TAX POLICY AND ECONOMIC GROWTH:

EVIDENCE FROM GHANA

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DECLARATION

This is to certify that this thesis is the result of research undertaken solely by NYAMADI GODFRED towards the award of Mphil Economics in the Department of Economics, University of Ghana. I hereby declare that in exception of references made, this thesis is the product of my own work under the guidance of my supervisors and that no part or whole of it has been presented for another degree anywhere.

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DEDICATION

This dissertation is dedicated to the Lord, God Almighty, for empowering me throughout the successful completion of this course and to all my family members who in diverse ways offered me support during the study period of this project.

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ABSTRACT

An evaluation of the budgetary process in Ghana depicts that annual expenditure proposals are continuously anchored on projected revenue. This means that the accuracy of revenue projection is a necessary condition for devising a suitable framework for fiscal deficit management in Ghana.

This study explores the impact of tax policy measures on economic growth using time series data for the period 1970 –2013 to devise a reasonably accurate estimation of Ghana's sustainable revenue profile in a general Autoregressive Distributed- Lag model. This further leads in the design of an appropriate expenditure profile as a means of averting the persistent non- sustainable fiscal deficit in Ghana. The findings depict that economic growth benefits from increases in import taxes more than the other types of taxes both in the short and long run. However, increases in the share of personal income taxes have deleterious effect on economic growth in Ghana over time. This is because personal income taxes are progressive in nature having a higher marginal tax rates that discourages economic growth as compared to the lower average rates intended to generate more revenues.

Consumption taxes and excise taxes have negative effect on economic growth in the long run. However, the short run dynamic results indicate that consumption and excise taxes at one period lag exert a positive and statistically significant effect on economic growth.

The study concludes that the current revenue path is sustainable if broadening the tax base should be the utmost target of policy and this would be the most feasible solution to the problem of unsustainable fiscal deficit in Ghana. All in all, the study underscores the immediate need for the enhancement of the tax administration system to improve the assessment of the performance of Ghana's tax system as well as facilitating adequate macroeconomic planning and implementation.

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LIST OF ABBREVIATIONS

AIC	Akaike Criterion Information
ADF	Augmented Dickey Fuller
ARDL	Autoregressive Distributed Lag
BoG	Bank of Ghana
CEPS	Custom Excise and Preventive Service
CIF	Cost, Insurance & Freight
CIT	Corporate income Tax
CST	Communication Service Tax
CUSUM	Cumulative Sum of Recursive Residuals
CUSUMSQ	Cumulative Sum of Square of Residuals
DW	Durbin Watson
ERP	Economic Recovery Program
ECM	Error Correction Model
EXTAX	Excise Tax
GDP	Gross Domestic Product
GCM	Ghana Custom Management System
GC-Net	Ghana Community Network
GRA	Ghana Revenue Authority
IMF	Internal Monetary Fund
IMPDU	Import Tax
IRS	Internal Revenue Service
ISSER	Institute of Statistical Social & Economic Research
LTU	Large Taxpayer's Unit
NHIL	National Health Insurance Levy
NRS	National Revenue Secretariat
OECD	Organization for Economic Corporation & Development

OLS	Ordinary Least Square
PAYE	Pay as You Earn
PIT	Personal Income Tax
RGD	Registrar General's Authority
SSPP	Single Spine Pay Policy
SAP	Structural Adjustment Program
TIN	Taxpayer's Identification Number
UNESCO	United Nations Educational, Scientific & Cultural Organization
VAT	Value Added Tax
VIT	Vehicle Income Tax
WDI	World Development Indicator

CHAPTER ONE

INTRODUCTION

1.0 Background

Todaro and Smith (2003) describe economic growth as 'the steady process by which the productive capacity of the economy is increased over time to bring about rising levels of national output and income'. This means that economic growth is predominantly a quantitative measure that is the rate of change of real GDP. Also, Myles (2007) perceives economic growth as the foundation of increased prosperity. Growth comes from accumulation of both physical and human capital, and from innovations that lead to technical progress. Innovation and accumulation raise the productivity of inputs into production as well as increasing the potential level of output.

Growth modeling relies on exogenous models for many years. This means that the technological progress is given and output per worker remains constant. Assuming this, the impact of government policy is inadequate, if not non- existent. However, the development of endogenous growth models with technological progress is an internal feature of the model. This is because the impact of policy becomes increasingly significant. This naturally creates the possible correlation between tax policies and growth (Lee and Gordon, 2005).

Growth rate can be affected by policy through the effect that taxation has on economic decisions. Goode (1984) refers to taxes as compulsory payments from households and firms to governments. Taxes must possess certain attributes. Adam Smith (1776) captions

the attributes as “cannons of taxation”. Thus a good tax system must be economically efficient, convenient, certain and equitable.

Tax policy is the choice by a government as to what taxes to levy, in what amounts and on who is to be levied. On the macroeconomic side, it takes into consideration the growth of the economy. Tax policies from time to time have been implemented for a variety of reasons. The key objectives of taxation are: revenue generation for financing government spending capable of raising the growth rate, resource allocation, re-distribution of income and reducing inequalities arising from the distribution of wealth among consumers. Romer and Romer (2010) also attest to the fact that tax policies are implemented either to: finance a budget deficit and counter other influences in the economy.

The tax policy is beneficial if it is designed to mobilise additional revenue and to afford the fiscal authorities the opportunity to realise a wider set of socio economic objectives example stabilization of prices, incentive to industrial development and prohibition of consumption of certain goods and services. The tax policy measures also reflect the government desire to make taxation as a main policy instrument to accelerate economic growth. To these ends, reforms have encompassed outrights reliefs as well as incentives signals to households and business sectors. Also, the tax policy measures suggest how to manage the tax system more especially the tax laws and information so that the households and businesses can make their savings, consumption as well as investment decisions in the most efficient way.

Governments in developing countries are beset with situations where there is an ever-increasing demand on governments' services and public budget deficits. The widening imbalance between government revenues and expenditures normally result into huge and chronic fiscal deficits. Ghana was among the developing countries that experienced fiscal imbalance in the 1970s and 1980s. The public debt with respect to gross domestic product (GDP) ratio was relatively high and consequently tax policy has for the most part been geared towards filling a financing gap. The fiscal imbalance resulted into undesirable impacts on domestic prices, interest rates and balance of payments. In most cases, measures that were adopted to address these failed.

It is therefore obvious that chronic deficits stifle the growth of the economy and impinge on other macroeconomic aggregates (Broadway et al., 1994). As a result, this compels government to look at domestic revenue mobilization which constitutes part of the structural adjustment programme to address the issues. The growth in government revenue must approximate the growth in government spending for macroeconomic stability to hold (World Bank, 1990). The tax structure therefore must be stable as well as flexible. This is because stability of the tax structure guarantees revenue to be predicted with certainty. Revenue instability can impede on fiscal management more especially if expenditures are inflexible downwards.

In response to the decline of the economy, the government of Ghana in 1983 embarked on various forms of fiscal and structural adjustments programme aimed to stimulate economic recovery issues. One of the major adjustment processes was the reform of the

tax policy[1]. This was done in order to expand the revenue generating policy for the Ghanaian government as well as removing existing distortions and then strengthening economic incentives. Also, there were several attempts made to enhance efficiency of the administration and equity of the overall tax system. The tax reforms have undergone broadly three main overlapping stages, namely: restoration of the tax base, strengthening production incentives and enhancing efficiency & equity in the tax administration.

For instance in 1998, one of the reforms was the introduction of the value added tax (VAT) that replaced the sales tax at a rate of 12.5 per cent. This was one of the main shifts of the tax system in Ghana envisioned for improving the tax productivity as well as promoting economic growth. Again, in January 2014, there was another policy dimension and as a result the VAT rate was increased to 17.5 per cent, the current rate. This was due to the shift of the standard rate from 12.5 per cent to 15.5 per cent while the National Health Insurance Levy (NHIL) remained at 2.5 per cent. One important aspect of the new VAT rate is the widening of the tax scope.

Over the last decade, Ghana's tax composition favours indirect taxes. This bias is essentially in line with the taxation characteristic for many developing countries. One of the key questions in macroeconomics is how changes in tax policy affect economic activity. In theory it is mostly considered that taxes are in a negative correlation with growth. So, higher taxes mean lower economic growth rates.

[1] Tax reforms deals with improving the welfare through making marginal changes in the structure and design of the tax system. It occurs as a result of introducing new taxes & then abolishing old ones. Changes in the tax mix. Radical transformations in administrative guidelines and practices as well as varying the tax rate brackets or make changes in the tax base.

1.1 Problem Statement

Economic growth increases the taxable capacity of a country of which Ghana is of no exception and enables a higher share of the private sector's resources to be surrendered to government as taxes to provide public goods and services. Several countries, therefore, depend mainly on taxation as means of generating the required resources to meet their expenditure requirements. These countries will likely find themselves in growing fiscal imbalance when their revenue productivity falls below their expenditures. Hence the need for fiscal adjustment becomes particularly necessary to restore balance in the government budget. Wagner's law[2] posits that public expenditure is a natural consequence of economic growth (Demirbas, 1999).

Economic theory postulates that instability in an economy may arise out of deficit financing primarily via foreign borrowing which may affect balance of payments, domestic interest rates and the rate of exchange of the domestic currency in relation to other currencies and thereafter may plunge the economy into crisis. As a result, numerous tax reforms aim at attaining optimal fiscal policies with emphasis on the role of tax policy measures as an instrument of economic development have been implemented yet the outcomes seem not to be that encouraging. Information from the World Development Indicators of the World Bank indicates that tax revenue in Ghana as a ratio of Gross Domestic Product (GDP) was 14.31 per cent in 2007, lower than the sub Saharan African average of 18 per cent. Also, in 2012, it was 17.31 per cent as compared to 26.9 per cent in sub Saharan African.

[2] According to Adolph Wagner (1835-1917), Wagner's Law is known as the law of increasing state spending. A country public expenditure rises constantly showing upward sloping trend.

Ghanaian experience with fiscal performance from 1971-1982 periods was very much disappointing. Due mainly to the low productive capacity of most establishments coupled the low tax collection efforts by tax collection agencies. The budget in each year of 1971-1982 was in deficit ranging from 0.4 to 12.3 as percentage of GDP. During this time, macroeconomic analyses and forecasts were not thoroughly undertaken to provide a base for effective and stable fiscal policy formulation. Instead, fiscal policy measures were taken on ad hoc basis, not coordinated and haphazardly executed, leading to a severe deterioration in the country's public finances. The rapid growth in the government spending accompany by a relatively low growth in revenue result in a persistent budgetary deficit which was mostly financed by the banking system.

