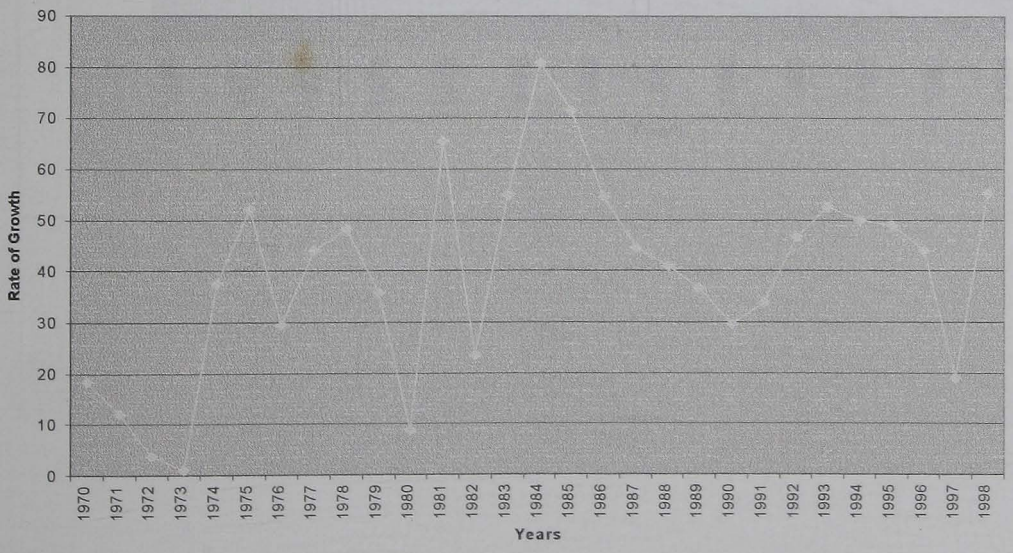


Figure 3 : The proportion of Goverment Expenditure in GDP in Nominal terms (1970-1998)

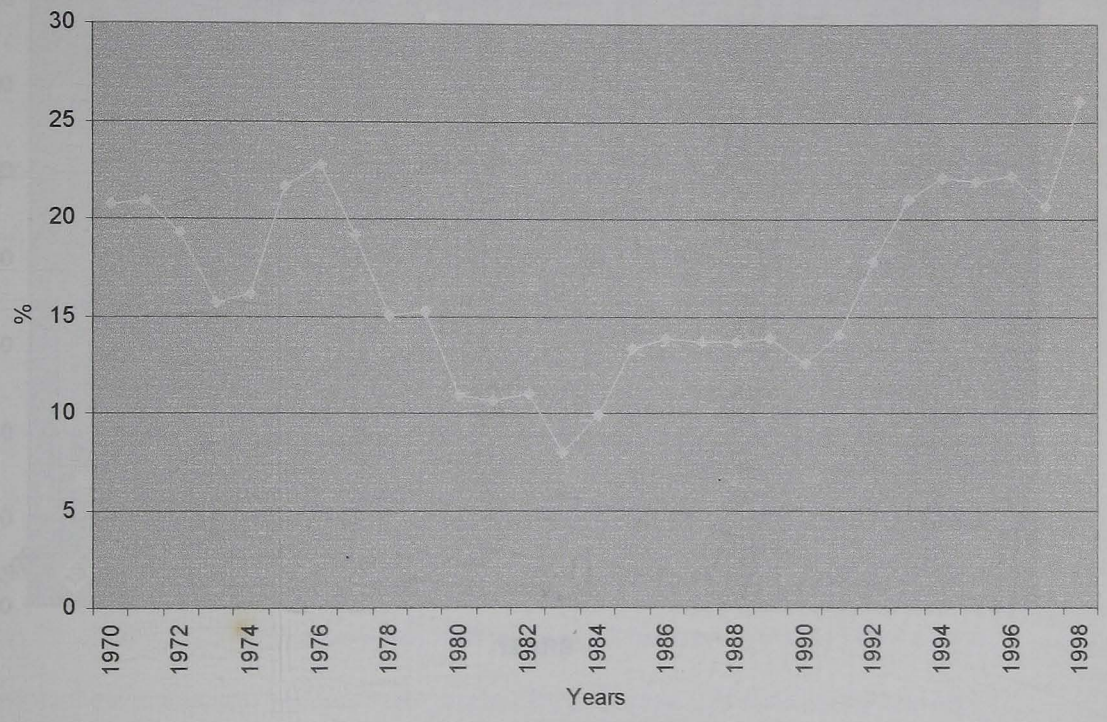
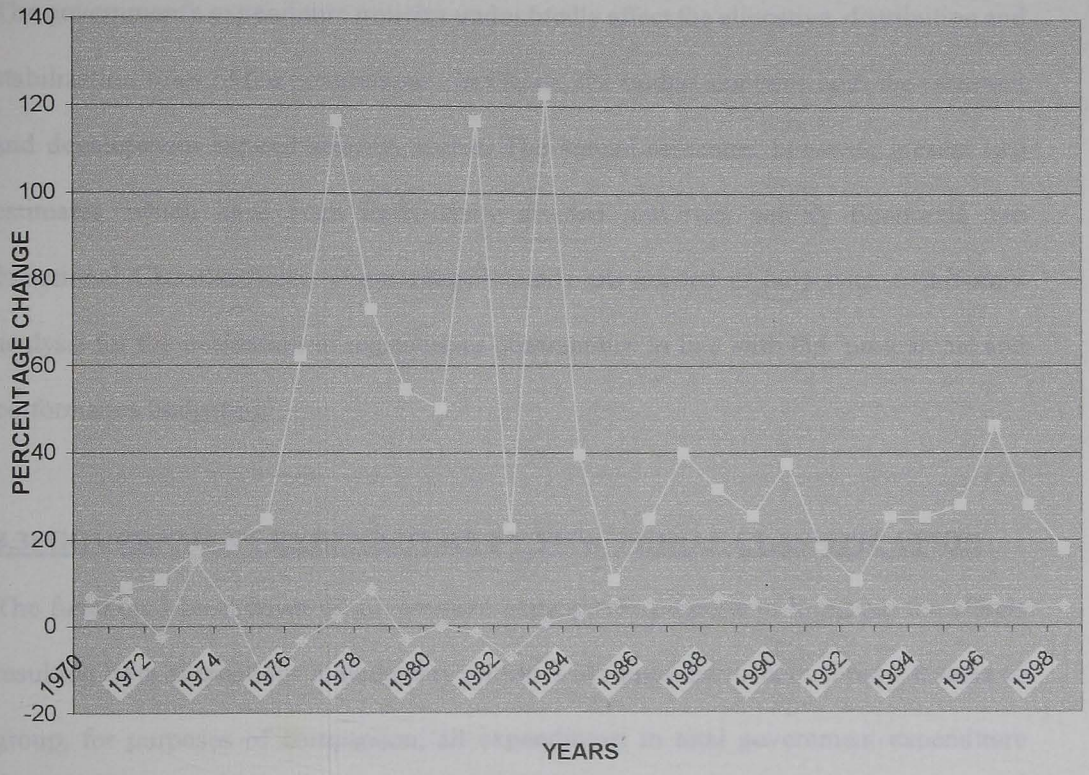


FIGURE 4: TREND OF REAL GDP GROWTH AND INFLATION RATE



3.2: CLASSIFICATION OF GOVERNMENT EXPENDITURE IN GHANA

We will now briefly and theoretically survey how government expenditures in broad terms are classified, taking note of the major items under each classification.

The government's expenditure policies undoubtedly affect the allocative, distribution and stabilization roles of the government. In Ghana, the budget contains both the recurrent and development expenditures by sector. The annual estimates, however, present two estimates, which have been traditionally divided into two, namely Economic and Functional Classifications. These classifications are needed to help with cost-benefit analysis for the evaluation of expenditure programmes in line with the "programme and performance budgeting".

3.3: GOVERNMENT EXPENDITURE BY FUNCTIONAL CLASSIFICATION

The functional breakdown of government expenditure purports to bring out the effects resulting from alternations in budgetary priorities of the government over time. It seeks to group, for purposes of comparison, all expenditures in total government expenditure having as their immediate or short-term purpose the provision of a distinct and separate public service. The following are the broad categories of functions underlying government expenditures.

1. General Services
2. Community Services
3. Social Services
4. Economic Services

5. Unallocable Expenditures

Each of these major categories is sub-divided to conform to the usual budgetary classification by head, sub-head and item of expenditures. The major sub-divisions of the functional categories are presented below:

General services: The major items under general services are General Public Services (General Administration), Defence, Justice and Police

Community Services: This category has Roads and Waterways, Fire Protection, Water Supply and Sanitation as the major sub-divisions.

Social Services: The major items under this category are Education, Health, Social Security and Welfare Services.

Economic Service: This encompasses Agriculture, Fuel and Power, Manufacturing and Construction, Transport, Storage and Communication.

Unallocable Expenditure: This category is made up of interest on General Debt, repayment of General Debt, contributions to sinking funds and the general transfers to the local government.

3.4: GOVERNMENT EXPENDITURE BY ECONOMIC CLASSIFICATION

The economic classification facilitated an assessment of the impact of budgetary policies on government savings and investment and equity. This classification enables us to present and to see government expenditure in juxtaposition to the national accounts. Under this government expenditure was sub-divided into recurrent (consumption), capital (development) expenditure and financial claims.

(a) RECURRENT EXPENDITURE

Recurrent expenditure has been broken down to show consumption expenditure (made up of personal emoluments and purchases of goods and other services). These transfers are unrequited expenditures taking the forms of subsidies, pensions, etc. This category also includes interest on public debt. Examples of some of the transfers to the domestic sectors are scholarship to households and contribution by the government to the running costs of local authorities, public corporations and institutions.

In the early 1980s, for instance, recurrent expenditure accounted for over 88 per cent of total government spending (State of the Ghanaian Economy, 1999). This rarely allowed the government to embark upon any domestic savings of its own. A frantic effort by the government to realign spending in favour of capital expenditure, within the framework of the ERP (which was introduced in 1983), led to a successive reduction in the relative share of recurrent expenditure to governments total spending.

(b) CAPITAL (DEVELOPMENT) EXPENDITURE

This category comprises items such as new buildings and construction, machinery and equipment (the gamut of these items contribute to capital formation by government), purchases of existing capital, expenditure on surveys and transfers to Capital Accounts of domestic sectors and abroad. These are unilateral expenditure transfers, which beneficiaries receive on their capital accounts. They are a means whereby central government finance indirectly, capital projects in other sectors of the economy and therefore constitute one of the ways central government can undertake or expedite the economic growth process.

(c) FINANCIAL CLAIMS

Payments, which create financial assets for the government, are the main constituents of this item. These comprise loans and advances and subscriptions to international lending institutions. Loans and advances are used as a means whereby the government encourages other sectors of the economy to undertake development projects for which they are themselves not capable of providing funds. It also includes sinking fund contributions and repayments on contractual debt.

3.5.0: THE NEW BUDGET APPROACH OR FORMAT

Prior to 1999, the prevailing classification of government expenditure was the Economic and Functional classifications. At the beginning of 1999 however, the government introduced a new budget format, whereby government expenditure was prepared against the background of a Medium Term Expenditure Framework (MTEF) and presented in the form of a three-year rolling expenditure programme. As a result of the introduction of the MTEF the format of classifying and presenting government expenditure has changed tremendously. In contrast with the traditional functional and economic dichotomy where emphasis was placed on individual expenditure items, the new approach rather emphasis certain vital expenditure components such as interest and non-interest, statutory and discretionary expenditures. According to the new approach, government expenditure has been divided into two main categories namely discretionary and non-discretionary expenditures. Under the discretionary criterion, government expenditure is classified according to economic and functional criteria. This ensures that the impact of budgetary policies on government savings and investment as well as the effects of changes in budgetary priorities of the government overtime are well captured.

The discretionary classification also brings out the types of expenditures the Ghana government would want to manipulate in its fiscal policy framework in order to attain price stability, satisfactory rate of economic growth and relative high level of unemployment.

Conversely, the non-discretionary expenditure comprises mainly statutory payments, which the government is compelled to make during the financial year.

3.5.1 DISCRETIONARY EXPENDITURE:

The main components of the discretionary expenditure comprise total investments and other expenditures, which include personal emoluments, administration and services. In 1999 government discretionary expenditure was equivalent to about 61.70% of total spending and about 17.53% of GDP. In 2000, however, discretionary expenditure rose by 45.86% from ¢3,608 billion in 1999 to account for 53.07% share of total government outlays.

Total investment, which is about 52.2% financed from foreign sources, accounted for about 47% of total discretionary expenditure, with 51.75% going to other discretionary expenditures. During the same year, clearance of arrears owed to road contractors for past completed contracts, which are regarded as part of total investments, recorded an increase of 25.48% from ¢103.6 billion in 1998 to ¢130 billion in 1999. These arrears clearance have taken up an upward trend especially since 1996, since most of these arrears were originally not budgeted for and apparently no records existed about the actual total arrears still outstanding.

Under this category, it is apparent that the largest single discretionary expenditure item is total investment, with a relative share of total discretionary expenditures of about 47.26% followed by personal emoluments. The increase in the wage bill, according to the

government resulted from the implementation of the new Ghana Universal Salary Structure (GUSS), which was introduced at the beginning of 1999.

3.5.2: NON-DISCRETIONARY EXPENDITURE:

This is also called the statutory expenditures and it comprises under the new budget format, interest payment on the national (domestic and external) debt, government transfers to the District Assembly Common Fund (DACF) and to households. Non-discretionary expenditure as a percentage of total government expenditure was 38.3% and 46.93% in 1999 and 2000 respectively. Interest and principal payment on external debts accounted for about 45.98% of the total statutory spending while interest payments on domestic debt were equivalent to about 38.29% in 1999. The interest and principal payments on the external debt together accounted for over 51.38% of the total statutory spending for the year 1999 and thus reiterates the tremendous relative size of the national debt and how its servicing affects the flexibility of the government's budgeting.

Also, in 1999, transfers to DACF and private households accounted for about 7.36% and 7.72% of the total statutory spending respectively while the year 2000 saw a decline in both variables, recording 4.15% and 2.71% respectfully.

3.6: TRENDS AND STRUCTURE OF SOME COMPONENTS OF PUBLIC EXPENDITURE IN GHANA (1970-1998)

Appendix 1 (Page 122) shows the structure and trend of some public expenditure components between 1970-1998.

The table shows that little progress has been made in shifting spending to development and/or pro-poor priorities. Government expenditure ratios (expressed as a percent of GDP) increased over the post- ERP period, recording a significant jump in 1993 (a year after Ghana returned to constitutional rule) when the expenditure/ GDP ratio increased by over 4 percentage points vis-à-vis the pre-reform average of 16.4%. Comparatively, this was 2 percent lower than the SSA average of about 23.2%. Over the period, 1970-1998, however, the highest Expenditure/GDP ratio of 26.1% was recorded in 1998 (Refer to figure 3 in the previous analysis for the trend of government size measured as the ratio of expenditure in GDP between the periods 1970-1998). Although the average for the sub-region can be said to have declined, this is at variance with the Ghanaian case (Table 2).

A careful examination of the components of public expenditure reveals that the public wage bill accounts for the lion's share, averaging about 27 per cent of the total in the pre-ERP period and reaching about 34.9 per cent in 1992. Between 1994 and 1999, the wage bill as a percentage of total government expenditure averaged at approximately 35.1%. The Minister of Finance amply manifested the alarming increase in the share of the wage bill in total expenditure with its concomitant ghost names.

" The government losses an estimated ¢300 billion every month through the insertion of 'ghost names' onto worker's payrolls. The amount represents 10 per cent of the about ¢3 trillion that the government expends on civil/public servants every month" (Daily Graphic, December 14, 2001).

The statement by the minister clearly demonstrates how the issue of ghost names has exacerbated the wage bill problem. In an economy where individuals succeed in getting emoluments without commensurating output, the total output of the economy will decline since the marginal productivity of the "ghost" is zero. It is even argued that a sizable labour force actually contributes nothing or even negative in terms of marginal productivity vis-à-vis their emoluments let alone ghosts. It is against this background that the government is making pragmatic efforts to remove the ghost names from the government's payroll. It is noteworthy that ghost names are negligible or non-existent in the private sector due to the high degree of vigilance by employers.

Although the share of total expenditures in recent years has relatively declined, it is still higher than the pre-reform average (Addison and Osei, 2001). Interest payments have become an important component of government expenditure especially during the 1990s, increasing from about 12 per cent of total expenditure in the late 1980s to about 29 per cent in 1997. This is a significant portion of government expenditures and thus needs to be given urgent attention if appreciable progress is to be made in reducing poverty and accelerating economic growth. It is no wonder that the country opted for the Highly Indebted Poor Countries initiative in March 2001 reaching a decision point on February

22, 2002. The country no doubt has made modest savings on expenditures that would have been otherwise used to service debt.

Addison and Osei (2001) outlined two reasons for the increase in Ghana's interest payments. Firstly, high domestic interest rates which have averaged over 30 per cent in the 1990s, significantly more than the early 1980s average of about 13 per cent. Secondly, Ghana's external debt ratio of about 87 per cent of GDP in 1997 is almost 3 times the average for the pre-reform period. This has aggravated the debt-servicing ratio, increasing from an average of about 11 per cent of GDP over 1970-1983 to about 31 per cent of GDP in 1998 (see Appendix 1).

The duration of the economic reform notwithstanding, the pattern of public expenditures in Ghana still does not appear to be 'pro-poor' or at least it is no more pro-poor compared to the pre-ERP era. Health and education expenditures (as a per cent of GDP) have recorded slight increases although their importance relative to other expenditure items has declined. For example, the share of public health spending in total expenditures decreased from an average of about 9 per cent over 1984-1991 to about 5 per cent in 1997. The share of public spending on education in total government expenditure seem to have decreased from about 19.1 per cent in the pre-ERP era to about 15.7 per cent in 1998. The decline in these important expenditure components is further compounded by the fact that they are traditionally biased towards the urban areas and also towards university education and tertiary health care. In 1993, a World Bank report on Ghana indicated that only 25 per cent of the total health budget was earmarked for primary

health and preventive care. However, this was markedly better in education where the proportion spent on basic education was about 62 per cent in 1989 compared to about 44 per cent in 1984. Even if the share of spending on primary education and health care as a proportion of their respective sector totals has increased over the years, it still does not warrant a reduction in the share of education and health expenditures in the total budget. A World Bank poverty assessment report on Ghana in 1995 noted that social spending was not well targeted to the poor. Public expenditure on health was too low and the existing spending was urban biased (World Bank 1995: 2).

Defence expenditure has steadily decreased from the pre-reform high level of 7.7 per cent of total expenditure to an average of 3.5 per cent between 1990-1998. Fortunately, Ghana does not have pressing security concern given that Ghana's immediate neighbours (Cote d'Ivoire, Togo and Burkina Faso) are relatively stable and peaceful. Consequently, military spending has been low and can be expected to stay that way, thereby avoiding the burdens experienced in more insecure sub-regions of SSA (Addison and Murshed 2000, Ndikumana 2000).

Expenditure on general administration or general services has also been steadily reduced from the pre-reform high level of 18.5 per cent of total expenditure to 10.6 per cent in 1998. It is envisaged that the share of expenditure on general administration in total expenditure will decline further as the efficiency of administering public services increases. Of the expenditure components presented, transport and communication recorded the least share in total expenditure, recording an average of 3.5 per cent in the

pre-reform period and a highest of 4.0 per cent in 1985 with the lowest share being 0.2 per cent in 1997 and 1998.

In summary, it could be said that some progress has been made in reducing the size of the public sector wage bill (for example the recent head count conducted by the government in civil and public services to remove "ghost" names). Pragmatic efforts should however, be made to channel increased resources to priority sectors such as health and education rather than servicing public sector debt (both internal and external). It is in this direction that the government took advantage of the HIPC initiative to reduce the extent of debt servicing.

Table 3 shows the comparison of the structure of Ghana's public expenditure and the Sub-Saharan African averages. According to this information, Ghana's gross-public investment as a percentage of GDP ranks as one of the highest in the sub-region. However, Ghana has not fared well in its share of total interest payment in GDP, which ranks among the highest in the sub-region.

In Table 4, a further comparison is made in the allocation of central government expenditure by sectors between Ghana and four SSA countries namely Malawi, Nigeria, Tanzania and Uganda. Herein again, Ghana's expenditures on education, health and social security/welfare as a percentage of total expenditure were the highest relative to the other countries. Whereas Nigeria's share of general administration expenditure in total was the lowest, that of Ghana was one of the highest.

In addition, Uganda's interest payment was the least (in comparison with the other countries including Ghana) while Ghana's interest payment was one of the highest, only next to Nigeria and Malawi over the period. In terms of defence expenditure, Ghana recorded the least while Uganda recorded the highest.

In the government's Interim Poverty Reduction Strategy, the projected share of spending on primary health care and basic education in their respective sectoral totals shows a significant improvement, when compared to the shares in the early 1990s. In addition, the projected shares of both health and education spending in total public expenditure are expected to increase in the medium term. The achievement of these projections will depend on whether the projected reduction in the spending of interest payments materializes. With Ghana admitted into the HIPC initiative, it is envisaged that a lot of money will be channelled into pro-poor priority areas such as primary health care and education to justify the option for the initiative, which attracted a lot of criticisms from both the social and political arena.

Table 3: Comparison of the Structure of Public Expenditure in Ghana and the Sub-Saharan African Averages

Country Or Region	Period	Gross-Public Investment (% of GDP)	Total-Interest Payment (% of GDP)	Wages & Salaries (% of total)	Capital Expenditure (% of Total)
Ghana	1990-95	10.8	11.0	21.3	41.9
	1996	13.3	17.2	18.2	44.8
	1997	12.4	22.9	18.8	40.9
	1998	11.3	22.9	19.5	39.4
SSA	1990-95	7.4	17.4	17.4	26.5
	1996	6.4	15.6	15.6	28.0
	1997	6.6	14.0	14.0	28.7
	1998	6.1	13.3	13.3	23.5
W/A	1990-95	7.3	22.4	22.4	29.5
	1996	6.6	18.7	18.7	33.5
	1997	7.4	17.1	17.1	35.8
	1998	6.6	14.5	14.5	25.8
Africa	1990-95	6.9	11.5	11.5	21.3
	1996	5.9	11.8	11.8	19.6
	1997	6.1	11.2	11.2	19.9
	1998	6.3	16.6	16.6	17.76

Source: Addison and Osei (2001, p 9)

Table 4: The Allocation of Central Government Expenditures by main Sectors, in Selected Countries, 1980-1992, 1980-1997

Ghana	19.24	6.37	5.92	5.41	16.49	19.33	20.9
	(21.95)	(8.79)	(5.23)	(6.85)	(12.51)	(19.29)	(18.41)
Malawi	11.47	5.3	---	19.63	12.3	14.87	38.47
	(10.73)	(6.43)	---	(5.80)	(18.97)	(17.07)	30.57)
Nigeria	6.97	2.13	---	8.63	5.97	14.40	53.2
	(5.47)	(1.87)	---	(6.40)	(28.77)	(12.33)	34.23
Tanzania	13.02	5.79	0.96	10.74	7.26	22.98	37.68
	(8.28)	(5.66)	(0.54)	(15.78)	(10.19)	(34.02)	27.47
Uganda	13.31	5.09	1.23	24.27	2.9	26.28	12.52
	(13.87)	(2.97)	(1.22)	20.98)	(9.6)	22.57)	12.68

Notes: Rows do not add up to 100 since the values reflect percent change averages and omit 'other' Sectoral expenditures and adjustments; all averages are unweighted. The 1980-1997 averages are in parenthesis.

Sources: IMF (1989, 1990); UNDP and World Bank (1989)

CHAPTER FOUR

MODEL SPECIFICATION AND JUSTIFICATION

4.1: INTRODUCTION

In most poor countries, education is considered as a priority to reduce poverty and thus enhance economic growth. Several studies have emphasized its importance. Barro (1991), Chu et al (1995), Tanzi and Chu (1998) argue that public expenditure allocations for education can improve economic growth while promoting equity. Gupta and Verhoeven (2001), Gupta, Verhoeven and Tiongson (1999) suggest that both the size and efficiency of public education expenditure are important in improving socio-economic performance.

Jung and Eric (2001) support the positive impact of education expenditure on economic growth. They however, cautioned that maximum benefits from education expenditure could be only maximized if there is sufficiently high level of investment. Generally, promoting the education sector entails increasing public expenditure on education.

Economic growth can also be enhanced through efficient outlay of health expenditures. Growth in output can only be sustained if the labour force is healthy. The positive relationship between health expenditure outlays and economic growth notwithstanding, Ghana's health sector underwent numerous problems in the late 1970s and early 1980s. For example, health expenditure as a share of total government expenditure decreased from 8% in the mid 1970s to less than 5% in the early 1980s (World Bank, 1995). The

health sector has however, recorded some improvements. Between 1980-1989, an average of 7.6% of total government expenditures was allocated to the health sector. Per capita nominal health expenditures have been rising steadily from ¢38 in 1980 to ¢816 in 1988, representing an increase of over twenty-fold over the period (Jackson, 1994).