Similarly, the Ghanaian fiscal stance from 1992 – 2013 was characterized by a wide persistent gaps between revenues and expenditures, the only exception been the 1986-1991 fiscal years. From a deficit of 5.37 percent in 1992 (an election year), the fiscal deficit ratio oscillated year after year until it reached its highest level in 1997 (a year after the 1996 election). The oscillatory pattern in the deficit ratio continue and in the year 2000 (another election year) the ratio was 8.02 percent. With the exception of 2004, what is pretty obvious is that the fiscal deficit was very high in all the subsequent election years (2008 and 2012). Whilst total government expenditure grew at alarming rates during the aforementioned periods, the growth in tax revenue lagged behind that of government expenditure. With the available tax receipts inadequate to meet the ever increasing government quest to spend in most of the years, deficit financing was the natural resort and it was not surprising that inflation outturn was very poor. The exchange

rate also tumbled as rates of depreciation of the cedi were also above policy targets set by the government and the Bank of Ghana.

Also, there was considerable unevenness in economic growth rate particularly in the 1970s (Figure 3.1). However, it began to stabilize from 1984. There had been numerous years of negative growth and these were often years that experienced changes in government most importantly with explosive policy changes or reversals. The lowest ever growth of −12.4 per cent was experienced in 1975 which coincided with oil –price shock in addition to policy reversals from a market –oriented stance to an inward-looking protectionist regime.

In response to the decline of the Ghana's economy, a series of major policy reforms were undertaken in 1983 aimed at laying the bases for sustained economic growth and also envisioned to increase domestic revenue mobilization to meet expenditure demands via a comprehensive reform in the system of taxation. The Structural Adjustment Programme (SAP) was to remove existing distortions, strengthening economic incentives, promote efficiency and equity in the economy. In spite of the various efforts made, there were numerous challenges in administering of the tax system. There was heavy reliance on indirect taxes since about 70 per cent of the total revenue in the country was realised from VAT and trade taxes. Revenue from the direct taxation increased over the last decade however it did not exceed 30 per cent of total revenue from taxation. Disaggregated data shows that the tax system relied on a small number of tax payers who normally contribute the greatest share of the tax revenue (Fumey et al., 2009).

Furthermore, there are ranging debate on how should additional tax revenues be raised and which tax type to increase over the countries since no one likes paying higher taxes and additional rises in rates could be highly distortive and damaging to incentives as implied by the Laffer curve. This is because in the world of growing international integration, increasing taxes on incomes could be predominantly harmful to growth. Besides, the burden of taxation may be switched more towards consumption taxes (OECD's Current Tax Agenda, June 2010, page 16). The study therefore attempts to examine the quantitative impact of four major tax categories, that is, excise duty, VAT, import tax and personal income tax on economic growth in Ghana. Because policy/reform is expected to impinge on economic growth through their impact on the various tax categories, the significance and magnitudes of the various coefficients associated with the different tax categories in the growth equation will direct government efforts at particular areas where more efforts should be placed in raising the ever needed revenue for development. Therefore, we will use a growth equation appropriately augmented with the four major tax categories to answer the research problems and objectives in this thesis.

1.2 Research Questions

The main research question in this thesis is: which tax type is more beneficial to economic growth? The following are the specific research questions:

- What are the short-and long run effects various types of taxes have on economic growth in Ghana?

- What causal relation is between the types of taxes and economic growth?

1.3 The Objective of the Study

The main goal of this study is to investigate the impact of tax policy on economic growth in Ghana and to address this objective we specifically assess the impact the various tax categories has on economic growth.

More specifically, the study seeks to:

- analyze the effectiveness of different tax components on economic growth in Ghana
- evaluate the short and long-run effect of the various types of taxes on economic growth
- examine the causal relationships between types of taxes and economic growth

1.4 Significance of the Study

Despite the growing interest in the growth effects of tax policy reforms, there are only a small number of empirical studies on this subject. Early studies (Kneller et al., 1999; and Widmalm, 2001) embark on traditional econometric tools like pooled Ordinary Least Squares (OLS) and fixed -effects within groups' regression to estimate the impact of tax policy measures on income per capita in the long run. Implicitly, these economic techniques restrict the slope parameters in the growth model to be common across countries. If these restrictions are invalid, the resulting estimate may be biased and the inference may be invalid. This study therefore rigorously tests the validity of the parametric restrictions using the ARDL model on the grounds that the model

specification has no bias to the order of integration since it has a merit of yielding consistent estimates especially for the long run coefficients that are asymptotically normal.

Similarly, some recent studies on the growth effects of tax policy (Gemmell et al., 2007; and Arnold et al., 2011) apply the Pooled Mean Group (PMG) estimator which allows parameters on the short-run dynamics to be heterogeneous across board and at the same time not robust under less restrictive parametric assumptions. This study rigorously tests the validity of the parametric restrictions imposed by the PMG estimator using the general Autoregressive Distributed- Lag (ARDL) model which reveals that the results are sensitive to the model specification. In similar manner, we investigate the robustness of the "tax and growth system" proposed in Arnold et al., (2011). Also, we will show if some of the restrictions imposed by using PMG estimator will be rejected by the alternative Wald test.

Also, most of the major studies are cross country based on a panel of OECD countries (Kneller et a., 1999, Widmalm, 2001 and Arnold et al., 2011). The OECD study emphasizes on tax structure rather than levels in terms of tax types to GDP ratio because cross –country differences in tax levels mostly reflect public choices as to the appropriate level of societal spending. However, there are only a small number of empirical studies on the link between tax policy and economic growth in the developing countries hence the need to carry out this study.

Moreover, previous research within this field of study fails to offer consistent conclusion. Results for taxes on consumption and import are not consistently significant (Scarlett, 2011). However, the findings from this study will go a long way in determining how consumption and import taxes affect economic growth in Ghana.

All in all, this study is very essential as it will help ascertain if the government is keeping track on the effectiveness of types of taxes with GDP growth. Moreover, estimation of individual tax type on growth would help the fiscal authorities to identify those tax types which are productive or otherwise and therefore aim at directing their efforts at the more productive ones to raise overall productivity of tax revenue. Furthermore, estimation of our augmented growth equation in the period 1970-2013 will help shed more light on the weaknesses and strengths of the tax systems. This study contributes to the literature by examining the impact of tax policy on economic growth in Ghana.

1.5 Organization of the Study

This thesis proceeds as follows. The second chapter provides a review of the relevant literature which is made up of both theoretical and empirical in the perspective of types of taxes and economic growth. The third chapter looks at an overview of the general tax system and economic growth in Ghana. Chapter four presents the data to be used for estimating the impact the various tax types have on economic growth. This is followed by chapter five that discusses the empirical results while chapter six gives the closing remarks and the policy recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter presents a review of relevant literature on the impact of tax policy on economic growth. The review covers both theoretical and empirical literature. The theoretical literature starts with discussion of the essential features of growth models and thereafter we discuss theories on how changes in tax policy measures affect economic activity. The empirical literature reviews empirical studies that deal with the topic using different data and econometric models.

2.1 Theoretical Underpinning

2.1.1 The Solow Growth Model

Solow (1956) model takes the rates of saving, population growth, and technological progress as exogenous. There are two inputs namely capital and labour which are paid their marginal products. Since the model assumes that factors are paid their marginal products, it envisages not only the signs but also the magnitudes of the coefficients on saving and growth of the population.

The model assumes a single good economy where output is either saved or consumed. The only source of saving is investment in capital. Output must be divided between consumption and investment. With inputs of capital (K) and labour (L) at time t employed in production, the level of output is expressed as:

$$Y_t = F(K_t, L_t) \qquad (2.1)$$

It is assumed that there are constant returns to scale in production where output can either be consumed or saved. The fundamental assumption of the model is that the level of saving is a fixed proportion of output$(0 < s < 1)$. In equilibrium, saving must be equal to investment. At time t, investment (I) in new capital is expressed as:

$$I_t = sF(K_t, L_t) \qquad (2.2)$$

The use of capital in production results in its partial depreciation. Solow assumes that this depreciation (δ) is a constant fraction. So, the capital available in period $t+1$ is given by the new investment plus depreciated capital. Hence, the basic capital accumulation relationship is given as:

$$K_{t+1} = sF(K_t, L_t) + (1-\delta)K_t \qquad (2.3)$$

The fact that population is growing makes it preferable to express variables in per capita terms. This is done by exploiting the assumption of constant returns to scale in the production function as; $Y_t = L_t F(K_t/L_t, I) = L_t f(k_t)$ where $k_t \equiv K_t/L_t$. Dividing (2.3) by L_t and representing constant population growth rate by n, the labour supply grows according to $L_{t+1} = (1+n)L_t$. Embarking on this growth relationship, the capital accumulation relation depicts that the dynamics of the capital/labour ratio are governed by:

$$(1+n)k_{t+1} = sf(k_t) + (1-\delta)k_t \qquad (2.4)$$

Removing the time trends in(2.4), the long run equilibrium capital/labour ratio becomes:

$$(1+n)k = sf(k) + (1-\delta)k \qquad \text{or}$$

$$sf(k) - (n + \delta)k = 0 \qquad (2.5)$$

This is referred to as the steady state capital/ labour ratio(k). The steady state is attained when the capital stock is constant with $k_{t+!} = k_t$. Once, the new steady state is attained after the policy transformation, the growth rates of the per capita variables will return to zero. In addition to that any policy that only increases saving (s) cannot sustain growth. This is because s has an upper limit of 1 which must eventually be reached. In the production function, if any policy intervention is to result in sustain growth, it has to produce a continuous upward movement.

The Solow (1956) neoclassical model suggests that tax policy has no impact on economic growth in the long run. This model assumes that labour and technological advancement which are the main factors of production are often determined outside the model.

In the framework of neoclassical Solow growth model, if different types of taxes affect the equilibrium capital labour ratio differently, then the choice of the nature of the tax policy measures would affect the steady state level of income per capita. The tax policy also matters for short run growth when the economy approaches its equilibrium. Even though, growth solely depends on exogenous progress technically, once the economy reaches its steady state, the transitional process can be as long as many decades. The Solow model therefore leaves a very little room for the tax policy actions.

2.1.2 Endogenous Growth Model

The endogenous growth theorists posit that tax policies do have an impact on economic growth over time since economic expansion is being determined within the system. The only way to create continuous growth in the production function is to include variable like human capital. Including human capital can potentially change either the theoretical modeling or the empirical analysis of growth of the economy and as a result leads to a stronger case for economic policy. With respect to tax policies, the fascinating theoretical case lies in the effect on the decision to invest in human and physical capital. Once the saving and population growth rates affect the human capital, we should anticipate human capital to be positively related with the saving rate and negatively related to the population growth.

The human capital variable(H) can be treated in the production function in two distinct ways. One way is to view the level of human capital input as a distinct variable to labour time. Another way is to consider the level of human capital input as the product of the quality of labour and labour time. The latter allows labour time to be made more productive by investment in education as well as training which raise human capital. In addition to that technical progress is then embodied in the quality of labour time. Using the latter, the standard form of production for such a model is expressed as:

$$Y_t = F(K_t, H_t) \qquad (2.6)$$

Here, if the production has constant returns to scale in human capital and physical capital jointly, then investment in both can raise output without limit even if the quantity of

labour time is fixed. As human capital is incorporated into the model, it has resulted into a stronger case for tax policy actions.