Bohoun and Kouassy (1992) argue that public investment especially in infrastructure is positively related with economic growth. Eichengreen (1995) reiterated the importance of infrastructure expenditures. He asserted that where transportation, communication and power generation are inadequate, increased supplies could do much to boost productivity and growth.

Theoretically, the effect of public investment on private investment is ambiguous. While government investment in infrastructure is expected to be complementary to private investment, government investment in non-infrastructure may compete with private investment especially if the government competes with the private sector for loanable funds. For a country like Ghana, The liberalization of interest rates has further increased the cost of investible funds. In Ghana, the proportionate rate of growth in interest rate has exceeded the rate of growth in private investment as a proportion of GDP. This could be partly explained by the competition between the public sector and the private sector for loanable funds and the demand for the government's financial papers. The possibility of the public sector investment crowding out private investment in Ghana cannot be ruled out. However, the empirical results obtained by Asante (2000) suggest that there is complementarity between public sector investment and private

investment. Although he did not categorize public investment into infrastructure and non-infrastructure, he obtained the crowding-in effect of public investment. This suggests that the positive externality of infrastructure investment outweighs the negative effect of non-infrastructural investment.

4.2: THE MODEL

The study estimates a linear growth regression model consisting of Labour Force, Investment, Growth Rate of Exports, Aggregate Government expenditure and three components of aggregate government expenditure. The three components of the aggregate government expenditure variable being investigated; Education, Roads and Waterways and Defence fall under the hitherto functional classification of expenditures.

Although this study cannot empirically research into the relationship between all the components of government expenditure and economic growth, the choice of the three components is particularly important based on growth theory. Expenditure on Roads and Waterways is used as a proxy for infrastructural expenditure, Education as human Capital endowment and Defence as "unproductive" expenditures. In essence, the three variables chosen encompass all the expenditure categories.

Thus our key explanatory variables are the impact of the aggregate expenditure variable and the specified expenditure components on the economic growth process. To control for level effects, we also include the aggregate government activity variable (Deverajan et al., 1995) in this case the share of government expenditure in GDP weighted by the

growth rate of government expenditure in the model. The choice of this model is based on its usefulness in examining which of these components influences growth most significantly.

Although the subject of the relation between government size and economic growth is important and the theoretical position can be quite diverse, direct empirical assessments of the issue have reported contradictory results. Using a sizable cross-country sample, Rubinson (1977) concluded that a large government size indexed by the share of government revenue in GNP, promotes economic growth by reducing "dependence", especially in the poorer less developed countries. In the same vein, Ram (1986) corroborated Rubinson's findings and indicates that the positive impact of government size on economic growth is most prominent in poorer developing countries.

Conversely, Landau (1986,p.68) using a sample of 65 developing countries over the 1960-80 period concluded that a large government size, proxied by the share of government consumption adversely affected growth. Barro (1991), using a sample of 98 countries (developed and developing) for the period 1965-1985 reports a similar finding and blames the negative effects of government expenditures (consumption) on allocative distortions.

In studying the impact of government expenditure on economic growth in Ghana, this paper utilizes a framework akin to that of Ram (1986). His model is built on a two-sector production function, originally developed by Gershon Feder (1983,pp.61-67), to explore

the relationship between exports and economic growth. According to this model, the economy is assumed to consist of a government sector (G) and a non-government sector(C). Output in the government sector is produced with a factor combination of labour (L) and capital (K), while output in the non-government sector is produced with labour (L) and capital (K) with an "externality" effect on output stemming from the government sector. The production functions for the government and non-government sectors can be written as follows:

$C = C(L_C, K_C, G)$----------(1)

$G = G(L_g, K_g)$----------(2)

Where subscripts denote sectoral inputs. If the total inputs in the two sectors are given as

$L_c + L_g = L$, ----------(3)

$K_c + K_g = K$----------(4)

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Then total output (Y) is given by the summation of outputs in the two sectors, and thus

$C + G = Y$----------(5)

The model also assumes that the relative factor productivity in the two sectors are different such that:

$G_L / C_L = G_K / C_K = (1+\delta)$,----------(6)

Where uppercase subscripts denote partial derivatives of the functions with respect to subscripted inputs. For instance, G_L denotes $\partial G / \partial L$ (the marginal productivity of labour in the government sector) or its discrete analogue $\Delta G / \Delta L$. From equation (6), it is obvious that the sign of ∂ indicates which sector has higher marginal factor

productivity. By inference, a positive ∂ means that the factor productivity in the government sector is higher than that in the non-government sector.

Manipulating the production functions and combining equations (3)-(6), we can derive the following approximation for an aggregate growth equation.

$$\dot{g} = \alpha(\frac{I}{Y}) + \beta \dot{L} + [\frac{\delta}{(1+\delta)}] G(\frac{G}{Y}) + \vartheta \dot{G}, \text{ ----------(7a)}$$

or writing δ' for $\delta / 1+\delta$, (7a) can be written as

$$\dot{g} = \alpha(\frac{I}{Y}) + \beta \dot{L} + (\delta' - \vartheta)\, G(\frac{G}{Y}) + \vartheta \dot{G} \text{ ----------(7b)}$$

Where the dot over the variable indicates its rate of growth for example, ($\dot{g}$) denotes $\frac{dg}{g}$ or its discrete equivalent $\frac{\Delta g}{g}$. In fact, $\dot{g}$ denotes the rate of change of real GDP.

The coefficients α, β and ϑ are of the kind usually found in simple growth models. In this case, α is the marginal product of (K) in the C sector: β is the elasticity of non-government (private) output (C) with respect to (L) and ϑ equals C (G/C), and is the elasticity of non-government output with respect to G.

If $\delta' = \vartheta$, we obtain a special case where (5) reduces to

$$\dot{g} = \alpha(\frac{I}{Y}) + \beta \dot{L} + \vartheta \dot{G} \text{ ----------(8)}$$

In equation (7) and (8), ϑ gives only the externality effect of government size and not total effect. However, since (6) is premised on $\delta' = \vartheta$, estimates ϑ also yields an estimate of δ' (and of ∂), and thus of total effect, provided the constraint $\delta' = \vartheta$ holds.

If it is assumed that C_G, rather than ϑ, is the constant parameter, (7) can be written as

$$\dot{g} = \alpha(\frac{I}{Y}) + \beta \dot{L} + (\delta' + C_G)\ G(\frac{\dot{G}}{Y}). \text{----------(9)}$$

Obviously, the coefficient of $\dot{G}(\frac{G}{Y})$ in (9) is different from the coefficient of that variable in (7). Typically, the coefficient in (7) is likely to be much smaller than the coefficient in (9). In addition the advantage of (9) is that unlike (7) and (8), one can obtain the overall impact or effect of government size directly from the coefficient of $\dot{G}(\frac{G}{Y})$. However, the disadvantage is that one cannot get separate estimates of the externality effect and the factor productivity differential. This weakness will have no impact on this work since the focus is to obtain the overall effect of the government expenditure variable on the economic growth process. It is also notable that while colinearity between $\dot{G}$ and $\dot{G}(\frac{G}{Y})$ may lower precision in the estimation of (7) neither (8) nor (9) has that weakness.

Since the main focus of this study is to obtain the direction and magnitude of the overall effect of government size on economic growth, equation (9) will be adopted and the estimated coefficient of $\dot{G}(\frac{G}{Y})$ that is $(\delta' + C_G)$ will be treated as a composite coefficient, say β.

For empirical comparisons, Ram also estimates an equation, which has been widely used in the literature (Landau, 1983). This can be written as

$$\dot{g} = \alpha(\frac{I}{Y}) + \beta L + \gamma(\frac{G}{Y}) \text{ ----------(10)}$$

Equations (8) and (9), or what might be called the Ram model, measure the size of government by the percentage change in government expenditure, while the standard equation (10) otherwise called the Landau model, measures it by the ratio of government expenditure to GDP.

The Ram model (equation, 9) has been adopted in this study with some modification. An export orientation variable, political instability and nature of political governance dummies, which are instrumental for determining growth in Ghana, have been added to the Ram (1986) model to reflect the realities of the politico-economic environment in Ghana during the sample period. The inclusion of the export variable and political instability have been necessitated by existing literature and hence justified in this study.

Functionally, the model for this study can be specified as follows

$g = f(L, XR, IY, GGY, RGR, EGR, FGR,)$----------(11)[3]

Equation (12) includes specified government expenditure variables in addition to the aggregate government expenditure.

Econometrically, the equation can be specified as follows:

$$g = \alpha + \beta_1 L + \beta_2 XR + \beta_3 IY + \beta_4 GGY + \beta_5 RGR + \beta_6 EGR + \beta_7 FGR + E_t \text{ ----------(12)}$$

[3]. Regression results obtained by using the double-log model have been provided in Appendix 4. Although this study employed a model akin to that of Ram (1986), the double log model results is provided for comparison purposes. By all intent, the model used in the study is superior to the double-log model especially in terms of the expected signs of the coefficients (with recourse to theory) and the diagnostic summary test.

Where:

α = The constant term

L = Labour Force (Proxied with the rate of growth of population)

XR = The growth rate of real exports.

IY = The ratio of Investment to GDP (Both Private and Public)

GGY= The growth rate of real Government Expenditure weighted by the share of Government Expenditure in GDP.

EGR = The growth rates in real Education expenditures

RGR = The growth rates in real expenditures on Roads and Waterways

FGR = The growth rates in real Defence Expenditures

E_t = The stochastic error term

The expected analytical results (a prior) are as follows:

$$g = \alpha + \overset{+}{\beta_1} L + \overset{+}{\beta_2} XR + \overset{+}{\beta_3} IY + \overset{\pm}{\beta_4} GGY + \overset{+}{\beta_5} RGR + \overset{+}{\beta_6} EGR + \overset{-}{\beta_7} FGR + E_t$$

Theoretically, it is expected that the neo-classical labour force variable will have a positive impact on economic growth. Also, the growth rate of real exports is expected to be complementary to economic growth. In addition, the investment variable, which is regarded as the "engine" of economic growth, is expected to positively influence economic growth.

Theoretically, the effect of the aggregate government activity variable on economic growth is ambiguous. While increased government expenditure on infrastructure or "productive" sectors will confer spillover effects on the private sector, thereby promoting economic growth, increased government expenditure on recurrent activities and debt-

servicing will stifle the growth process. The sign of the aggregate government activity variable is therefore an empirical issue. The a priori signs of the proxies for expenditures on infrastructure and human capital formation; the growth rates in roads & waterways and real education expenditures respectively are expected to have positive signs. Lastly, the proxy for "non-productive" expenditures (the growth rates in real defence expenditures) is expected to have a negative effect on Ghana's economic growth.

The choice of these variables is influenced by both growth theory and general empirical growth literature. The Ordinary Least Squares (OLS) method of estimation is used to estimate the regression coefficients with the PcGive8 computational programme.

Barring the three expenditure components in the model, the model exploited is also akin to the internally-determined growth function explored by Tsikata (1996) as the determinants of growth in Ghana. A disparity between this model and the one used by Tsikata is the choice of government activity. While Tsikata chose the rate of growth of government consumption, this study measures government activity as the ratio of government expenditure in GDP weighted by the growth rate of real government expenditure. This study also includes three important government expenditure components to ascertain their impact on the economic growth process in Ghana within the time range.

4.3: THE IMPORTANCE OF THE STOCHASTIC ERROR TERM IN THE MODEL

In the growth model specified above, E_t, is a stochastic error term. According to Johnston (1963), there are three feasible though not mutually exclusive ways of rationalizing the inclusion of the error term in the model. Firstly, the dependent variable, 'g', could be fully explained if all the factors at work were known, and all the necessary data is accessible. In explaining economic growth, the list of relevant factors may be extended 'ad infinitum'. However, many of the factors will not be quantifiable, and even if they are, it is usually impossible in practice to obtain data on all of them. Besides, the objective(s) of the study may not warrant the inclusion of all determinants of economic growth. Moreover, many variables may have very slight effects so that even with substantial quantities of data, the statistical estimation of their influence will be difficult and uncertain. For instance, variables such as terms of trade, inflation and exchange rate have not been considered in this study. The error term is therefore included in the model to represent the net effect of the excluded variables.

A second justification for the inclusion of the error term in the model is to assume that over and above the total effect of all relevant factors, there is a basic unpredictable element of randomness in responses, which can be adequately characterized only by the inclusion of a random variable term. Lastly, the inclusion of the error term is justified due to errors of observation or measure of the dependent variable.