The theoretical underpinning on the link between innovation and growth is investigated by Schumpeter (1934). The author's idea of creative destruction whereby new products replace old ones becomes the theoretical foundation for technological progress. The role of tax policy is therefore to increase the net returns of innovation.

Another important factor that stands out from the classical growth framework is that of economic, legal and political institutions. North (1991) refers to institutions as "the humanly devised constraints that structure political economic and social interaction". Based on this, institutions matter for growth because it affects transaction costs. However, since this study does not concern the connection between the institutions and growth per se, no in –depth review will be made theoretically.

2.1.3 Theoretical Effect of Tax Policy on Economic Growth

One of the essential questions in macroeconomics is how changes in tax policy affect economic activities. In theory, it is usually assumed that taxes are in negative correlation with economic growth. This means that higher tax results in lower growth rates of the economy. This is explained with the fact that higher taxes introduce distortions to the economy and as result normally leads to loss of efficiency. Thus higher taxes encourage people to change their behaviour. This is because whichever way tax payers choose to come to terms with taxes, they will be worse off than in the world without taxes.

A country's tax system is a main determining factor of other macroeconomic indexes. Specifically, for both developing and advance economies, there exists a correlation between tax policy and the level of economic growth as well as development. Certainly, it has been debated that the level of economic growth and development has a very strong effect on a country's tax system (Hinricks, 1966; Musgrave, 1969) and similarly tax policy objectives vary with the stages of development.

According to endogenous growth theory, tax policy can affect both the level and the growth rate of output per capita. A detail representation of the mechanism through which tax policy influences growth can be found in Barro (1990) and Barro & Salai –i – Martin (1992, 1995). The authors employ a Cobb – Douglas –Type production function with government providing goods and services as an input to depict the positive impact of productive government spending.

Also, in the endogenous growth model, long –term steady state is determined by the accumulation of reproducible capital. Thus any tax policy that distorts the motivations to accumulate physical and human capital will permanently reduce the growth rate. It is expected that taxes on capital and accumulation of capital like corporate and income taxes would have adverse growth effects. But all taxes may not be equally distorting and hence the tax mix becomes a vital growth determinant. If supply of labour is highly inelastic, neither taxes on consumption nor a flat tax on labour income may distort an individual's inter-temporal consumption choice which leaves capital accumulation decisions and growth unaffected (Rebelo, 1990).

In the framework of the neoclassical growth model, if varied taxes affect the equilibrium capital labour ratio in a different way, the choice of the tax policy measures would affect the steady –state level of per capita income. Tax policy measures also matters for the short –run growth whenever the economy approaches its equilibrium. Even though growth solely depends on the exogenous progress technically once the economy reaches its steady state, the transition process can be as long as many decades. One of the sources of technical progress that leads to long –run growth in the neoclassical growth model is based on new ideas generated by entrepreneurial activities (Schumpeter, 1934).

The neoclassical investment theory pioneered by Jorgenson (1963) and Hall & Jorgenson (1967) propose that tax system on corporate income which implies higher cost of capital may lower investment, resulting into a lower level of capital –labour ratio in the long –run. However, lowering the tax –adjusted user cost of capital possibly by providing more generous investment tax credits, it would reduce the statutory corporate income tax rate and thereby induce additional investment.

It has been posited by Keynesians that reducing direct taxation particularly personal income tax would aid as a catalyst for transferring greater spending power of the taxpayer. This would then facilitate an increase in the consumption expenditure, increase savings and then enhance investment ventures as well as promoting economic growth. However, any attempt to increase tax collected from direct taxation may serve as a disincentive to work. Thus, there would be a reduction in supply of labour since people would prefer leisure to work and hence a fall in production level.

Arnold et al (2011) postulate that changes in tax system that is directed towards entrepreneurship and innovation may have persistent and positive long run effects on growth. On the other hand, it has been argued by the Ricardians that it would entail the government to balance its budget in the short run by increasing borrowing if taxes are reduced. Thus, the potential fiscal imbalance of any country has to bear in mind implementation of the tax policy. Also, the effects that a tax policy is likely to have on the growth of the economy will vary because this would depend greatly on the country's stage of development and production level.

Jones (2001) argues that distribution of income with the aim of promoting factors of production such as labour and capital plays a key role in the production level. He also stresses that external factors do contribute to the level of growth in output because there exist a close correlation between the growth in output and in volume of international trade.

Again, tax policy should foremost affect growth through economic variables. Heckman et al, (1998) discuss the impact of progressivity on investment in human capital taking into consideration personal income tax. Taxes with higher marginal rates would induce lower education. The reason is that if it is treated as investment, then the return of human capital reduces with higher marginal income taxes.

Another equally impacts of personal income tax concerns the supply of labour. Higher marginal taxes on wages and salaries have theoretically two possible effects known as

income and substitution effects. The former is impact on one's income which in the case of a higher tax means lower income. In theory a person would have to work more to earn the same amount of money than before and hence causing more hours of work. In case of the substitution effect, it implies that the relative price of leisure goes down and hence causing less hours of work.

2.2 Empirical Literature Review

The impact of tax policy on growth of the economy varies across countries in terms of the short and long run effects. Most of the empirical studies have utilised growth models with diverse specifications to ascertain the testing of theories of directional and the degree of impact of tax policies across countries and territories. The standard Solow growth model is being used comprising human capital, physical capital and growth of labour force to which tax indicators are incorporated. Further in the text, we shall tackle the research on the relation between tax policies and growth that is mainly based on endogenous growth models. This is because the goal of this study is to present those studies which are essential for building a foundation for an efficient tax policy.

The relation between taxation policy and growth was established in the mid-eighties using neoclassical growth model most commonly associated with a single good and infinitely lived individuals (Lucas, 1985 and Skinner, 1988). The result shows that taxes have no impact on the output growth in the long run. This is because a steady state growth of output is determined by some exogenous factors such as population growth and

technological progress. Nevertheless, growth rates will be affected during the transitional path between the two steady state equilibra.

Skinner (1988) noted that there is little reason to believe that Africa and some other countries are in study state equilibrium. This is because only 5 sub –Saharan Africa countries had achieved independence before 1960 and the regime changes will presumably lead to different growth paths. Besides, the transition path was lengthy.

By means of testing the hypothesis that taxes affect output growth rates, Marsden (1983) matched 10 high tax countries such as Zambia, Britain, Chile and Zaire with other 10 low tax countries such as Singapore, Korea, Uruguay, and Japan. Marsden calculated the difference in growth rate of output and compared the 20 countries. Marsden found out that an increase of one percentage point in the tax to GDP ratio decreases the economic growth rate by 0.36 percentage point. Translating from rates of growth to differences in income per capita, Marsden's coefficient indicates that a 3 per cent increase in the tax to GDP ratio will reduce the level of GDP 20 years in the future by 20 percentage point (Skinner, 1989).

One drawback in the study is its lack of theoretical framework. The neoclassical growth theory envisages that tax rates in this model only affect the level but not the growth rates of GPD in steady state equilibrium.

However, since late eighties, endogenous models have been developed. This is because it is possible for the growth to be based on optimizing decisions of economic subjects. As soon as long term growth rate acquired endogenous characteristics, a theoretical base for research of the role of economic policy in determining the growth rate of economy was established. Economic subjects stimulate growth with accumulation of human and physical capital in endogenous models. The motivation variable is the real rate of the return on capital. Taxes in endogenous growth models influence growth in that they reduce it with taxation of factor incomes since they reduce the real rate of return on human and physical capital.

Harberger (1964) examines the relation between taxation policy and growth. He believes that taxation policy using structure of direct and indirect taxes are very important determinant of investments and growth in theory. However, the impact of taxation policy on growth is negligible in practice. Also, he assesses that changes in taxes could not increase the growth rate of national income by more than 0.1 to 0.2 per cent (Mendoza, Milesi-Ferretti and Asea, 1995). In Harberger's opinion, changes in taxation policy have no significant effect on growth of the economy in practice. In other words, taxation policy seems to be "superneutral".

Using endogenous growth models, Mendoza, Milesi-Ferretti and Asea (1995) try to test Harberger's work. Their research attest Harberger's assertion that the impact of taxes on growth is very small. This means that large changes in a taxation system are needed for any visible changes in economic growth to take place. But, they do not consider that

Harberger's superneutrality means that tax reforms are useless. The fact is that reduction of tax distortions contributes to a substantial increase in welfare (Mendoza and Tesar, 1995).

Further, Milesi-Ferretti and Roubini (1995) employ endogenous growth model to examine the effects of current taxation system on economic growth in USA. This is mostly based on taxation of income and consumption taxes. They conclude that taxation of factor income from human and physical capital reduces growth. This is because introduction of taxes lower the rate of return from factor input and hence discourages accumulation of labour and capital. Besides, they believe that the effect of consumption taxes on growth is not negligible but largely depends on the elasticity of labour supply. Thus the more elastic the labour supply is the more consumption taxes motivate workers to substitute their work and education with leisure. Consequently accumulation of labour factor becomes lower and the economic growth also reduced. Yet still, they conclude through their model that this is the only distorting effect that consumption taxes have on growth whereas income taxes not only affect the link between work and leisure however lower also the accumulation of capital and economic growth by means of other mechanisms. These considerations show that optimal tax structure should be more based on consumption taxes than taxes on income.

Cashin (1994) examines the effect of taxes, public investment and public transfers on economic growth rate using endogenous model. The model indicates that distorting taxes have a strong negative effect on growth. This is because taxes reduce the marginal return

on private capital and hence reduce economic growth. Besides, productive public expenditure in the form of public investments and transfer payments stimulates growth. Cashin concludes that in countries with a small scale state, a positive effect of public investments on growth of the economy is predominant while in the case of large scale states a reduction impact of distorting taxes on growth is predominant.

Esterly (1993) examines the impact of taxes on growth. Esterly, rather than looking at tax rates directly, places the emphasis on the distortions generated by those tax rates. These distortions are found by using the data of Summers and Heston (1988) on 1980 price data for 151 commodities in 57 countries relative to the US. The variance of the prices within countries is then taken as a measure of the relative degree of distortion that exists in those economies due to taxation, price restriction, quotas and other forms of intervention. The reported estimates depict that the variance of input prices is a statistically significant variable in the determination of growth after controlling for other determinants of growth such as initial country income and school enrolment. However, this approach has two deficiencies. In the first place, the variance of prices is not proven to be a good proxy for the degree of distortion in the economy, it is only assumed to be so. Secondly, there is no immediate obvious way to translate the impact of price variation into the impact of changes in tax rates. To do so would call for knowledge of how taxes feed through market equilibrium into prices.