In the data analysis (chapter 5), the presence or otherwise of the basic assumptions were tested using the Test Summary in PcGive 8 computational programme after every regression equation.

4.4:0 JUSTIFICATION FOR THE INCLUSION OF VARIABLES OTHER THAN GOVERNMENT EXPENDITURES

4.4.1: INVESTMENT

Investment plays a pertinent role in models of economic growth and in recent times has been touted as the "engine" of economic growth in Ghana. Investment is an essential component of aggregate demand and thus fluctuations in investment have considerable effect on economic activity and long-term economic growth.

The role of investment or capital in LDCs is less controversial relative to that of labour force. The positive neoclassical relationship between investment and economic growth has been established in most cross-country and country-specific studies. The empirical framework for analysing the relationship between investment and economic growth is two-fold; investment as a ratio of GDP and the rate of investment. The former has been found to be positively correlated with economic growth in several studies among which are those of Feder (1986); Landau (1986, op.cit); Veneries and Gupta (1983) and Hatcher (1991). Likewise, the rate of investment approach has also produced significant positive correlation between investment and economic growth. For instance, Ram (1985), Kormendi and MeGuire (1985), Gendberg and Swoboda (1987), inter alia.

The share of investment in GDP has been historically lower in Ghana than in other SSA countries. In 1970, when investment-GDP ratios in Gabon and Zambia were averaging about 30 per cent, the figure for Ghana was just above 10 per cent (IMF, 2000). This ratio further exacerbated owing to the economic crises thereafter, reaching 6 per cent in 1980. However, there has been a remarkable recovery culminating in an investment-GDP ratio of about 25 per cent in 1998. Hitherto, the 1996 ratio of 22.0 was competitive enough to place Ghana among the top 10 countries in the region.

The share of public sector investment has also been declining steadily throughout the years of recovery programme, reaching a low 10 per cent in 1996. However, this accounts for about 50 per cent of total investment. An inference that could be drawn from this development is that, there is a gradual withdrawal of the public sector from economic activity and the rising importance of the private sector in the economic growth process. The productivity of investment in Ghana although low by international standards, appears to be relatively high vis-à-vis the SSA average, at least in the past 15 years. Between 1985 and 1995 investment accounted for about 15-20 per cent of the increase in output, a productivity level among the highest in the region (IMF, 2000).

Currently, it is an undeniable fact that capital accumulation is no longer viewed as a panacea for poor countries such as Ghana. However, it is important that even mildly robust growth rates as currently being experienced by Botswana and Mauritius can be sustained over long periods only when countries keep investment as a sizable proportion

of GDP. The proportion can be rarely less than 15 per cent if long-term growth is to be sustainable (Gillis et al, 1987: 255).

4.4.2: LABOUR FORCE

Fundamentally, the Solow-type neoclassical growth model consists of labour force growth, capital accumulation and technological progress. Thus, labour force has been viewed as one of the principal determinants of economic growth. The role of labour in the growth process can be considered in a dichotomous perspective; labour as a co-operant or augmenting factor and labour as a scarce factor.

Firstly, labour can be viewed as a non-scarce factor due to the high levels of unemployment and underemployment in most SSA countries including Ghana. By inference, the factor constraint reduces arguably to the scarcity of capital resources. As a result, the omission of the labour force variable will not significantly affect the authenticity of the results. Salvatore and Hatcher (1991) had used this approach when considering the influence of trade, investment and industrialization on economic growth. It can be argued that when the unemployed and underemployed are skilled and highly educated labour force, the economy will be dissipating scarce resources unless there is exchange, that is if the said labour force, are sent to a deprived economy which lacks highly skilled labour. If the surplus skilled labour is not appropriated, their omission from the growth model will significantly affect the authenticity of the results and render any policy recommendation or generalizations meaningless.

Conversely, the inclusion of labour in the growth process could be justified due to the fact that it is regarded as a co-operant factor or a growth-augmenting variable. This approach has received wider attention and recognition than the exclusion approach. As in a number of other studies, the population growth rate turns out to be most empirically plausible and a good proxy for the rate of increase in labour input. Although not a very good proxy in some cases, the use of the population growth rate however, does have some advantages. For instance, good time series data on labour force are rare, particularly for LDCs, but data on population are fairly good.

One serious weakness, however, associated with the use of the population growth rates stems from the Malthusian-type growth rates which is coterminous with the gradual exhaustion of resources since the population growth surpasses the growth of resources (Tsikata, 1996). This setback is further amplified by Todaro (1989) to the effect that there was no period in the history of the European and North American growth process in which natural population growth rates exceeded 2 per cent per annum. This is however at variance with the population growth rate of 2.5 and 3.0 per cent prevalent in SSA countries such as Ghana.

Feder (1983), Agarwala (1983), Ram (1983) inter alia have empirically found a positive and significant relationship between the labour force variable and economic growth. Conversely, other studies such as those of Marsden (1983), Landau (1983, 1986), Balassa (1985) among others have found the relationship either negative or insignificant. Thus

empirical relationship between population growth (i.e. labour force) and economic growth remains inconclusive.

4.4.3: EXPORT

Although it is evident that most LDCs have been confronted with adverse terms of trade especially in primary products, many development economists maintain the view that, export orientation can enhance sustainable economic growth. This recognition of trade as an "engine of growth" dates as far as Adam Smith's proposition of international trade as means of promoting "specialization" and hence economic growth.

Salvatore and Hatcher have clearly put forward the three main arguments in the literature by considering export-oriented strategy as resulting in:

1. A better allocation of resources and higher factor productivity especially when economies of scale are fully exploited through better utilization of capacity and a lower capital output ratio.
2. A higher rate of technological innovations and dynamic learning from abroad.
3. Less serious foreign exchange bottlenecks and greater access to international capital markets.

The robust growth rates achieved by the four Asian "tigers" namely Singapore, Taiwan, Hong Kong and South Korea have given credence to the pro-export argument. Empirically, the share of export in GDP (a proxy for the openness or export orientation of the economy) has been shown to be positively correlated with

growth in several studies such as those of Easterly and Wetzel (1989) and Romer (1986).

Similarly, models, which adopt the growth of exports in lieu of export-GDP ratios, have generally shown significantly positive export coefficients. Country-specific studies on some African economies such as Nigeria, Cote d'Ivoire and Zambia have confirmed the positive relationship between the export ratio and economic growth.

Griffin (1989), regressing the rate of growth of GDP on the rate of growth of exports, the investment ratio and labour force growth (proxied by population growth) obtained positive correlation between exports and growth with however, an insignificant coefficient for Cote d'Ivoire. Levine and Renelt (1991) revealed that replacing the share of exports in GDP variable with total trade and import share would yield similar results. Interestingly, they also found that, generally, the positive relationship between economic growth and exports becomes statistically insignificant if the growth of government is incorporated into the model.

4.4.4 POLITICAL INSTABILITY AND NATURE OF POLITICAL GOVERNANCE.

The contribution of political environment on the growth process in developing countries, especially Sub-Saharan Africa has been an interesting phenomenon in recent times. Since independence, the Ghanaian political system has witnessed four republics interspersed with four successful coups and military regimes. In addition, there have also been several

failed coup attempts. No doubt, these anomalies in the political system may have serious consequences for output growth.

Barro (1991) has empirically confirmed that social indicators of war, revolution and civil liberties are inversely related to growth. However, there is no significant correlation between these measures of political instability and measures of monetary or exchange rate variability and thereby highlighting the difficulties in drawing causal links. Fosu (1992) reiterated the effect of the political instability variable when his index of political instability proved to be a major determinant of GDP growth. Kormendi and Meguire (1985) introduced an index of civil liberties into their cross-country growth equation and found a positive but insignificant relationship.

The empirical examination of the political instability variable in Ghana is quite problematic because of definitional and measurement problems (Tsikata, 1996).

Consistent with the available empirical studies on growth determinants, a dummy variable capturing the impact of political instability on economic growth is included as an explanatory variable. This must however be done with some caution. Political instability and other upheavals resulting from political uncertainties such as poorly enforced property rights undermine the ability of individuals to reap the benefits of investments both in physical and human capital. It is therefore not unexpected for increased uncertainty arising from political volatility to undermine investment and economic growth. Therefore, a dummy for political instability (POLINS), which Tsikata (1996) found to be negatively and significantly correlated with growth is included to capture the effect of the peculiar politico-economic activities on growth in Ghana. We assign

negative 1 to each year in which a political change actually occurred, 0 to each year of the subsequent two years after the change (i.e. the transitional years) and one for all other years. An alternative approach is the orthodox application of the dummy variable, where 0 is assigned the year in which change of government occurred and 1 to years without political change. This research however, employs the former.

The nature of political governance is represented by a dummy (DEMOCRA) with any year of multi-party (Parliamentary rule) democracy assigned a value of 0. There is an improvement in the nature of governance variable at least in the last 7 years in the data set. It is expected that democratic governance will positively correlate with economic growth.

CHAPTER FIVE

DATA AND REGRESSION RESULTS

5.1: VARIABLES

The empirical analysis uses annual data from 1970 through 1998 to examine the link between three important components of government expenditure and economic growth. In the empirical analysis, we test whether the rates of growth (incrementalist approach) of these components of government expenditure; Education, Roads and Waterways and Defence are associated with higher economic growth. Thus, our key explanatory variables are the impact of the aggregate expenditure as well as the specified components on the economic growth process in Ghana. The rate of change of real GDP has been taken as a proxy for economic growth, which is the dependent variable. Fixed Capital Formation and Population are used as proxies for investment and labour force respectfully. The use of the latter is dictated by the lack of data on the labour force. The Consumer Price Index is used as a deflator to construct real magnitudes.

5.2: STATIONARITY (UNIT ROOT TEST)

In conventional econometric models, the variance of the disturbance term is assumed to be constant. However, time series exhibit periods of unusually large volatility followed by periods of tranquillity and as such the assumption of constant variance is violated.

As many papers have demonstrated, there are special problems related to time series data when it comes to estimation (Adam, 1992, Charemza and Deadman, 1992). Since this study utilizes macro data, it is likely to be trended. In other words, the variables may have a mean that changes with time and a non-constant variance. The implication of this is that, working with such variables in their levels will give a high likelihood for spurious

regression results and furthermore no inference can be done since the standard statistical tests like the F-distribution or the t-distribution are invalid. Consequently, the first test to be conducted is to ascertain whether the variables are stationary, or test the level of integration through the Unit Root Tests.

The simplest case of this test comes form a random walk variable. This is a variable that assumes the same value as in the last period, modified by current shocks.

$$y_t = y_{t-1} + \varepsilon_t \quad \text{---------- (1)}$$

Where ε_t are shocks to the system and are assumed to be white noise process.

In general, we would like to write (1) as

$$Y_t = \alpha Y_{t-1} + \varepsilon_t \quad \text{---------- (2)}$$

So that if $\alpha = 1$, it is a pure random walk variable. This is not a necessary requirement to have a random walk variable, but we want the example to remain simple and tractable. The assumption that $\alpha = 1$, implies that y_t is an integrated process so that if we subtract y_{t-1} from both sides, we get

$$y_t - y_{t-1} = \varepsilon_t \quad \text{---------- (3)}$$

That is, we difference y_t. Now Δy_t is stationary. The error term is assumed to be a shock process, which is stochastic and can thus be regarded as a white noise process [E $(e_t) = 0$, E $(e_t^2) = \sigma_{et}^2$ E $(e_t\, e_{t-s})$, for S $\neq 0$. This involves taking the first and second moments of ε_t. The first moment is the mean and the second moment the variance.

The test for unit root is thus formulated as follows (Dickey-Fuller Test, DF):

It is based on the estimation of :

$$\Delta y_t = \rho y_{t-1} + \varepsilon_t \quad \text{---------- (4)}$$

Thus $\alpha = (1+\rho)$ or $\alpha - 1 = \rho$

Hence if $\rho < 0$, then in (2) $\alpha < 1$ (is less than 1)

The Dickey Fuller test consists of testing the negativity of ρ of the OLS regression in (4).

We therefore test,

H_0 : $\rho = 0$ which implies that $\alpha - \rho = 0$ then $\alpha = 1$ (non-stationary)

Hi : $\rho < 0$ which implies that $\alpha - 1 < \rho < 0$ then $\alpha < 1$ (Stationary).

The following equations are used in accepting or rejecting the null hypothesis

(1) $\Delta y_t = \rho y_{t-1} + \varepsilon_t$ (a) get ρ

(2) $\Delta y_t = \alpha_o + \rho y_{t-1} + \varepsilon_t$ (b) get ρ

(3) $\Delta y_t = \alpha_o + \rho y_{t-1} + \alpha_1 (t - t_m)$ (c) get ρ

Equation (a) has no drift, (b) has a drift and (c) has a drift and a stationary trend process. That is time trend subtracted from its mean (t_m).

These three equations are supposed to give a value of ρ and it becomes more efficient as you move from (a) to (c).

(4) $\Delta y_t = \alpha_o + \rho y_{t-1} + \alpha_1 (t - t_m) + \sum_{i-1}^{k} \alpha_i + \Delta y_{t-1} + \varepsilon_t$ ---------- (d)

Equation (4) is the Augmented Dickey-Fuller. The augmentation involves the inclusion of lags of Δy_t and this improves the statistical fit of the equation and ρ is more efficient now with added information. Being the most efficient tests among the tests for stationarity and cointegration, the ADF, is used in this study to determine the order of integration of the variables. The use of the ADF is to prevent the possibility

of a higher order autocorrelation in the error term associated with the Dickey-Fuller (DF) test.

For the decision criteria, we collect the ρ values in all the equations and compare the t-statistics with the critical values. If the t-statistics from the stationarity equations is greater than the critical value, we reject the assumption of non-stationarity (unit root) and otherwise.

After testing for stationarity of the regression variables in their levels, it was found that all the variables with the exception of the growth rates in real exports were significant at the conventional 5% level with two lags[4]. There is therefore the danger of obtaining spurious regression results if the variables are used in their levels. To mitigate this possibility, the first difference of all the variables were estimated to ascertain whether they are stationary. The results provided in Appendix 2 shows that all the variables became stationary with first difference at the conventional 5%level of significance.

5.3: COINTEGRATION

It is imperative to determine that each of the variables is integrated of the same order and be non-stationary before any cointegration analysis is performed. In cointegration, we test whether if variables are integrated of the same order, a linear combination of the variables will also be integrated of the same order or lower order. The idea behind

[4] The number of lags for augmentation is two because annual data is used in this study, If quarterly data was used, six lags would be recommended (Adam, 1992).

cointegration analysis is that, although macro variables may tend to trend up and down over time, groups of variables may drift together. If there is some tendency for some linear relationships to hold amongst a set of variables over long periods of time, then cointegration analysis helps us to discover it. Generally, if a linear combination of variables of different orders of integration is formed this linear combination will take on the high order of integration. This is however a trivial case. We should thus consider variables that are integrated of the same order.

By definition, variables are said to be cointegrated if a linear combination of these variables assumes a lower order of integration. These variables must always be of the same order of integration individually. That is, they are individually non-stationary, integrated of the same order but their linear combination is integrated of a lower order.

Appendix 2 shows that not all the variables were stationary in levels at the conventional 5% level of significance with two lags. In fact, only one variable was not stationary in levels (i.e. the external orientation variable)[5]. As a result, all the variables were differenced and as shown in Appendix 2, their first difference became stationary at the conventional 5% level of significance.

By implication, all the variables are integrated of order one.

i.e. g ~ I (1), L ~ I (1), IY ~I (1), XR ~I (1), GGY ~I (1), EGR ~ I (1), RGR ~(1), FGR ~ I (1),

In testing for cointegration, equation (12) was estimated using the OLS. The residuals (E_t) from the cointegrating static regression were retained and treated as estimates of the

[5] The external orientation variable (i.e. the growth rate of real exports) however passes the stationary test at the 10% level of significance).

disequilibrium errors. To ascertain the order of integration of (E_t), a stationarity test (ADF-unit root test) was applied to the retained residuals. The test as reported in Appendix 2, shows that the retained residuals (E_t) were integrated of order zero [i.e. $E_t \sim I(0)$]. The stationarity of the error term in levels implies that a linear combination of these variables was stationary and therefore the variables are justifiably cointegrated.

Given that the variables are all cointegrated, it is reasonable to assume that there exists a long run growth function involving the variables and this is shown by the cointegrating static equation (12).

Since a long run relationship exists, we can construct an Error Correction Model (ECM) in order to appreciate the short run dynamics of the economic growth function. The first difference of equation (12) is therefore re-parameterized into an Error Correction Model as depicted below:

$$Dg = \alpha + \beta_1 DL + \beta_2 DXR + \beta_3 DIY + \beta_4 DGGY + \beta_5 DRGR + \beta_6 DEGR + \beta_7 DFGR + E_{t-1} + U_t$$

The above equation can be rewritten as:

$$E_{t-1} = Dg - (\alpha + \beta_1 DL + \beta_2 DXR + \beta_3 DIY + \beta_4 DGGY + \beta_5 RGR + \beta_6 EGR + \beta_7 FGR + U_t) \text{------(13)}$$

The Error Correction Term (ECT) is thus given by a linear combination of the residuals (E_{t-1}). The ECT reflects the temporal status of the long-run relationship in the system. The sign and size of the estimated coefficient on the Error-Correction Term (ECT) in the equation reflects the direction and speed of adjustment of the dependent variable to

temporary deviations from the long-run equilibrium summarized by the cointegrating vector. For example, a negative and significant coefficient on the ECT in the Error Correction Model implies a positive response of economic growth to fluctuations that depress the value of the stationary combination. Conversely, if ECT were insignificant, that would indicate the absence of any long-run adjustment of the growth measure to movements amongst the explanatory variables.

5.4: GRANGER CAUSALITY TEST

The detection of causal relationships among a set of variables is one of the objectives of empirical research. A high degree of correlation between two variables does not necessarily mean the existence of causal relationship between them; it may simply be attributable to the common association of a third variable.

Granger (1969) devised tests to probe into the question whether a variable X_t causes Y_t and vice versa. The test makes use of lagged values of say Y_t to explain current Y_t, and then goes further to test if lagged values of X_t can be used to improve the prediction of current Y_t. In this study, the Pairwise Granger Causality Test is employed to investigate the direction of causality between the dependent variable (economic growth, G) and four variables of interest namely, the aggregate government activity variable (GGY), the growth rate of real expenditures on education (EGR), roads (RGR) and defence (FGR). These variables are stationary in levels (refer to Appendix 2) since the investigation of causal relationship is only feasible for stationary series. For example, since G_t and GGY_t are stationary, the standard Granger Causality Test determines the direction and nature

(unidirectional, feed back etc) of causal relationship between G_t and GGY_t based on the following regression:

$$G_t = g_o + \sum_{j=1}^{m} \alpha_j GGY_{t-j} + \sum_{i=1}^{l} \beta_i G_{t-i} + e_t$$

Where G_t and GGY_t are two stationary series, i and j are the lag lengths, e_t is a mutually uncorrelated white noise series. The acceptance of the null hypothesis implies the lack of causal relationship between G_t and GGY_t and rejection otherwise. The null hypothesis is tested using the F-statistics and probability values.

From the empirical results provided in Appendix 3, the aggregate government activity variable Granger-Causes economic growth at only 10% level of significance. However, the economic growth variable significantly Granger-Causes the aggregate government activity variable at 5% level of significance. Thus, the Granger Causality Test reported confirm the Wagnerian Hypothesis that economic growth will lead to a greater public expenditure in Ghana. Likewise, there is empirical evidence that the rate of growth of real government expenditure on education Granger-Causes economic growth at the 5% level of significance (unidirectional).

Furthermore, the empirical results confirm that economic growth Granger-Causes growth in real expenditures on roads and waterways unidirectionally.

Finally, there is no evidence of Granger-Causality between the rate of growth of real defence expenditure and economic growth in both directions.

ANALYSIS OF REGRESSION RESULTS

5.5: THE LONG-RUN GROWTH MODEL RESULTS

Table 5: The Long-Run Growth model Estimates

EQ(1) Modelling G by OLS
The present sample is: 1 to 29

Variable	Coefficient	Std.Error	t-value	t-prob	PartRý
Constant	-3.6722	2.4162	-1.520	0.1435	0.0991
L	0.40567	0.62030	0.654	0.5202	0.0200
XR	0.029502	0.027301	1.081	0.2921	0.0527
IY	0.43295	0.13367	3.239**	0.0039	0.3331
GGY	-1.2165	0.31818	-3.823**	0.0010	0.4104
RGR	0.0068622	0.0040957	1.675	0.1087	0.1179
EGR	0.15418	0.064791	2.380**	0.0269	0.2124
FGR	-0.00099662	0.033194	-0.030	0.9763	0.0000

Rý = 0.542086 F(7, 21) = 3.5514 [0.0112] å = 4.05139
DW = 2.10
RSS = 344.6885625 for 8 variables and 29 observations

AR 1- 2F(2, 19) = 0.21399 [0.8093]
ARCH 1 F(1, 19) = 0.1776 [0.6782]
Normality Chiý(2)= 1.4948 [0.4736]
Xiý F(14, 6) = 0.54681 [0.8350]
RESET F(1, 20) = 3.8533 [0.0637]

Equation (1) is the leading equation in the empirical analysis. However, a further model exploration has been undertaken with the introduction of political instability dummy, democratic environment dummy and Time trend. The inclusion of these dummies has been necessitated by their influence on growth in developing economies. It is therefore prudent to ascertain how they have impacted on economic growth in Ghana within the range of data set.

The remaining regression equations, which are also important for our analysis, have been summarized in the table below.

Table 6: Other Regression Results: Dependent variable = Real GDP Growth (G)

Variable	REG. 2.1	REG. 2.2	REG. 2.3	REG. 2.4	REG. 2.5
C	-3.4716 (-1.325) **0.2018**	-3.5296 (-1.380) **0.1835**	-3.7174 (-1.491) **0.1516**	-3.5775 (-1.455) **0.1613**	-3.6277 (-1.471) **0.1570**
L	0.47459 (0.682) **0.5040**	0.41258 (0.622) **0.5411**	0.42683 (0.655) **0.5196**	0.42873 (0.679) **0.5048**	0.47663 (0.729) **0.4746**
XR	0.038361 (1.199) **0.2460**	0.034733 (1.159) **0.2606**	0.029367 (1.050) **0.3064**	0.034183 (1.186) **0.2495**	0.033191 (1.139) **0.2683**
IY	0.42038 (1.841)* **0.0822**	0.36755 (2.029)* **0.0567**	0.43384 (3.166)** **0.0049**	0.37380 (2.222)** **0.0380**	0.48758 (2.611)** **0.0167**
GGY	-1.2138 (-3.553)** **0.0023**	-1.2073 (-3.619)** **0.0018**	-1.2207 (-3.732)** **0.0013**	-1.2114 (-3.747)** **0.0013**	-1.2246 (-3.767)** **0.0012**
RGR	0.0072666 (1.613) **0.1241**	0.0073949 (1.684) **0.1086**	0.0068207 (1.622) **0.1204**	0.0073170 (1.730)* **0.0991**	0.0067164 (1.602) **0.1248**
EGR	0.14478 (1.933) **0.0691**	0.15270 (2.164)** **0.0434**	0.15696 (2.276)** **0.0340**	0.15503 (2.355)** **0.0288**	0.14696 (2.155)** **0.0436**
FGR	0.0016886 (0.046) **0.9635**	-0.0015715 (-0.045) **0.9643**	-0.0013564 (-0.040) **0.9686**	- 0.0018075 (-0.054) **0.9578**	0.0022356 (0.064) **0.9493**
POLINS	0.20912 (0.152) **0.8806**	0.15152 (0.114) **0.9108**	-0.17529 (-0.148) **0.8840**	-	-
DEMOCRA	1.3783 (0.560) **0.5822**	1.3788 (0.573) **0.5732**	-	1.2621 (0.595) **0.5583**	-
TIME	-0.057923 (-0.395) **0.6971**	-	-	-	-0.059593 (-0.428) **0.6732**
R^2	0.554237	0.550364	0.542586	0.550059	0.546244
DW	2.12	2.10	2.12	2.11	2.13

- *Figures in brackets indicate t-values*
- *Figures in bold prints are the prob-values.*
- *SOURCES: Author's own computations*

Tables 5 and 6 show the results of the long-run equilibrium growth model obtained from the cointegrating static equation (13). It is worth mentioning that equation (13), which is the leading model, will be used for the error correction model though other models have been explored in table 6. Thus the main variables in equation (13) have been maintained throughout the regression exploration with the political instability dummy, the democratic environment dummy and time trend.

The diagnostic test summary indicates the absence of autocorrelation, absence of autoregressive-conditional heteroscedasticity (ARCH) and the presence of homoscedasticity (i.e. absence of heteroscedasticity) in the leading model. All the regression equations explored passed the normality chi^2 test. The passing of the chi^2 test is an indication that the residuals in all the regression results explored are white noise.