Plosser (1993) examines the link between tax policy and economic growth. Plosser regresses the growth rate of per capita GDP on the ratio of personal income tax to GDP

for OECD countries and finds a negative significant relationship. The limitation of this discovery is that the OECD countries differ in their income levels since income has been found to be one of the most significant determinants of growth (Barro, 1991). Considering this, Esterly and Rebelo (1993) show that the negative relationship all but disappears when the impact of initial income is accounted for. This observation makes the assertions of Plosser rather doubtful.

Esterly and Rebelo (1993) extend this investigation by using various different tax policy measures in regressions involving other determinants of growth. These include initial income, school enrolments, revolutions and war casualties. In response to some of the difficulties identified, four different measures of the tax policy are used: statutory taxes, revenue as a share of GDP; income-weighted marginal income tax rates and marginal rates from a regression of tax revenue on tax base. Based on a number of regressions involving these variables, Esterly and Rebelo conclude that the evidence of tax policies matter for economic growth is disturbingly fragile.

Engen and Skinner (1996) focus on the impact of taxes on economic growth. They underline the negative correlation between taxes and growth. They take Solow's approach to the growth rate of the economy as their starting point. This is because in this approach economic growth rate depends on the availability of human and physical capital as well as changes in productivity.

After reviewing the results of some of the cross- country studies, Engen and Skinner label the regressions as "top-down" since those works involve aggregate measures of taxation. Instead, Engen and Skinner propose a "bottom –up" method which involves calculating the impact of taxation on labour supply, investment and productivity, and then summing these to obtain a total measure. Doing this suggests a cut of 5 per cent in all marginal rates of tax and 2.5 per cent in average rates would raise the growth rate by 0.22 per cent. However, such a modest impact on growth has substantial consequences on living standard.

Kneller et al. (1999) using annual panel data set of twenty two (22) countries within the Organization for Economic Cooperation and Development (OECD) for the period 1970 to 1995 estimated the impacts of tax policy measures on economic growth. The approach contains complete specification of the government budget constraint in terms of revenue and expenditure. This is in contrast to other endogenous growth models which only incorporate the revenue aspect. The authors build on the methodological approach suggested by Barro (1990). Here, the complete specification of the government's budget constraint is corrected for the biases that exist with a partial specification. The model includes the regression of non –fiscal and fiscal variables on economic growth rates. The findings indicate that increasing direct taxation significantly reduces growth whenever compare to consumption taxes having less discernible negative impact on growth. But, the estimation implicitly uses average tax rate rather than the marginal tax rate.

Embarking on panel data from 22 OECD countries over the period 1970 -1995, Gemmell et al. (1999) estimate the impact of different types of taxes on the growth rates of per capita income. Their pooled OLS and fixed –effects estimation results suggest that imposing a higher level of taxes reduces per capita income. They emphases that the estimated impacts of different types of taxes may be biased if other elements in the budget like expenditures are omitted from the model. As propose by Arnold et al. (2011), the feasible solution is to focus on the growth effects of revenue neutral changes in tax policy. This avoids the complication that changes in the total tax revenue are reflected in changes in the public spending.

Arnold et al (2011) examine the long run effects of revenue neutral changes in tax policy on economic growth based on panel data for 51 OECD countries over the period 1970-2004 provided by OECD Tax Revenue Statistics. The Pooled Mean Group (PMG) estimation results in Arnold et al, (2011) indicate that shifts in total tax revenue towards immovable property taxes and taxes on consumption in addition to improving the design of individual taxes are associated with a higher level of per capita income in the long –run on economic growth. The authors propose that if there is a "tax and growth ranking" in terms of the impact of each type of tax on the long –run level of per capita income, property tax would come first of this ranking. This is followed by taxes on consumption; taxes on personal income, and then taxes on corporate income. This is because it has been realised that personal & corporate taxes and immovable property taxes has the least detrimental effect on GDP per capita in the long run.

Further, Arnold et al, (2011) find that to enhance economic growth as well as promoting economic recovery, the best option is to reduce income tax on low income earners. This falls in a context where a reduction of income tax for low income earners would stimulate demand, minimize income disparity and increase work incentives. Besides, they find that the ranking remains robust in varied model specifications with additional independent variables like inflation rate.

Widmalm (2001) examines the growth effects of revenue- neutral changes in tax policy base on the data provided by the OECD Tax Revenue Statistics covering 23 OECD countries from 1965 to 1990. The author group taxes into five categories namely: corporate income taxes, labour & capital income taxes for individuals, property taxes, taxes on goods & services and taxes on payroll & social security contributions.

Employing the Extreme Bounds Analysis (Leamer, 1983), Widmalm (2001) finds that there is a robust negative relationship between the share of taxes on personal income and the growth rate of per capita GDP. However, He finds that corporate income taxes as a share of total tax revenue have a positive nevertheless fragile relationship with growth. Similarly, the evidence is also fragile in correlation to taxes on: payrolls & social security contributions, goods & services and property. Including investment to GDP ratio, the estimation result suggests that the tax type may affect growth through channels other than physical capital accumulation for example human capital accumulation or supply of effort.

Romer and Romer (2010) investigate the impact of tax policy actions on growth of the economy in the United States during the post- war period. Regression of legislative tax measures from narrative sources especially presidential speeches is regressed on changes in real GDP over the period of 1947 to 2007. Changes in the tax system are separated into those related to prospective economic conditions and other exogenous reasons. The findings reveal that tax policy actions have very big impact on output resulting in reduction from 3.0% to 2.5%. Further, output effects are found to be more closely related to changes in actual taxes as compared to news about future changes.

Myles (2007) views from an endogenous growth perspective the relation between taxation and economic growth. The results show that corporate taxation affects the return to innovation and hence influence the optimal amounts of research and development. Also, personal income taxation reduces the returns to education and hence reduces the accumulation of human capital.

For studies that have direct bearing on this thesis, a number of recent studies on the growth effects of tax policy (Gemmell et al., 2007 and Scarlett 2011) apply autoregressive distributed lag (ARDL) model first developed by Pesaran, Smith and Shin (1999) which allow the coefficients on the short run dynamics to be heterogenous across board.

Greenidge and Drakes (2009) use an unrestricted error correction model to examine tax policies and its impact on macroeconomic activities in Barbados. Pesaran and Shin

(1997) initially propose this technique which captures both short and long run effects from a general autoregressive distributed lag model. The procedure has potentials to assess the co-integrated variables irrespective of the order of integration as well as handling small samples and dynamic source of biases. This model is initially estimated with standard growth variables where individual tax indicators are added. The tax indicators are constructed using tax index and principal component analysis. The results show that direct taxation has a negative impact on growth in both short and long run. But total and indirect taxation has a contractionary effect on the economy only in the short run without any long run impact.

Scarlett (2011) uses autoregressive distributed-lag model to estimate the impact of tax policy on economic growth with a quarterly data in Jamaica. Also, a granger causality test is used to ascertain the directional correlation between the explanatory variables and growth of the economy. The results point out that increasing revenue from indirect taxes is more conducive to growth of the economy in the long run. Nevertheless, increasing the share of taxes from personal income precisely PAYE has the utmost detriment on GDP per capita over time. Therefore, correction to equilibrium needs a maximum of nine quarters from such an impact. Besides, an increase in tax revenue by policy makers on consumption tax would be favorable to economic growth in the short run. In an effort to stimulate demand, there is a need to reduce taxes on P.A.Y.E.

In examining the impact of government's tax policy measures, the tax policy variable is defined as the share of tax revenue which is raised from a given tax as proposed by

Arnold et al (2011). The tax measure basically provides an indication of the level of taxation as well as the policy action of the fiscal authority. Nevertheless, one has to bear in mind that the tax policy will take into consideration the targeted tax group. In this regard, the tax component is grouped into four categories namely: personal income tax, value added tax, excise duty and import tax. It is essential to know that an increase in the share of tax revenue for one tax group will automatically reduce the amount of taxes needed to be generated from the other tax groups.

2.3 Conclusion

This chapter discusses the literature related to tax policy and economic growth. Under the theoretical literature, we discussed the Solow growth and Endogenous growth models as well as the theoretical effect of tax policy measures on economic growth. The Solow (1956) model takes the rates of saving, population growth, and technological progress as exogenous. The model incorporates two inputs namely capital and labour which are paid their marginal products. However, the Endogenous growth model includes human capital as the only way to create continuous growth in the production function.

Besides the basic determinants of growth, the theoretical literature stresses on the theories of whether or not tax policy measures influence economic growth. As some schools of thought are of the view that government tax policy in economic activities is important for growth, the opposing groups posit that government actions are inherently bureaucratic and unproductive and hence stifles instead of promoting economic growth.

Empirical research of the impact of taxation policy on economic growth varies across countries in terms of the short and long run effects. This is because different empirical studies yield varied results. This makes it hard to make clear conclusions on negative impact of tax policies on growth as the theory suggests. The difficulties that hinder unequivocal conclusions on the basis of empirical researches usually include the following: Different definitions of state in different countries and periods which means different levels of taxation, problems of measuring of individual tax variables, difficulties in sorting out the effect of individual tax variables on growth which is based on the complex interactions of fiscal variables, difficulties in separating the effect on growth of other economic variables from the effect of fiscal variables only and lack of empirical data which enables unambiguous acceptance or rejection of a conclusion of some model theoretically.

All in all, ceteris paribus, moving from taxes on income to consumption taxes is expected to have positive impact on growth. Similarly, the effect of moving from taxes on corporate income to taxes on personal income is theoretically mostly unclear and any action is plausible.

Finally, the empirical literature review portrays that the findings are mixed equally. The main objective of this study is not to resolve the raging controversies but to add to the level of tax policies and economic growth literature the differing quantitative effects of the major tax categories on economic growth model. In doing this we augment the basic Solow model with the four major tax components in Ghana.

CHAPTER THREE

OVERVIEW OF THE GHANAIAN TAX SYSTEM AND ECONOMIC GROWTH

3.0 Introduction

The chapter contains an overview of fiscal developments in the Ghanaian economy since 1970s. Issues concerning fiscal decisions together with strategies adopted prior and post to the Economic Recovery Programme have been discussed. Again, this chapter discusses the various ex–ante and ex-post tax reforms and their achievements as well as the growth of Ghanaian economy.

3.1 Tax System and Economic Growth

Taxation relates to growth of the economy and development in diverse ways. The rate of economic growth can be influenced by policy through the impact that taxation has upon economic decisions. This is because an increase in taxation reduces the returns to investment. Lower returns imply less accumulation and innovation and thereafter lower rate of growth.

Taxation promotes transfer of available resources from the private to public sector. It also allows government to establish enabling environment for the private enterprises. Resources raised through taxation are used in construction of roads, improving the security system, and providing health and educational facilities among others. Sound administration of the tax system and public spending policies can also promote economic efficiency and equity. Also, sound economy policy seeks to facilitate the pros and cons of

the tax system in achieving the net effect as means of stimulating growth and improving the social and economic welfare of the populace.

3.2 Ghana's Fiscal Development

The fiscal performance in Ghana prior to Economic Recovery Programme in 1983 was below expectation and very much disappointing. From 1970 to 1982, the macroeconomic projections and analyses were not exhaustively achieved to provide a base for effective consistent and fiscal policy formulation. As a substitute, fiscal policy measures were taken on ad hoc basis, not coordinated and haphazardly implemented. This led to severe deterioration in the country's public finances. A rapid growth in government spending accompanied by a relatively low growth in revenue resulted in persistent budgetary deficits. This was mainly finance by the banking system. Unfortunately, this action led to a sharp increase in the money supply causing rapid growth in the rate of inflation and an increasingly over-valued exchange rate. In an attempt to suppress inflationary pressure through official control of domestic prices added a further setback to the economic policy implementation by the government (Kusi, 1998).

The price control system in addition to the over-valued exchange rate created severe distortions in the economy (World Bank, 1994). These as a result destroyed motivations for production and exports and stimulated speculation and smuggling. The World Bank (1984) also found that economic activity shifted from the monetary to the subsistence sector. This indicated a withdrawal from monetized economy by some people as well as the collapse of the organized markets. These developments led to a sharp contraction of

the productivity of the tax system and consequently in the ability of the government to generate enough revenue to meet its expenditure requirements.

3.3 The Tax System in Ghana

Ghana's tax system constitutes a variety of major tax categories which are direct, indirect and international trade taxes.

3.3.1 Direct Taxes

It is a tax paid by the individual person or organization on which it is levied. This type of tax includes income and property tax levy directly on the tax payers. The income tax constitutes three broad categories, namely: personal income tax (PIT), corporate income tax (CIT), and "others" in Ghana.

Personal income tax (PIT) is made up of Pay-as-you-earn (PAYE) and taxes for the self-employ. PAYE contributions are deductions withheld from employees' salaries or wages mostly at source in order to satisfy the income tax payers' responsibilities. The PAYE is introduced to lessen the burden of taxation on employees. The tax is routinely deducted from employees' emoluments each time they are paid. The payments serve as a final tax, with no further obligation by the employees to file a tax return unless he/she has more than one job or other sources of income in addition to the regular employment income.

Pay-as-you-earn (PAYE) is calculated using personal income tax (PIT) rates. Tables 3.1 and 3.2 illustrate the current annual and monthly PIT rates respectively.

Table 3.1: PIT Annual Tax Rates in Ghana –Effective 23 May 2013

Chargeable Income (GH₵)	Rate (%)	Tax (GH₵)	Cumulative Chargeable Income (GH₵)	Cumulative Tax (GH₵)
First 1,584	Free	NIL	1,584.00	NIL
Next 792	5	39.6	2,376.00	39.6
Next 1,104	10	110.4	3,480.00	150
Next 28,200	17.5	4,935.00	31,680.00	5,085.00
Exceeding 31,680	25			

Source: Ghana Revenue Authority

The tax rates are graduated with rates ranging from 0 – 25 per cent. Annual income of GH₵ 1,584.00 is taxed free. The current minimum chargeable income is GH₵ 2,376.00 at a rate of 5 per cent. Also, the marginal top tax rate of the tax is 25 per cent for annual income exceeding GH₵ 31,680.00 (Table 3.1).

Table 3.2: PIT Monthly Tax Rates in Ghana – Effective 23 May 2013

Chargeable Income (GH₵)	Rate (%)	Tax (GH₵)	Cumulative Chargeable Income (GH₵)	Cumulative Tax (GH₵)
First 132	Free	NIL	132.00	NIL
Next 66	5	3.30	196.00	3.30
Next 92	10	9.20	290.00	12.50
Next 2,350	17.5	411.25	2,640.00	423.75
Exceeding 2,640	25			

Source: Ghana Revenue Authority

Self-employ persons are required to pay income tax at graduated rates in four equal installments. This covers individual businesses and is done especially by the end of every quarter of the year. That is 31^{st} March, 30^{th} June, 30^{th} September and 31^{st} December. Corporate income tax deals with corporate bodies which are incorporated under the Companies Code (Act 179) in 1973 or other specific legislation. This consists of the tax pays by companies on their profits in the year. The current tax rate is 25 per cent. Nevertheless, companies which were listed on the Ghana Stock Exchange enjoyed a reduction of CIT of 22 percent in the first three years of entry. Also, CIT for mining companies stood at 35 per cent whereas companies in the hotel industry attract 20 per cent rate of tax reduced from 22 per cent in 2011.

Again, there is a reduction of CIT rate of 20 per cent for financial institutions which normally grants loans to farming enterprises. Similarly, to the rural and community banks as well as free zone developers and enterprises, an 8 per cent rate is applicable after a tax holiday of 10 years. Further, domestic together with the foreign companies operating in the country are taxed on their taxable incomes which involve net profits, interest, royalties and rent income of companies formed exclusively for real estate development.

The third category is others which comprise of royalties, dividends, rental income, pensions and license fees. Rent tax is a tax being paid by rent income earners on the gross amount which is earned in a year of assessment. It is a final tax with 8 per cent rate of tax on gross rent income.

Mineral royalty is a tax with rate of 5 per cent imposed on persons for the extraction of natural resources on or beneath the surface of the earth. Dividends are 8 per cent rate of tax and also a final tax. But, dividends earned from unit or mutual trusts are exempted from tax.

Other equally important direct taxes administered in Ghana are: vehicle income tax (VIT), tax stamp, gift tax, capital gains tax, airport tax, and stamp duty. Gift tax is a tax payable by a recipient on the total value of taxable gifts receives and which must exceed GH50.00 in the year of assessment. Currently, the gift tax rate ranges from 5 per cent to 15 per cent. Gift tax is imposed on the following assets: land, buildings, securities, shares, bonds, business and business assets and money (including currency from abroad). Yet, exempt gifts from taxes levy on gifts include gifts receive by: a person under a will or upon intestacy, from that persons' relative, from a religious body for the benefit of the public and for charitable and educational purposes.

Capital gains tax is the tax paid on gains from the realization or sale of chargeable asset. The rate is 5 per cent with the gains exceeding GH50.00. The tax is imposed on the following asset: buildings, land, shares of resident company, business asset including goodwill. However, shares issue on the Ghana Stock Exchange and capital gains by companies listed on the Ghana Stock Exchange are exempted. Tax stamp is a tax collected on quarterly basis from small scale self –employ persons in the informal sector introduced in February, 2005 in the country. The business operators are grouped

according to types such as: dressmakers, susu collectors, chop bar owners, bucthers etc. and further group by class or size to arrive at equitable rates.

Stamp duty is administered under the Stamp Duty Act, 2005 (Act 689). This Act is amended by Act 764 in 2008. The Stamp Duty is not a tax on transactions; however, it is on document brought into being for the purposes of recording transaction. Hence, it is regarded as a tax on document or specific instrument having legal effect. Vehicle income tax is a tax which is collected from commercial vehicle operators on quarterly basis introduced in the country in July 2003. The rate charge depends on the vehicles passenger capacity as well as the type of operation such as: taxis, tour buses and "trotros". The VIT stickers are designed in various categories and are to be purchased on quarterly basis.

3.3.2 Indirect taxes

They are taxes levied on goods and services consume in the country in question regardless of their origin. Indirect taxes administer in Ghana consists of Value-added tax (VAT), custom and excise duty, petroleum tax, National Health Insurance Levy (NHIL), and Communication Service Tax (CST). Valued –added tax is a broad based tax levy on the consumers' expenditure whenever goods and services are purchased. VAT is imposed on the value added of a product at each stage of the production and distribution process and form part of the price pay by the final consumers. Its collection by registered agencies or businesses charge the tax in stages on the value added from the manufacturing to the retail level.

VAT was invented by Maurice Laure, a French economist in 1954. Initially, it was meant to cover large businesses however, was later extended to all businesses. Its adoptions by the European Union, many African countries, Asia and South America occurred by the end of the 20^{th} century. In 1993, the government of Ghana recognized the need for VAT in the budget statement and started preparation for its introduction. In October 1994, a bill introducing VAT was discussed and approved in parliament yet its implementation was deferred until March 1995. The VAT rate has been 12.5 per cent after successful implementation. However, due to the enactment of the Value Added Tax Act, 2013 (Act 870), the new VAT rate is 15 per cent which took effect from 8^{th}January, 2014.The VAT Act received presidential assent on 30^{th} December, 2013 and then notified in the Gazette on the 31^{st} December, 2013. This was done in order to widen the tax net by including many businesses making huge profits however operate outside the tax net. As a result companies that manufacture and/or supply pharmaceutical products other than operating at a retailing stage are to pay tax for the first time. Further, gymnasiums and spas together with the domestic airlines and companies dealings with haulage have also been roped in the outstanding tax net.

National Health Insurance Levy still remains at 2.5 per cent. This in effect amount to a total charge of 17.5 per cent of the taxable value of the supply. Excise tax is a tax imposed on output of manufactured goods either at the production or sales of the products. It goes with a specific or ad valorem rate of 20 per cent. The aim of levy is to discourage production and consumption of certain goods. This type of tax is administered

by domestic tax revenue division of GRA on products such as: beer, spirits, petroleum and tobacco (eg. cigarettes).

Communication Service Tax (CST) is a tax imposed on charges for using communications services provided by communication service operators. The CST is paid by consumers to communications services providers who also in turn pay all collected CST on monthly basis. The providers are: public and corporate data operators, national fixed network operators, and broadcasting radio services providers, television services pay-per-view, providers of internet services, mobile cellular network operators and providers of free-on-air services. Petroleum tax is a tax levied on oil companies. This is done to cater for economic rent on land usage for mining.

3.3.3 International Trade taxes

Tax revenue from duties on imports and exports trade transaction constitutes revenues from international trade taxes. Import duty is a tax levied on all imports in exception of those items exempted by the law. It is charge on the Cost, Insurance and Freight (CIF) value of commodities. Also, it is levied at different rates. However, it must be noted that there is a clear distinction between import VAT and import duty. Import VAT is charged at a flat rate and levied on duty inclusive value of the goods.

Export duties are grouped into two major categories; traditional and non-traditional exports. The traditional export commodities involve: beans, cocoa, logs, fresh fish and yam, electricity and mineral ore (eg. unprocessed gold). However, the non-traditional

commodities consist of all commodities excluded from the traditional type. With the exception of cocoa beans and hydrocarbon, the other exports commodities attract zero per cent. Parrots, rattan canes, narcotics, bamboo, pornographic materials and Ghanaian currency in excess of GH 5000.00 are prohibited from export under the law in Ghana.