Another important characteristic of the models is their correct specification at the conventional 5% level of significance. With the exception of regressions (2.2) and (2.4) (which include the exploration of dummies) all the remaining regressions passed the RESET test at the conventional 5% level of significance. This shows that the null hypothesis of model mis-specification is rejected at the conventional 5% level of significance. In other words, the linear model specified is correct and thus the use of the Ordinary Least Squares is justified.

LABOUR FORCE (L)

In line with the neo-classical growth theory, this variable has the expected positive association with economic growth in all the regression equations. However, it was not significant in any of the equations. This attest to the fact that in a labour surplus economy like Ghana, the labour force may not be an important determinant of growth despite its positive association with growth. If the labour force variable is dropped from all the equations, the R^2 drops though not significantly but the model fails the specification test. This might imply that labour is an important co-operant factor to the growth process. This is buttressed by the fact that capital, technology etc need to be harnessed by efficient labour force to achieve their desired impact on economic growth. The improvement in the efficiency of labour with time is buttressed by regression (2.5). With the introduction of only the time trend to the common variables, the t-value for labour improves, though still insignificant. This phenomenon usually called 'learning by doing' (sometimes called the learning or experience effect) occurs since labour is able to reduce the per unit cost of production with time since it becomes more efficient.

GROWTH RATES OF REAL EXPORTS (XR)

Although this study is centered on the impact of public expenditure on economic growth, the inclusion of the external orientation variable is justified. The rational is based on the premise that the government can create the enabling environment through its expenditure outlays to promote exports since it has a positive association with a country's economic growth process. Both the growth rates of exports and export GDP ratio were explored in

the model. While both variables have the correct positive sign and insignificant, the export-GDP ratio increases the DW above the acceptance level (increasing the possibility of autocorrelation) and reduces the R^2 hence the choice of XR in the final regression equations.

The growth rate of exports has the expected positive association with economic growth but insignificant in all the regression equations. The t-value of the coefficient of XR recorded its highest value when the DEMOCRA dummy was included to the basic model, although still insignificant. The interesting revelation is, probably, that there is a strong association between the export variable and the nature of political environment.

This result was not anticipated but not surprising. In related studies, Tsikata (1996) and Baah-Nuako (2000) found the external orientation variables insignificant in the economic growth process in Ghana. Interestingly, when the expenditure components are removed from the model, the external orientation variable is significant at least at 10% but the model fails the specification test (RESET). This confirms the finding by Levine and Renelt (1991) that the positive relationship between economic growth and exports becomes statistically insignificant if the growth of government is introduced in the model. One of the principal reasons accounting for the insignificant association between the export variable and economic growth is the lack of goodwill on the part of governments to create the enabling environment for the export sector. Distortionary practices such as connivance and under valuation of export duties are still prevalent in our fledging economy. In addition, when an economy is inward looking, the export

variable may not have significant impact on economic growth. For example, Ghana had embarked on import-substitution policies prior to the ERP/SAP in 1983.

INVESTMENT GDP RATIO (IY)

Empirically, the ratio of investment to GDP proved to be the most robust variable (as shown by the magnitudes of the coefficient ant the t-statistics) in the formulation of a growth model in Ghana. The regression estimates for the period 1970-1998 indicates that this variable has the expected positive relationship and significant at the 5% level or better in all the regressions undertaken. In the growth literature, the coefficient of this variable is described as the marginal productivity of capital. Thus the marginal productivity of capital was found to be significant in all the regressions undertaken.

It is significant to note that the t-value of the coefficient of the IY variable is most robust with the dropping of the POLINS, DEMOCRA and Time trend variables. The positive and significant association between the investment variable and economic growth confirms the thesis that in a labour surplus economy such as Ghana, capital (IY) is an indispensable factor requirement for the economic growth process.

AGGREGATE GOVERNMENT ACTIVITY VARIABLE (GGY)

The impact of the size of government on economic growth has been controversial and inconclusive irrespective of the size of government chosen. In the empirical results, this variable has the most significant negative impact on economic growth. The t-value of the GGY coefficient was the highest in all the regressions undertaken. Interestingly, the coefficient has a significant negative association with economic growth at the

conventional 5% level of significance or better in all the regressions undertaken. Although, this result was not expected, it is explicable. This result implies that government activity in terms of aggregate rate of expenditure has a negative impact on Ghana's economic growth process over the period 1970-1998. The basic argument is that an increase in government expenditure will increase the amount of distortionary taxation to finance such expenditure and hence will reduce growth. The argument is based on the assumption that, a higher government spending acts as a proxy for a higher rate of taxation which may stifle economic growth. While aggregate government expenditure provides utility to households, government consumption expenditure reduces economic growth because the higher taxes needed to finance the consumption expenditure lowers returns on investment.

In addition, economic growth is stifled when governments grow too large relative to technical efficiency (Barro, 1990). Thus, the increases in government expenditure without a corresponding increase in managerial efficiency have been the bane of Ghana's economic growth. Given that about 10% of the total wage bill is paid to 'ghost' workers, the fact that expenditures disproportionately favour wage bills, interest payment on general debts and recurrent expenditure in general, the aggregate government expenditure may not impact positively on economic growth.

It is therefore apparent that the null hypothesis of a significant positive relationship between government expenditure and economic growth is rejected in favour of alternative hypothesis in all the regressions undertaken. This conclusion is based on the

fact that the GGY variable is significantly negative in all the regressions undertaken at the 5% level or better. This also suggest that Ram's (1986) proposition that there is a greater likelihood of obtaining positive and significant relationship between GGY and growth can not be accepted for Ghana at least over the period 1970-1998.

GROWTH RATES OF REAL ROADS AND WATERWAYS EXPENDITURE (RGR)

The growth rates in expenditures on roads and waterways have been used as a proxy for infrastructural expenditures. This variable has the expected positive correlation in all the regressions attempted but was only significant at the 10% level when only the DEMOCRA variable is introduced. It is also worth-mentioning that the t-value of this coefficient was quite appreciable in all the regressions but could not be accepted at the conventional 5% level of significance or better. Although it is insignificant at the conventional 5% level of significance it is quite close to being significant at 10%.

The significance of the RGR variable with the introduction of the DEMOCRA variable makes interesting revelation. The result suggests that expenditures on infrastructure have the desired impact on growth under democratic governance. The rational behind this result may be due to the ability of parliamentarians to regulate government expenditures in favour of pro-growth projects. Since the budgets of democratic governments are scrutinized and approved by lawmakers, excesses in government expenditure are better curtailed under democratic regimes. This result also confirms the thesis that while

aggregate government expenditure may exert negative influence on growth, the composition necessitates a mixed result.

GROWTH RATES OF REAL EDUCATION EXPENDITURES (EGR)

As expected, this variable has the expected positive association with economic growth and proved to be significant in all the regressions undertaken. Expenditures on education are very crucial for building human (manpower) capital and thus any country, which fails to do, so may stifle its economic growth process. With the exception of the equation (Reg.2.1) involving the POLINS, DEMOCRA and TIME trend variables (which only passed at 10% level of significance) the EGR variable was significant at 5% in all the equations. The result also shows some strong relationship between the nature of political environment and the EGR variable. The coefficient of EGR was most robust when only the DEMOCRA variable is added to the basic model. This suggests that human capital endowment achieves the desired result under democratic regimes relative to autocracy or one partism. This may be related to the fact that qualified personnel are willing to work and stay in conducive environments than uncertain political systems. It must be stated however, that it is not the expenditures on education per se which contributes significantly to the economic growth process but rather the human capital endowment achieved through such expenditures and their efficient utilization.

The null hypothesis that expenditures on education have significant positive impact on economic growth is accepted in all the regressions undertaken at least at the 10% level of significance.

GROWTH RATES OF REAL DEFENCE EXPENDITURES (FGR)

The impact of this variable in both the theoretical and empirical literature has been inconclusive. The coefficient of FGR has the expected negative sign and insignificant over the period. This result was expected since military expenditures in Ghana have been mild averaging about 4.2% of total expenditure over the period. This is in sharp contrast with a country like Angola, which spends about 26% of its total expenditure on military activities due to its protracted civil war. The insignificance of the FGR coefficient is buttressed by the fact that mild expenditures on defence have the tendency to increase the marginal productivity of capital. Defence spending helps protect property rights, which increases the probability that an investor (whether local or foreign) will receive the marginal product of capital.

POLINS, DEMOCRA AND TIME

The introduction of these three variables simultaneously to the basic model did nothing to improve the model. Although the R^2 increased from 0.54% to 0.55%, this does not denote any significant change. None of the three variables proved to be significant in all the regressions undertaken. When these variables are introduced simultaneously, the POLINS and TIME did not have the correct sign although they are woefully insignificant. However, if they are introduced separately to the basic model, POLINS and DEMOCRA had the expected signs but still insignificant. The TIME trend had an incorrect sign (negative) in all the regressions in which it was introduced but not significant. This is in sharp contrast to the results obtained by Tsikata (1996). The insignificance of the

POLINS variable is particularly not surprising since this might be due to the expansion of the data to include more years of political stability. In fact the last eight years of the governance of this country is particularly biased towards political stability.

Likewise the political environment variable, DEMOCRA has little or no effect on the growth of the economy, at least statistically over the period 1970-1998. Although it has the expected positive relationship with growth in all the regressions, its t-value is very low and its inclusion increases the R^2 marginally.

When the economic environment variable (TIME trend) alone is introduced to the basic model, it still has a negative relationship with growth even though it is not significant. This suggests that economic growth in Ghana over the period was invariant with time. Theoretically, it may be accepted that a country's economic growth increases with time but this is not the case in many developing economies such as Ghana. In Ghana, economic indicators such as PCI, GDP growth rates, and inflation among others performed better between 1950-1970 than the post 1970 era. Thus, time factor, may not be an important determinant of Ghana's growth process at least over the period 1970-1998.

5.6: THE SIGNIFICANT VARIABLES PLUS POLINS AND DEMOCRA ON GROWTH (REGRESSION RESULTS)

Table 7: Significant Variables Plus POLINS and DEMOCRA: Dependent variable = Real GDP Growth (G)

Variable	REG.3.1	REG.3.2	REG.3.3	REG.3.4
Constant	-1.4877 (-0.807) **0.4281**	-1.4462 (-0.823) **0.4186**	-1.4790 (-0.820) **0.4201**	-1.4500 (-0.843) **0.4073**
IY	0.42836 (2.388)** **0.0255**	0.41731 (3.063)** **0.0053**	0.42401 (2.515)** **0.0190**	0.41698 (3.126)** **0.0044**
GGY	-1.2717 (-3.853)** **0.0008**	-1.2700 (-3.935)** **0.0006**	-1.2691 (-3.942)** **0.0006**	-1.2687 (-4.023)** **0.0005**
EGR	0.15798 (2.993)** **0.0065**	0.15762 (3.057)** **0.0054**	0.15646 (3.209)** **0.0038**	0.15670 (3.288)** **0.0030**
POLINS	-0.11264 (-0.087) **0.9317**	-0.062792 (-0.054) **0.9576**	-	-
DEMOCRA	-0.22202 (-0.098) **0.9231**	-	-0.14454 (-0.071) **0.9443**	-
R^2	0.43548	0.435246	0.435296	0.435179
DW	2.09	2.08	2.08	2.07

Figures in brackets indicate t-values, Figures in bold are the t-prob. values. Source: Author's own Computations.

Table 7 provides the regression results of the variables that were statistically significant at the 5% level or better (Refer to Tables 5 and 6) in addition to the POLINS and the DEMOCRA variables. This approach is useful in ascertaining whether the interaction between the three most significant variables (IY, GGY and EGR) and the politico-economic environment variables (POLINS and DEMOCRA) provides some useful insights into the growth problem of Ghana. The results reveal that the three most significant variables explain about 44% of the total variations in economic growth over the sample period. In addition, the investment variable proves to be the most important

determinant of growth. This is buttressed by the robustness of the investment coefficient in terms of its magnitude, the t-values and the t-probability values in all the regression results presented in Table 7. Generally, there has been an improvement in the significance of the three variables in terms of the t-values and t-probability values as compared to the results provided in Tables 5 and 6.