3.4 Performance of the Ghanaian Tax System prior to 1983

Government tax receipts are lodged into consolidated fund out of which disbursements are done. Tax revenue, non-tax revenue and grants constitute the revenue aspect. The revenue portion is further classified into three broad categories of taxes: direct, indirect and international trade taxes.

Revenue from import tax declined from 2.42 per cent in 1970 to 0.66 per cent in 1982 as illustrated in Table 3 .4. Factors such as: corruption and tax evasion, artificial low value of imports in terms of domestic currency and the sluggish growth in non-oil imports which was caused by fall in import earnings and an increment in the import bill due to the oil shock in 1973/74 contributed to the fall in the import tax revenue. Consequently, this decline contributed to the economic deterioration in the late 1970s as the government did not have the requisite tax receipts to bridge its financial gap.

Tax earnings from personal income tax remained fairly stable especially between 1970 and 1977(Table 3.3). Personal income tax was the most reliable source of government revenue because its deductions were made from source through PAYE although; its revenue contribution to the government was low. On the other hand, due to extensive

evasion with lags in collection and assessment, revenue realised from self- employed tax was far below targeted deed. Table 3.3 represents performance of government revenue prior to the reform.

Table 3.3: **Sources of Government Revenue :1970 - 1982 (As Percentage of GDP)**

Years	PIT	Import Tax	Sales/ VAT	Excise Tax	Total Tax Revenue
1970	1.385	2.424	0.938	0.867	5.615
1971	1.564	2.945	1.068	0.851	6.427
1972	1.637	2.054	1.034	2.054	6.778
1973	1.477	2.713	0.968	2.713	7.871
1974	1.197	2.428	0.753	2.090	6.469
1975	1.582	1.758	0.795	3.419	7.554
1976	1.436	1.772	0.801	4.109	8.118
1977	1.534	1.707	0.511	2.821	6.573
1978	0.997	1.466	0.341	1.530	4.333
1979	1.091	1.411	0.325	1.647	4.473
1980	0.895	0.842	0.464	2.420	4.622
1981	0.927	0.649	0.410	2.094	4.080
1982	0.865	0.659	0.299	1.668	3.491

Source: Brown 1972, Government of Ghana Economic Survey, Quarterly Digest of Statistics

In order to address the issue pertaining to the economic deterioration, the government of Ghana implemented an Economic Recovery Program (ERP) in 1983 which aimed at achieving external payment viability as well as sustaining economic growth. Restoration of fiscal discipline, regulating expenditure to reduce fiscal deficit, adopting fiscal policies geared towards economic growth and increasing the amount of revenue generated through comprehensive tax reform system were components of the ERP.

3.5 Reforms in the Ghanaian Tax System

The government of Ghana in 1983 embarked on various forms of fiscal and structural reforms aimed at stimulating economic recovery. One of the major adjustment processes was the reform of the tax system[3]. This was done in order to expand the revenue generating capacity of the tax collecting agencies as well as removing existing distortions and then strengthening economic incentives. Also, there were several attempts to enhance efficiency of the administration and equity of the overall tax system. The tax reforms have thus undergone broadly three main overlapping stages, namely: restoration of the tax base, strengthening production incentives and enhancing efficiency & equity in the tax administration.

3.5.1 Restoring the Tax Base

During 1983-1984, adjustment of exchange rate was aimed at increasing receipts from cocoa export taxes together with import duties. Further, increment in the availability of foreign exchange as a result of donor inflows stimulated expansion of imports and hence the base of import taxes. Therefore, the tax reform measures were designed greatly to restore the base of the tax system which declined during this period due to persistent over –valuation of the domestic currency and the large margins between official and market prices (Kusi,1998) and (Osei and Quartey, 2005).

[3] Tax reforms deals with improving the welfare through making marginal changes in the structure and design of the tax system. It occurs as a result of introducing new taxes & then abolishing old ones. Changes in the tax mix. Radical transformations in administrative guidelines and practices as well as varying the tax rate brackets or make changes in the tax base.

Also, the reform of the tax system was aimed at widening the tax net, reducing evasion as well as minimizing the tax burden. Thus, the introduction of a multiple exchange rate system in 1983 was as a result of imposition of surcharges on foreign exchange payments together with granting of bonuses on foreign exchange receipts. In 1988, two exchange rates operated however were unified eventually. Again, between1983-1984, prices charge was de-regulated. Pricing of consumer goods were allowed to reflect fully production cost in addition to the profit margins whereas a flexible producer system of pricing was adopted to maintain prices in order to provide incentives for producers for items such as cocoa, rice, maize and palm oil. Additionally, budgetary subsidies for consumer goods and public utilities were removed gradually. For the public sector services; fees, levies and charges were revised upward as part of the new cost recovery measures.

Moreover, revision of the tax system assessment for import duties, sales and purchase taxes were due to price reforms and exchange rate adjustments. These tax systems were reviewed to make basis for dutiable goods and then reflect the full face values plus certain surcharges. Also, the basis for corporate income tax assessment was likewise changed from profits of the preceding year to actual income earned during the recent year (Kusi, 1998). Furthermore, at the initial stage of each quarter, the system of advance payments of taxes which caused extensive evasion was discontinued. Instead, at the end of each quarter, corporate bodies as well as the self- employed were allowed to pay taxes. In all, the lowest tax- free personal income bracket was raised as the marginal rates were lowered to reduce the average effective rates.

3.5.2 Strengthening production incentives

Introduction of the investment code (PNDC Law 116, 1985) and a new minerals law (Minerals Commission Law, 1986) were the second stage of the tax reform process in Ghana. The code identified four priority areas of investment namely: agriculture, construction and buildings, manufacturing and tourism. In these areas, any enterprise engaging in any form of activities qualified for a broad range of incentives and tax benefits. For instance, when an enterprise having priority status undertook or supported an approved programme of scientific research for the purposes of developing or advancing the enterprise, then the related capital expenditure in respect of such research was fully tax deductible. Also, encouraging regional dispersion of industrial activities, enterprise located outside Accra-Tema metropolitan area qualified for a reduction in income tax ranging from 15-40 per cent depending on the located area. Again, the code made special provision for reduction or deferment of taxable income payable by enterprises especially in areas lacking in basic infrastructure and precisely where the enterprise undertook the costs of providing for such infrastructure.

The new minerals law (Minerals Commission Law, 1986) modified eight existing laws, clarified mining rights and then made provision for new incentives for investors. The incentives covered corporate tax allowances, capital allowances from which companies would be able to write off between 40-100 per cent of capital investment against taxes. Also, companies were allowed to use offshore bank accounts for servicing foreign loans, dividend payments and expatriating staff remuneration.

3.5.3 Enhancing Tax Efficiency and Equity

Reformation of the Ghanaian tax system after 1985 focused on enhancement in the efficiency of the tax administration and ensuring equity in the tax system. Until 1986, the tax administration system was not adequately monitored neither was tax compliance ensured efficiently. Hence, a major component of tax reform was to strengthen the revenue collection agencies to ensure that they increase revenue and also to transform the structure of the tax system to make it more efficient and equitable. In 1985, the National Revenue Secretariat (NRS), Custom Excise and Preventive Service (CEPS) and the Internal Revenue Authority (IRS) were made autonomous institutions. The NRS responsibility was to supervise the activities of CEPS and IRS. Also, the NRS duty is to recommend revenue policies to the Ghanaian government.

Further, conversions of IRS and CEPS into autonomous bodies with new organizational structures in close relation to the state- owned enterprises in 1986 was another measure aimed at improving efficiency in tax collection. Additionally, new incentive policies for the staffs of IRS and CEPS were introduced to enhance productivity of the tax collection system. Again, between 1986 and 1992, the IRS operated with ministerial powers alongside the ministry of finance nonetheless this whole autonomy was partially reversed (Kusi, 1998).

Upon the advice of the World Bank in 1989, the Ghanaian government took the initiative to computerize the tax administration management information systems and also introduced a unique taxpayer identification numbering system.

On the direct side of taxes, the goal of the corporate tax reform has been the gradual reduction of tax rates as well as elimination of the distortions that arise from application of multitude of tax rules to varied form of capital financing and incomes from the sectors. The corporate tax rate stood at 55 per cent in 1986 with the exception of mining and manufacturing which faced a tax rate of 50 per cent. The tax rate applicable to banking went down from 50 per cent in 1991 to 40 per cent in 1992. In 1993, all corporate tax rates reduced to 35 per cent excluding the rate applicable to the mining sector. The rate was reduced to 35 per cent due to the amendments of the Petroleum and Mining Law in 1994 (Kusi, 1998). The corporate tax rate stood at 25 per cent since 2006. This was in conjunction with the reduction in National Reconstruction Levy rates. The reductions in the corporate tax burden would position Ghana with the other strong destinations for foreign direct investment and to assist medium to long term planning.

Until 1989, the rates regarding capital gains tax were: assets in use under 5 years were levied 55 per cent; between 5 and 10 years, 45 per cent; between 10 and 15 years, 35 per cent; and between 15 and 20 years; 25 per cent (Kusi, 1998). These were changed to assets in use under one year 50 per cent and between 2 and 20 years 2.5 per cent in 1990. A flat rate of 5 per cent was introduced in 1991 to replace the progressive tax structure with income from mergers, acquisition and publicly traded shares exempted from capital gains tax. The objective of the reform of capital gains tax was intended to lessen the effect of the inflationary tax on disposed assets. Also, the implementation of the capital gains tax in the Internal Revenue Act, 2000 (Act 592) to petroleum operations would enhance revenue mobilization.

Significant transformations were also introduced in the personal income tax system. In 1986, in place of the previous 17 tax brackets, 5 brackets were introduced with new effective tax rates that provided considerable relief to the low-income earners. The top marginal tax rate of 60 per cent (which previously applied to annual chargeable income exceeding 75,000 cedis) was reduced to 55 per cent when a taxpayer's annual chargeable income exceeds 180,000 cedis (Kusi, 1998). The basic aim was to lower the rates to minimize the disincentives to increased productivity and entrepreneurship.

The income tax levied under the Internal Revenue Act (Act 592) was passed in 2000 and became fully operational in 2001. The minimum taxable personal income was 1.2 million cedis at a tax rate of 5 per cent in 2001. The top marginal tax rate of 35 per cent was reduced to 30 per cent for personal incomes exceeding 48 million cedis. There was further reduction in the top marginal tax rate to 25 per cent for personal income exceeding GH₵9,600.00 in 2006. This was in operation until November 2011 before a new tax rate structure was introduced by the Ghana Revenue Authority. Even though, the top marginal tax rate remained at 25 per cent, the personal income level increased to GH₵ 31,680.00 in 2013 (Table 3.1).

The tax reforms also affected indirect taxation system. The most significant changes included the lowering of tariffs rates as well as achieving horizontal and vertical equity through a broader spread of indirect tax burden. Starting from 1987, all excise duties on products other than petroleum, tobacco and beverages were abolished. The loss of revenue was compensated for through an increase in the general sales tax rate from 10 to

20 per cent and then further to 25 per cent. However, the rate was reduced to 22.5 per cent in 1989 and subsequently to 17.5 per cent in 1991. Yet, the sales tax on luxury items was increased from 20 to 35 per cent in 1987 and 1988 respectively.

In 1990, a "super tax rate", ranging from 75 per cent to 100 per cent of the ex-factory cost was introduced for high class luxury consumption goods. This was eliminated in 1992 from the tax structure because its practical implementation and administration tended to apply only to imports and thus increased the effective rate of protection for local industries. The high rates of the tax would encourage misclassification, evasion and avoidance (Terkper, 1994).

Concerning import duties, the view of tariff policy was that the search for economic productivity would make an across –the- board increases undesirable. Starting from 1988, special tax imposed on the local production of textiles, tobacco, alcoholic and non-alcoholic beverages were made to apply to imports of such items. Also, import duty and sales tax applicable to local production of textiles were made similarly applicable to imports of such goods. The special taxes and imports duties were to represent the main levies to protect local industries. But in 1990, special taxes were compressed into a uniform rate of taxes of 10 per cent as the authorities realized the possibility of this diversity of taxes perpetuating inefficiency in local production as well as rendering the local industries internationally uncompetitive. Additionally, the import licensing requirements were gradually removed and duty rates reduced by some 5 per cent. This reduced the major import tariff rate on most goods to 25 per cent in 1991.

Another main shift of the tax system in Ghana was the introduction of the Value -Added Tax (VAT) Act 1995, (Act 546) envisioned to improve tax efficiency at a rate of 17.5 per cent. VAT rate of 17.5 per cent replaced the preceding sales tax rate of 15 per cent. Since the VAT rate exceeded the extant sales tax rate, it resulted in excessive burden on the individuals (especially low income earners) because they spend greater proportion of their incomes in paying for the tax. VAT was withdrawn after a mass demonstration and the 15 per cent sales tax rate was re-introduced a few months after operation. In 1998, VAT was re-introduced at a 12.5 per cent to minimize the tax burden and reduce tax evasion.

Further, there was another policy dimension which resulted into implementation of Value – Added Tax Act, 2013 (Act 870) to include fee- based financial services and real estates in taxable activities. VAT was charged at a rate of 15 per cent and NHIL at 2.5 per cent. This in effect amounted to the total charge of 17.5 per cent of taxable value of supply.

3.6 Challenges of the Tax Reforms

Any tax reform leading to an increase in the amount of taxes paid by citizens is not usually popular anywhere in the world. Mahon (2000) posits that effective tax systems historically have resulted from exchanging of resources for institutions with the intention that government would be able to sustain tax effort through provision of effective institutions. Although, Ghana is of no exception to this existing rule, public resistance to the tax reforms has been minimized in the country. This is because prior to 1992, Ghana predominantly had been under military rule as a result alternative views on policy

implementation were considered to be sabotage. For instance, the challenges of moving from sales and service tax to VAT in 1990s thus presented a major shift in the entire paradigm of policy implementation. Implementation of VAT in 1995 failed during the first attempt and this has partially been blamed on inadequate investment in education institutional capacity (Addison and Osei, 2001). This manifestation through lack of detailed policy analysis results in the decision to replace the 15 per cent sales tax rate with the VAT rate of 17.5 per cent. Inadequate public education also results in chaos over the new system.

Irrespective of the gains especially in connection with shifting from the sales tax to VAT, there exist significant problems imposing constraint to the amount of generated revenue at the existing tax rates. Also, in Ghana, the institutional structures for tax collection are still weak. This is partially due to lack of logistics and skill personnel in identifying and providing comprehensive data to would-be taxpayers regarding the source as well as the levels of their income tax.

3.7 Tax Revenue Performance

The most glaring effect perhaps of the fiscal adjustment is the tremendous increases in almost all sources of government revenue. These increases consequently contributed to the massive restoration of fiscal discipline. For instance, the budget deficit was reversed from 2.6 per cent of GDP to a surplus of 1.5 per cent in 1983 and 1991 respectively. But, this impressive performance became very difficult to sustain from 1992 to 2013 (Table 3.4). The budget moved back again into a deficit amounting to 8.4 per cent in 1997,

however, this was reduced to 0.89 per cent in 2011. Within the same year, total government revenue grew by more than 26 times. This then caused the proportion of revenue to GDP ratio to increase from 5.4 to 29.6 per cent between 1983 and 2004 respectively.

Moreover, the tax revenue increased from 4.6 per cent of GDP in 1983 to 12.7 per cent in 1987. But the share declined gradually to 11.4 per cent in 1990 before rising sharply to 22.4 per cent in 2004 (Table 3.4).

Table 3.4 shows that fiscal deficit has become recurring feature of Ghana's fiscal policy. This is because the level of fiscal deficit in Ghana has become unsustainable since 1992. To address the problem of non-sustainable fiscal deficits, there is a need to determine the optimal tax rate for a given level of expenditure. Since the level of fiscal deficit in Ghana is no longer sustainable, efforts should be made to raise additional revenue in view of the current situation in Ghana.

Table 3.4: Government of Ghana Finances, 1983 - 2013 (% of GDP)

Years	Tax Revenue	Current Revenue	Total Expenditure	Fiscal Balance	Overall Balance (Incl. Divestiture)
1983	4.62	5.59	8.2	-2.61	2.61
1984	6.62	8.64	10.16	-1.52	1.79
1985	9.36	11.74	13.95	-2.21	2.21
1986	12.15	14.39	14.33	0.06	0.06
1987	12.71	14.88	14.33	0.55	0.54
1988	12.29	14.63	14.26	0.37	0.37
1989	12.31	15.14	14.41	0.73	0.73
1990	11.44	13.92	13.74	0.18	0.17
1991	13.15	15.9	14.49	1.41	1.51
1992	10.77	12.85	18.22	-5.37	4.8
1993	13.15	16.49	21.22	-4.73	2.65
1994	15.88	18.98	22.09	-3.11	2.26
1995	14.69	21.58	22.12	-0.54	0.95
1996	15.09	18.31	22.43	-4.12	3.16
1997	14.67	18.22	26.67	-8.45	8.21
1998	15.78	19.3	25.34	-6.04	6.07
1999	15.01	17.99	24.13	-6.14	6.51
2000	16.26	19.84	27.86	-8.02	8.62
2001	17.19	22.23	25.81	-3.58	4.36
2002	17.49	21.13	26.15	-5.02	6.11
2003	20.22	25.49	28.69	-3.2	3.52
2004	22.36	29.83	31.81	-1.98	2.77
2005	21.90	29.05	30.54	-1.49	1.95
2006	13.18	17.06	21.43	-4.37	4.8
2007	14.31	19.47	24.29	-4.82	4.89
2008	14.48	18.62	26.54	-7.92	6.55
2009	13.13	18.51	22.54	-4.03	5.58
2010	14.13	19.14	25.05	-5.91	6.47
2011	16.63	21.69	22.58	-0.89	4.26
2012	17.31	22.8	28.65	-5.85	11.83
2013	15.52	26.58	33.22	-6.64	9.45

Source : Bank of Ghana and Author's Computation

The tax policy measures introduced after 1982 led to a sharp rise in the share of international trade taxes in total revenue to 48.8 per cent (thus, sum of import and export taxes) in 1983 before declining steadily to 9.67 per cent in 2012 (Table 3.5).The tax policy measures and the reform process also led to a great change in the relative shares of the components of the international trade taxes, that is import duty and export duty. While in 1983 some 27. 4 per cent of the total tax revenue was realized from export duty; by 2012 the proportion of export duty had fallen to 0.67 per cent. On the other hand, the proportion of import tax receipts in total tax revenue increased from 21.4 per cent in 1983 to 27.4 per cent in 1990 before declining to 9.0 per cent in 2012(Table 3.5). Thus, import tax replaced export tax as a major source of revenue originating from international trade taxes after 1987.

Since revenue from export tax is mainly duty on cocoa exports, the decline in the former was based on the decline in cocoa export duty revenue. The declined in the cocoa duty was due to the falling cocoa prices on the world market as well as the government's policy to pay a realistic producer price to cocoa farmers especially in 1981-1982 and the period after 1987.

The contribution of taxes from personal income and company tax to the total revenue was likewise affected by the policy measures. In relation to the total revenue, the proportion of taxes from personal income and company tax increased from 15.96 per cent in 1983 to 20.6 per cent in 1986 and then declined gradually to 12.2 per cent in 1994. Thereafter, the share jumped to 26.8 per cent in 2009 (Table 3.5). In general, the lack of growth in direct

taxes in less developed countries may reflect the relative strength of indirect taxes. But, in Ghana, it was also probable to be the result of the reductions in the marginal and rates of personal and corporate taxes as well as the widening of the tax brackets individually.

Obviously, the structure of the personal income tax did not change much during 1983-2013. However, it is essential to notice that revenue from company taxes increased its contribution to total tax revenue from 7.4 per cent in 1983 to 14.3 per cent in 1989, whereas the share of personal income declined from 8.6 per cent to 6.5 per cent (Table 3.5). This development reflected the availability of foreign exchange which permitted large imports of important inputs to support the recovery of the industrial production growth. Also, the abolition of the price control system permitted producers to set prices at domestic market levels and hence increased the sales value and companies' incomes and profits. The declined in the share of income tax revenue was largely the result of an income tax policy that sought to lower the tax burden on personal incomes. Even though, taxes on incomes of self –employed persons expanded, the increases were very slow compared with the reduction in taxes of incomes of employees'.