The two politico-economic variables namely POLINS and DEMOCRA are still statistically insignificant in explaining the economic growth process in Ghana during the sample period. Whereas the POLINS variable has the expected negative association with economic growth, the DEMOCRA variable has an unexpected negative correlation with economic growth. The sign of the DEMOCRA variable is unexpected but not unexplainable. Although the sign of the DEMOCRA variable is in sharp contrast with the regression results in Tables 5 and 6, it provides a useful insight into the growth problem in developing countries such as Ghana. Contrary to the view that democracy (parliamentary rule) is a prerequisite or panacea to robust economic growth in developing countries, dictatorship or military rule may rather provide the impetus to robust economic growth. Perhaps the most cited example is General Augosto Pinochet's 17-year reign (1973-1990) in Chile, which was characterised by impressive economic successes although a military dictator. The great atrocities committed notwithstanding, the controversial military dictator is widely respected for initiating the social and economic changes that have led to Chile's prosperity. It's free market economy experienced 12 years of record economic growth with low inflation and low unemployment. It is also argued by some political analyst that the cost of maintaining democracy in developing

economies is very high and therefore imposes excess burden on taxpayers, the effect of which is to stifle economic growth.

It is therefore probable that the conditions that led to Chile's economic successes under Augosto Pinochet's dictatorship are prevalent in Ghana and other developing countries.

5.7: THE SHORT-RUN GROWTH REGRESSION RESULTS

Although additional variables were introduced to the basic (i.e. without the POLINS, DEMOCRA and TIME trend variables) model to ascertain their impact on economic growth, the ECM was constructed from the basic model. It must be emphasized that long-run information is lost following the differencing of the variables in order to make them stationary.

The results from the ECM indicates that, the model passes the diagnostic test for autocorrelation, autoregressive-conditional heteroscedasticity (ARCH Test), normality chi^2 test, heteroscedasticity and the RESET model specification all at the conventional 5% level of significance. While 54% of the variations in the independent variables explain the long-run economic growth, 55% of the variations of the independent variables explain the short-run phenomenon. Thus, there seem to be no significant change in the goodness of fit between the two periods (long run and short-run).

TABLE 8: THE SHORT-RUN ECONOMIC GROWTH ESTIMATES

ERROR CORRECTION MODEL

EQ (8) Modelling DG by OLS
The present sample is: 4 to 29

Variable	Coefficient	Std.Error	t-value	t-prob	PartRý
Constant	-0.12546	1.0082	-0.124	0.9025	0.0010
DL	0.30262	0.73208	0.413	0.6848	0.0106
DXR	0.038785	0.031722	1.223	0.2392	0.0854
DIY	0.23994	0.44490	0.539	0.5971	0.0179
DGGY	-0.89721	0.30538	-2.938*	0.0096	0.3504
DRGR	0.0063851	0.0042931	1.487	0.1564	0.1215
DEGR	0.073964	0.072113	1.026	0.3203	0.0617
DFGR	0.0084137	0.039510	0.213	0.8341	0.0028
Et_3	-0.31000	0.39361	-0.788	0.4425	0.0373

Rý = 0.550088 F(8, 16) = 2.4453 [0.0609] å = 4.82366
DW = 1.73
RSS = 372.2836045 for 9 variables and 25 observations

AR 1- 2F(2, 14) =	1.0491 [0.3762]
ARCH 1 F(1, 14) =	2.3192 [0.1501]
Normality Chiý(2)=	0.57805 [0.7490]
RESET F(1, 15) =	0.97338 [0.3395]

With the exception of the first difference of the growth rate in real defence expenditures, all the variables including the error correction term (E_{t-3}) have the expected signs in the short-run model. The error correction term (E_{t-3}) is also a white noise process as shown in the test summary on the static error correction term in Appendix 2.

Interestingly, however, all the variables with the exception of the aggregate government expenditure variable were statistically insignificant.

The coefficient of the error correction term, E_{t-1}, which shows the degree or speed of adjustment to the long-run solution, is as expected negative and less than unity. This is

feasible since we do not expect a 100% or instantaneous adjustment. The implication of the coefficient of E_{t-3} (i.e.-0.31) is that 31% of any disequilibrium in three years is made up for during the next three years.

Admittedly, however, the adjustment is woefully insignificant at both the 5% and 1% levels. The insignificance of the adjustment is also shown by the acceptance of the error correction at the third lag. The length of the lag amply demonstrates that sizable data points are lost. This largely proves the thesis that sustainable economic growth and development is a long-term but rather not a short-run phenomenon. For instance, it takes time for the returns on capital investments, especially social overhead capital to be realized. There is even the possibility of losses in the short-run because of the huge capital outlay vis-à-vis the returns.

In addition, since education expenditures involve the accumulation (endowment) of human capital in individuals, it may not exert any significant positive impact on growth as depicted by the results in the short-run. For example, it takes an average of sixteen years to go through the Ghanaian educational system to become a university graduate. However, after the human capital receives substantial investment (example after successful university education), the impact on the economic growth process will be significant, 'ceteris paribus.'

The above ECM passes for the parsimonious model since none of the lagged coefficients of the independent variables was significant. In addition, the omission of any of the variables invalidates the coefficient of the error correction term.

CHAPTER SIX

CONCLUSIONS AND POLICY RECOMMENDATIONS

6.1: Summary and Conclusions

The purpose of this paper is to shed light on the relationship between the aggregate government expenditure on one hand and some specified components on the other hand and their impact on economic growth. Government inevitably undertakes expenditures to pursue a variety of objectives one of which is economic growth. This paper focuses on growth since it is important for a country to know the contribution of different components of government expenditure to the growth process and the fact that growth can easily be measured relative to other objectives such as the promotion of equity.

Consequently, an attempt has been made in this study to empirically investigate the impact of three key components of government expenditures (education, roads and waterways and defence) on Ghana's economic growth process. The three variables were chosen with recourse to economic theory. Expenditures on education is used as a proxy for human capital formation while that on roads and waterways is used as a proxy for infrastructural expenditures. Lastly, expenditures on defence is used to represent "non-productive" expenditures per the literature in empirical growth models.

The variables that have positively and significantly (statistically) influenced economic growth according to the empirical results are investment, the growth rates of expenditures on education and roads and waterways (proxy for infrastructural expenditure). Although the labour force variable (proxied by the rate of growth of population) and the external orientation variable (exports) had the correct positive association with economic growth, they were insignificant. Conversely, the aggregate expenditure variable had a

significantly negative association with economic growth. In addition, defence had a negative but insignificant correlation with economic growth.

Interestingly, however, the two political economy variables; political instability and the nature of government (democracy or autocracy) had insignificant association with Ghana's economic growth process over the period 1970-1998. This is in sharp contrast with the findings by Tsikata (1996). The possible explanation of this result is that, this data includes more democratic and political stability relative to that of Tsikata's, which was biased towards military regimes and political instability. This result suggests that as we enter into more democratic regimes the two variables are no longer significant determinants of Ghana's economic growth.

The empirical results also corroborate that of Tsikata's (1996) that in a labour surplus economy such as Ghana, investment (capital) is the most important determinant of growth relative to labour force. In fact, investment proved to be the most robust determinant of growth in all the regressions undertaken.

Another interesting result worth mentioning is the relationship between the nature of government variable (dummy) and the growth rates of education and roads expenditures on economic growth. When the DEMOCRA variable is introduced, the t-values of the coefficients of education and roads expenditures increase and thus enhance their statistical significance. This implies that policies geared towards the achievement of appreciable economic growth in Ghana should be made to include accelerated

infrastructural development in areas such as road construction, telecommunication and the educational sector.

6.2: Policy Recommendations

As could be observed from above, our research has provided some insights into the growth problem in Ghana. Accordingly, we provide below some policy recommendations to the problems based on the research outcomes.

Firstly, it is an undeniable fact that the marginal propensity to consume in Ghana is very high. This is in sharp contrast with the Asian culture of high savings (especially the Japanese and Koreans). From the study, the most important variable influencing Ghana's economic growth is investment (in this case gross fixed capital formation as a ratio of GDP). In this regard, robust investment in ICT, Agro-based industrial activities, Science and Technology and the development of a long-term savings and capital market among others will propel the economy to a higher growth path. The need to emphasize savings as an enabler of Ghana's growth process stems from the simple Keynesian equilibrium which states that savings equals investment.

Consequently, there is an urgent need to accelerate the inculcation of savings and investment culture in both the private and public sectors. As a policy intervention, the government should streamline the modus operandi of the financial institutions to adequately compensate the postponement of current consumption (savings) so as to motivate individuals and corporate bodies to save. The current interest rate on savings constitutes a disincentive to save by any rational economic agent. Additionally, the high

interest rates on loanable funds should be revised downwards to reduce the cost of borrowing and to help investors achieve their expected returns.

Following the footsteps of the East Asian Tigers, politicians and policy makers should devise policies to accelerate human capital formation, which constitutes, perhaps the cornerstone of sustainable growth and development. This recommendation is necessitated by empirical findings. The human capital formation proxy was statistically significant in all the long-run regression results. In addition, the Granger-Causality results (Appendix 3) confirm that growth in real education expenditures will promote economic growth. Growth and Development economists assert that the provision of at least a universal primary education will maximise social welfare. In commending the government for its Free Compulsory Universal Basic Education (FCUBE), which is a sine qua non for a fundamental human capital formation, the government is also called upon to make this policy efficient and effective in its implementation. The debate on how to find the requisite resources for increased investment in education is ongoing and inconclusive. Internally, the establishment of the GETFUND is a step in the right direction. With an ever increasing demand for the increase in the educational expenditures accruing to the various sectors of education, it is envisaged that the current cornerstone of the GETFUND; 2.5% of VAT, should be increased modestly in the near future to ensure efficient and equitable intra-sector allocation of educational expenditures.

A key international programme for augmenting public spending, particularly in education and health is the Heavily Indebted Poor Countries (HIPC) initiative. Since debt-service payments of countries receiving debt relief under the Enhanced Initiative are

expected to fall, it is envisaged that the government of Ghana, having gone HIPC will switch such expenditures to pro-growth areas such as education, health and infrastructure.

With respect to Roads and Waterways (proxy for infrastructure expenditure) and education, the study found a significant positive relationship with economic growth under democratic governance in the long run. The rational behind this result may be due to the ability of parliamentarians to regulate government expenditures in favour of pro-growth sectors (i.e. infrastructure and education) under democratic regimes. Since the budgets of democratic governments are scrutinized and approved by lawmakers, excesses in government expenditure are better curtailed. The result also reveals that highly skilled and educated people are willing to stay under democratic regimes to contribute their quota to the economic growth process. In other words, one of the factors influencing brain drain in Ghana is the nature of governance. Consequently, it is recommended that if the economy is to experience robust economic growth rates, the government of Ghana and all stakeholders should wholeheartedly embrace and deepen the existing democratisation process. In this regard, the NCCE should be adequately resourced with the requisite logistics to educate the public on their role in enhancing the democratic process. Also, the military and other security agencies should show enough loyalty to the democratic process by unequivocally halting all forms of military interventions such as coups in the political system.

Furthermore, the government should expedite its infrastructural development especially that of roads and waterways due to its significant influence on the economic growth

process. The Granger-Causality results indicate that growths in infrastructural expenditures will Granger-Cause economic growth (unidirectional). In Ghana, foodstuffs, industrial raw materials and other major export commodities (Timber, gold etc) are largely sourced from inaccessible areas such as parts of the Western Region (Sefwi Wiawso), Eastern Region (Afram Plains), Ashanti and Brong-Ahafo inter alia. However, most of these raw materials base lack motorable or feeder roads, thus increasing the cost of production. Therefore, in the government's bid to accelerate industrialization and maximise foreign exchange earnings, keen interest backed by political will should be manifested in linking these areas to the commercial centres of the country. The introduction of the road construction levy and more toll roads are commendable and must be pursued efficiently.

From the study, it is also recommended that when the government faces fiscal restraint with economic growth as a prime focus, priority should be given to the education sector, roads and defence respectively in its expenditure outlays (especially if there is the need for expenditure reduction). This conclusion is necessitated by the fact that the expenditures on education proved to be the most important determinant of economic growth out of the three expenditure components explored. Since economic growth is the prime focus of every economy, in periods of competitive expenditure allocations (probably resulting from low government tax revenues), it is the education sector, particularly primary education that should be given a priority.

Moreover, the proliferation and concentration of commercial activities in the form of stores in almost every corner of the cities and urban centres (rent-seeking behaviour) should give way to long-term productive activities such as manufacturing. In Ghana, the manufacturing sub-sector constitutes the largest share in real GDP emanating from the industrial sector. In addition, growth in industrial value added has the tendency to increase GDP growth rate than the agriculture and services sector. Consequently the government should channel more resources into the activities of medium and small-scale firms. In this direction, the NBSSI should be adequately resourced to undertake this task efficiently.

Finally, the main contributions of this study to the empirical growth literature in Ghana are the findings on the composition of government expenditure (proxied by the growth rates in education, roads and waterways and defence expenditures) alongside the aggregate government expenditure on economic growth. Econometrically, this study has confirmed the theoretical importance of human capital formation through expenditures on education. While the aggregate government expenditure was found to be significantly negative, the composition has mixed results.

In future, fiscal economists and other researchers in this area can specify the model to include more components of public expenditure to ascertain their contribution to the economic growth process in Ghana. Also, since growth is a dynamic phenomenon, a simultaneous equation system could be specified by interested researchers in this area to

appreciate the dynamism of growth. The outcome of such study will make interesting comparison with a single equation model.

6.3: Limitations of the study

Finally, it is imperative to admit the limitations of the study since impeccability is unachievable. The major limitation of the study has to do with the quality of the data employed. Since the data is basically from secondary sources, the accuracy of the data cannot be wholly guaranteed since some of the data sets vary from one approved source to another (though insignificant in some cases). Consequently, the analysis and the conclusions drawn from this study should be interpreted with these limitations in mind.

Secondly, there are several measurements of the aggregate government expenditure and the components. The choice of the measurements employed in this study is in corroboration with growth theory and suits the objectives of the study. Therefore, it will not be surprising if similar works using different measurement of government size obtain different results. However, contrasting results obtained from using different size of government activity and its composition should by no means invalidate the authenticity of this research findings.

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Appendix 1: Trends and structure of public expenditure in Ghana, 1970-1998
(% of total expenditure and or as a % of GDP)- some major components under the Functional Classification

Year	Roads & Waterways	Social security/social welfare	General Admin.	Interest payment	*Wage bill	Defense	Health	Educ.	Transport & Comm.	Mining, Manuf. & constr.	+Interest Payment	+ Health	+Educ.	+Wage bill
1970-83	7.0	---	18.5	12.4	27.8	7.7	8.6	19.1	3.5	---	2.0	---	2.9	---
1984	7.1	4.2	17.5	13.0	19.8	6.0	8.5	20.2	1.9	2.5	1.3	0.8	2.0	2.0
1985	5.6	4.9	18.5	11.1	32.7	6.5	8.7	22.3	4.0	1.3	1.5	1.2	3.0	4.4
1986	3.8	5.3	13.1	16.0	39.5	6.5	8.3	24.0	3.8	1.5	2.2	1.1	3.3	5.5
1987	8.4	6.4	9.7	10.4	37.5	4.2	9.3	26.5	2.9	1.8	1.4	1.3	3.6	5.1
1988	8.6	6.9	13.5	8.3	34.2	3.2	9.0	25.7	1.8	1.2	1.1	1.2	3.5	4.7
1989	7.6	7.3	13.0	9.5	34.6	3.1	10.1	24.3	1.2	1.1	0.8	1.4	3.4	4.8
1990	6.3	7.2	13.1	10.7	34.6	3.5	10.1	25.5	1.3	1.0	1.3	1.3	3.2	4.3
1991	8.3	7.0	12.3	12.6	31.5	4.5	8.4	23.2	1.3	0.9	1.8	1.2	3.2	4.4
1992	10.3	7.0	12.2	12.3	34.9	3.6	7.8	24.0	0.8	1.0	2.2	1.4	4.3	6.3
1993	9.1	9.0	10.3	17.9	33.0	3.5	7.8	20.8	0.8	1.1	3.5	1.5	4.0	6.5
1994	7.1	7.2	14.7	20.2	28.7	3.2	4.9	18.7	0.6	2.6	4.4	1.1	4.1	6.3
1995	11.2	8.3	12.6	19.4	27.9	3.5	6.6	19.4	0.3	0.8	4.2	1.4	4.3	6.1
1996	11.2	7.1	13.9	23.7	26.9	3.0	5.0	18.4	0.3	0.9	7.5	1.5	4.0	8.5
1997	8.9	7.2	12.9	29.0	27.8	3.5	4.5	19.0	0.2	0.6	6.0	1.4	3.9	5.7
1998	7.4	5.1	10.6	23.8	22.6	3.6	4.2	15.7	0.2	0.5	6.2	1.1	4.1	5.9

Source: Computations were done by the researcher using data from the Ghana Statistical Service. * Belongs to the Economic Classification. [+]Expressed as a percentage of GDP.

APPENDIX 2

RESULTS OF UNIT ROOT TEST FOR STATIONARITY OF VARIABLES (ADF)

1990-1998 (PcGive8 Version)

Results of Unit root tests 1970-1998(Level Variables)

Critical Values: 5% = 3.60, 1% = 4.38; Constant and Trend included

Variable	t-ADF	t-lag	t-prob.
G	-6.346**	2	0.0000
G	-6.443**	1	0.0000
G	-5.162**	0	0.0000
L	-5.162**	2	0.0000
L	-2.621	1	0.0160
L	-4.874**	0	0.345
IY	-1.536	2	0.338
IY	-1.430	1	0.165
IY	-3.655*	0	0.0014
XR	-3.258	2	0.0039
XR	-3.061	1	0.0059
XR	-3.389	0	0.0026
GGY	-3.636*	2	0.0016
GGY	-3.683*	1	0.0014
GGY	-3.619*	0	0.0015
EGR	-2.752	2	0.0119
EGR	-3.223	1	0.0038
EGR	-3.645*	0	0.0012
RGR	-3.568*	2	0.0018
RGR	-4.227*	1	0.0002
RGR	-5.907**	0	0.0000
FGR	-4.645**	2	0.0001
FGR	-5.145**	1	0.0000
FGR	-4.593**	0	0.0001

UNIT ROOT TESTS 1991- 1997-FIRST DIFFERENCE

Critical Values: 5% = 3.60, 1% = 4.38

VARIABLES	T-ADF	T-LAG	T-PROB
G	-8.716**	2	0.0000
G	-10.317**	1	0.0000
G	-9.277**	0	0.0000
L	-5.298**	2	0.0000
L	-2.621	1	0.0160
L	-6.267**	0	0.0000
IY	-4.716*	2	0.0001
IY	-4.600**	1	0.0002
IY	-4.947**	0	0.0000
XR	-4.379**	2	0.0003
XR	-5.007**	1	0.0001
XR	-4.763**	0	0.0001
GGY	-6.109**	2	0.0000
GGY	-6.613**	1	0.0000
GGY	-6.002**	0	0.0000
EGR	-5.270**	2	0.0004
EGR	-5.625**	1	0.0002
EGR	-5.382**	0	0.0002
RGR	-6.862**	2	0.0000
RGR	-8.163**	1	0.0000
RGR	-8.837**	0	0.0000
FGR	-8.323**	2	0.0000
FGR	-9.117**	1	0.0000
FGR	-8.383**	0	0.0000

Unit Root Test (ADF) on the Static Error term

VARIABLES	T-ADF	T-LAG	T-PROBABILITY
Et	-2.589	2	0.017
Et	-4.419**	1	0.0002
Et	-5.772**	0	0.0000

** : Significant at 1% level

*: Significant at 5% level

Test Summary on the Static Error Term

AR 1- 2F(2, 21) =	6.1551 [0.0079] *	
ARCH 1 F(1, 21) =	0.2077 [0.6533]	
Normality Chiý(2)=	3.6566 [0.1607]	
RESET F(1, 22) =	0.0025175 [0.9604]	

APPENDIX 3

RESULTS OF PAIRWISE GRANGER CASUALITY TEST (3LAGS)[6]- STATIONARY LEVEL VARIABLES.

Null Hypothesis:	Obs	F-Statistic	Probability
GGY does not Granger Cause G	26	2.64729	0.09850
G does not Granger Cause GGY		3.60734	0.03240

Null Hypothesis:	Obs	F-Statistic	Probability
EGR does not Granger Cause G	26	3.50372	0.04093
G does not Granger Cause EGR		1.81935	0.17784

Null Hypothesis:	Obs	F-Statistic	Probability
RGR does not Granger Cause G	26	0.80176	0.50822
G does not Granger Cause RGR		4.16938	0.01991

Null Hypothesis:	Obs	F-Statistic	Probability
FGR does not Granger Cause G	26	0.46743	0.70845
G does not Granger Cause FGR		1.92828	0.15927

[6]. The choice of 3 lags was to include enough past values to improve the current predictions.

APPENDIX 4
REGRESSION RESULTS USING THE DOUBLE -LOG MODEL

Unit-root tests 1973 to 1998
Critical values: 5%=-3.594 1%=-4.355; Constant and Trend included
(First Difference)

Variable	t-ADF	t-lag	Order of Int.
DlogG	-3.0838	2	I(1)
DlogG	-4.2111*	1	I(1)
DlogG	-4.9386**	0	I(1)
DlogL	-3.1832	2	I(1)
DlogL	-2.7941	1	I(1)
DlogL	-5.0375*	0	I(1)
DlogIY	-2.5953	2	I(1)
DlogIY	-3.1790	1	I(1)
DlogIY	-3.9812*	0	I(1)
DlogE	-2.6146	2	I(1)
DlogE	-3.2982	1	I(1)
DlogE	-3.787*	0	I(1)
DlogAG	-3.0952	2	I(1)
DlogAG	-3.3519	1	I(1)
DlogAG	-4.1158*	0	I(1)
DlogRW	-2.5522	2	I(1)
DlogRW	-2.9696	1	I(1)
DlogRW	-5.7357**	0	I(1)
DlogF	-3.4189	2	I(1)
DlogF	-4.9122**	1	I(1)
DlogF	-4.2516*	0	I(1)
DlogX	-2.1416	2	I(1)
DlogX	-3.3997	1	I(1)
DlogX	-3.7685*	0	I(1)

Variable Definition:
LogG =Log of Real GDP,
LogL = Log of Population
LogX = Log of Real Exports
LogIY = Log of Real Gross Fixed Capital Formation
LogGE = Log of Real Aggregate Government Expenditure
LogE = Log of Real Education Expenditure
LogRW = Log of Real Expenditures on Roads and Waterways
LogF = Log of Real Defence Expenditure.

Long-Run model Estimates

EQ(1) Modelling LogG by OLS
The present sample is: 1 to 29

Variable	Coefficient	Std.Error	t-value	t-prob	PartRý
Constant	2.0710	0.17618	11.755	0.0000	0.8681
LogL	0.052869	0.16696	0.317	0.7546	0.0048
LogX	0.069377	0.058488	1.186	0.2488	0.0628
LogIY	-0.10275	0.10118	-1.015	0.3214	0.0468
LogGE	0.25114	0.12430	2.020	0.0563	0.1627
LogE	0.36643	0.10236	3.580	0.0018	0.3790
LogRW	-0.034001	0.029513	-1.152	0.2622	0.0594
LogF	-0.016988	0.072408	-0.235	0.8168	0.0026

Rý = 0.961987 F(7, 21) = 75.921 [0.0000] å = 0.0323335 DW = 1.51
RSS = 0.02195462735 for 8 variables and 29 observations

AR 1- 2F(2, 19) = 4.4043 [0.0268] *
ARCH 1 F(1, 19) = 0.23979 [0.6300]
Normality Chiý(2)= 1.3686 [0.5045]
Xiý F(14, 6) = 0.48069 [0.8786]
RESET F(1, 20) = 5.8248 [0.0255] *

Short-Run Double Log Model (Error-Correction Model)

EQ(2) Modelling DLoG by OLS
The present sample is: 2 to 29

Variable	Coefficient	Std.Error	t-value	t-prob	PartRý
Constant	-0.015970	0.017748	-0.900	0.3795	0.0409
DLogL	1.4911	1.3741	1.085	0.2914	0.0584
DLogX	0.094094	0.048004	1.960	0.0648	0.1682
DLogIY	-0.062448	0.066746	-0.936	0.3612	0.0440
DLogAG	0.098437	0.094927	1.037	0.3128	0.0536
DLogE	0.32834	0.11993	2.738	0.0131	0.2829
DLogRW	-0.042600	0.029720	-1.433	0.1680	0.0976
DLogF	0.066218	0.067618	0.979	0.3397	0.0481
Et_1	-0.84841	0.21809	-3.890	0.0010	0.4434

Rý = 0.927906 F(8, 19) = 30.568 [0.0000] å = 0.0277393 DW = 1.68
RSS = 0.0146199503 for 9 variables and 28 observations

AR 1- 2F(2, 17) = 1.9435 [0.1737]
ARCH 1 F(1, 17) = 0.00011483 [0.9916]
Normality Chiý(2)= 3.0637 [0.2161]
Xiý F(16, 2) = 0.57348 [0.7935]
RESET F(1, 18) = 2.6296 [0.1223]

Note: The Long-run and Short-run results using the double log model have been provided to facilitate comparison. The variables are all stationary in their first difference. The

first difference of the level variables constitute growth rates. It is noteworthy that only the log of real expenditures on roads and waterways was stationary in levels, hence the construction of the error-correction model. With the double log-model the regression coefficients are now interpreted as elasticities.