Table 3.5: Sources of Government Revenue, 1983-2013 (% of Total Revenue)

Years	Personal Income Tax	Import Tax	Sales/ VAT	Excise Tax	Company Tax	Export Tax	Non-Tax Revenue
1983	8.578	21.408	6.229	17.856	7.378	27.370	16.911
1984	7.891	17.173	5.775	28.201	9.767	20.764	17.495
1985	6.137	17.843	7.1533	22.414	10.331	22.911	16.964
1986	6.728	20.832	7.903	16.838	13.885	20.014	10.832
1987	7.745	16.960	12.572	18.097	9.221	25.574	9.633
1988	7.799	17.977	14.207	18.189	10.110	17.196	9.153
1989	6.539	23.342	17.546	19.525	14.312	16.265	9.654
1990	7.073	27.407	21.244	10.424	13.579	11.348	8.275
1991	5.136	23.679	15.308	9.271	9.353	10.335	8.714
1992	8.065	27.649	17.628	10.270	11.865	6.215	7.855
1993	7.991	24.524	15.946	7.797	7.174	6.251	10.961
1994	6.338	22.534	14.490	3.086	5.873	14.038	12.873
1995	5.349	21.717	13.519	2.679	5.510	9.955	27.893
1996	7.058	21.253	16.301	2.241	10.953	13.901	14.367
1997	8.429	23.445	17.262	2.114	12.932	10.869	15.394
1998	8.669	23.411	17.619	1.971	12.308	12.607	14.104
1999	10.467	15.644	24.248	5.198	13.960	7.475	9.130
2000	11.591	16.794	26.442	4.861	14.482	3.716	8.232
2001	11.011	18.237	28.493	3.880	14.022	4.351	5.043
2002	12.299	18.478	26.236	4.293	14.444	4.191	2.867
2003	11.929	17.225	24.239	3.746	13.058	5.766	2.643
2004	11.040	15.802	22.826	3.483	13.222	5.189	5.981
2005	11.223	15.025	21.535	3.121	13.716	2.739	8.006
2006	13.742	16.308	22.999	3.032	12.334	4.883	3.609
2007	11.444	14.875	22.849	1.947	11.596	0.918	9.267
2008	10.676	14.146	22.654	1.341	11.556	0.833	9.035
2009	13.794	13.146	22.355	1.185	13.048	0.295	15.339
2010	12.695	13.601	20.933	18.313	12.985	1.224	15.860
2011	9.728	11.292	17.758	1.566	12.690	0.043	15.603
2012	10.705	9.009	13.260	1.489	11.539	0.665	18.396
2013	11.252	11.139	15.513	1.265	12.238		

Source : Bank of Ghana, GRA and Author's Computation

The policy measures also produced a noticeable effect on revenue from excise tax. Excise tax revenue contributed 28.2 per cent to total revenue in 1984. But, its share to total revenue declined gradually to 1.3 per cent in 2013 (Table 3.5). The declined in excise tax revenue was based on the re-classification of petroleum tax as a separate tax. Also, the conversion of excise duties on all products other than tobacco and beverages to sales tax was another contributing factor.

The contribution of taxes from value added tax (VAT) to total revenue was similarly affected by the tax policy measures. In relation to total revenue, the share of taxes from VAT increased from 6.2 per cent in 1983 to 28.5 per cent 2001. Thereafter, the share declined gradually reaching 15.5 per cent in 2013 (Table 3.5). The declined in the contribution of VAT was due to the weak performance in the domestic VAT collection which was explained by the under performance of the CST as well as non-payment of the inter-connection charges by the telecommunication companies to the Ghana Revenue Authority.

3.8 Recent Macroeconomic Development

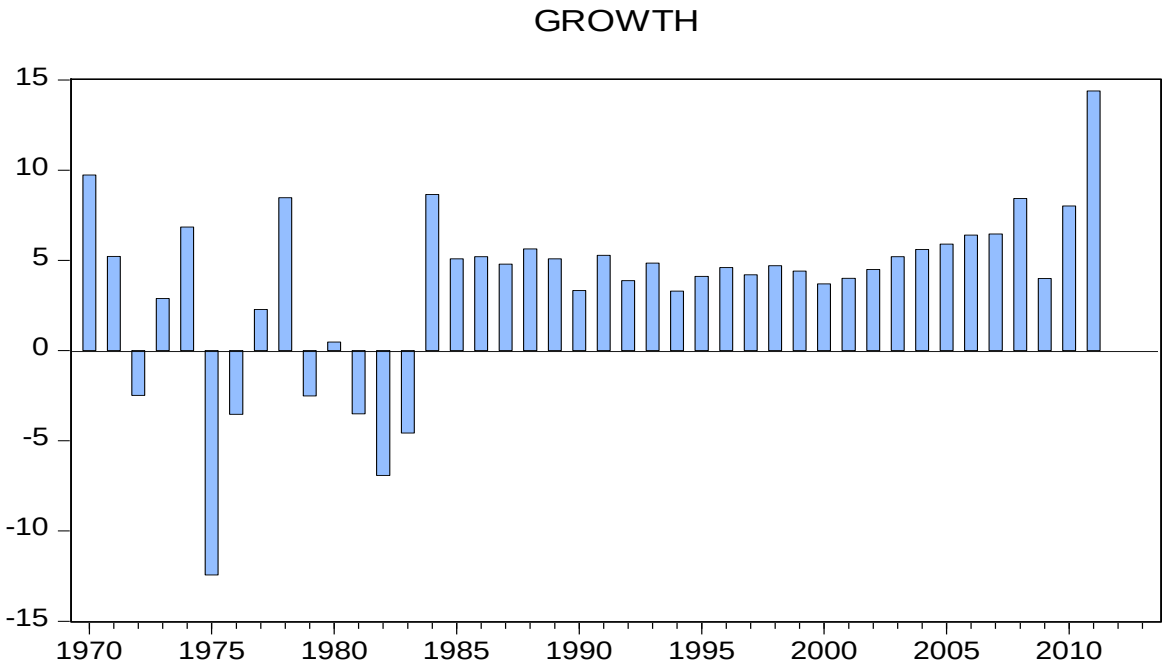
Figure 3.1 shows considerable unevenness in economic growth rate particularly in the 1970s. However, it began to stabilize from 1984. There had been numerous years of negative growth and these were often years that experienced changes in government most importantly with explosive policy changes or reversals. The lowest ever growth of −12.4 per cent was experienced in 1975 which coincided with oil –price shock in addition to policy reversals from a market –oriented stance to an inward-looking protectionist

regime. This period of instability, however, also had some positive growth episodes, with the maximum bar reaching 9 per cent in 1970 and 1978.

Also, Figure 3.1 depicts how growth rate appears to have settled around the 5 per cent level for two decades with some enhancement from 2004 at 5.6 per cent. This growth has been led by the agricultural sector growing at 7.5 per cent as compared to 6.1 per cent in 2003. The agriculture sector contributed 46.7 per cent of overall 2004 growth compared to 41.4 per cent in 2003. Cocoa was the driving force in the sector's growth with 29.9 per cent rise in the sub-sector. The industrial sector grew by 5.1 per cent which contributed 22.1 per cent to the overall growth in 2004. The largest growth in the industrial sector came from construction with 6.6 per cent growth arising from 6.1 per cent in 2003. The services sector grew by 4.7 per cent contributing 24.3 per cent to the overall growth.

Besides, Ghana recorded the highest growth of 14.4 per cent in 2011. This was as a result of inclusion of oil revenues as well as the strong export performance of cocoa and gold. Despite the phenomenal stride in economic growth in 2011, the country failed to maintain the momentum and hence fell to a lower growth rate of 7.2 per cent in 2012. The fall in real GDP growth rate which was translated into a decrease in the real per capita GDP growth rate from 14.4 per cent in 2011 to 7.2 per cent in 2012 was based on the population growth rate of 2.2 per cent. Similarly, a number of sub-sectors in the services sector experienced decrease or no growth in 2012.

Fig 3.1: Ghana's economic growth rate from 1970 -2013



Source: WDI and author's computation

Ghana's overall macroeconomic situations further worsen in 2014 with high twin-deficits lingering, increasing government debt and inflation, a sharp depreciation of its currency as well as weaker pace of economic growth. Macroeconomic issues continued to be driven by a large wage bill and increasing interest costs. The fiscal deficits also declined slightly only to a projected value of 9.4 per cent of GDP in 2014 from 10.4 per cent of GDP in 2013. In spite of the slight increase in the revenue, interest cost increased from 4.6 per cent of GDP to 6.2 per cent. As a result, the government continues to add to its stock of public debt to finance the fiscal deficit.

Nonetheless, the gross international reserves level improved by the Ghana Cocoa Board's loan of $1.7 billion. Also, in September 2014, Ghana issued Eurobond of $1 billion immediately after the start of the IMF case yet has to pay a premium of 100-150 basis points above the comparable sovereign bonds of Kenya, Zambia and Tanzania. In spite of these inflows, the cedi recovered only slightly with 33 per cent as against the dollar after the already 14.4 per cent in 2013.

The real GDP growth decreased to 4.2 per cent in 2014 from 7.3 per cent in 2013 and the domestic activity was hampered by the gas supply volatility from Nigeria, a sharp reduction in the currency as well as rising inflation that demanded policy tightening. Also, the 17 per cent of inflation in December 2014 as compared to 13.5 per cent in 2013 was followed by price adjustments in the petroleum and utilities through removal of subsidies by the government and sharp depreciation of the cedi. Inflation eased slightly also to 16.5 per cent in February, 2015.

In tackling the structural imbalances, the government adopted fiscal stabilization strategy and reached an agreement with the IMF about a new programme. The programme was to support fiscal adjustment for the 2015-2017 targets. Nonetheless, Ghana has important hurdles ahead and as a result the adjustment process is unlikely to be smooth.

3.9 Conclusion

This chapter discussed the role of the various tax systems on economic growth in Ghana. The tax policy system plays a very prominent role in economic development through

stabilization, redistribution and allocation. The Ghana's tax system constitutes a variety of major tax categories which are direct, indirect and international trade taxes. Theoretically, Karingi and Wanjala (2005) argue that using a lot of tax instruments may positively or negatively influence the efficiency of the tax system.

Indirect taxes, for instance have been the main source of revenue. Based on this, the tax policy that aims at mobilizing revenue from indirect taxes should recognize the elasticities involved. Also, tax policy that aims at discouraging imports must realize that it cannot generate adequate revenue at the same time.

The fiscal performance in Ghana prior to Economic Recovery Program in 1983 was below expectation and very much disappointing. From 1970 to 1982, the macroeconomic projections were not embarked on in providing reliable and effective fiscal policy formulation. The declined in government revenue was basically due to fall in the tax revenue (Kusi, 1998).

The government of Ghana in 1983 embarked on various forms of fiscal and structural adjustment programme aimed to stimulate economic recovery issues. One of the major adjustment processes was the reform of the tax system. The tax reforms have undergone broadly three main overlapping stages, namely: restoration of the tax base, strengthening production incentives and enhancing efficiency & equity in the tax administration.

Reforms have included introduction of new tax policies, increasing and decreasing tax rates on varied tax units. Also, there have been adjustments to current probable loopholes in the tax regime. This is to ensure that there is equity in the structure of the tax system.

In spite of the attempts that are being made, there are some challenges in the administration of the tax system. The tax revenue to GDP remained low at about 14% in 2007 as compared to sub Saharan African average of 18%. Also, in 2012, it was 17.31 per cent as compared to 26.9 per cent in sub Saharan African.

CHAPTER FOUR

METHODOLOGY

4.0 Introduction

The theoretical framework of the study is presented in this chapter. Also, the study analyses the impact of taxation on economic growth in Ghana within a human capital augmented Solow model with a standard Cobb-Douglas Production function. The chapter thereafter proceeds to explain the estimation techniques employed. These include the Phillip-Peron test for unit root, Bounds Testing Approach for cointegration and Pairwise Granger Causality test to examine the causal relationship between economic growth and the various categories of taxes.

4.1 Theoretical Framework

The econometric model employed in this study is based on the human capital augmented Solow growth model with a standard Cobb-Douglas Production function as in Mankiw et al (1992). In period t,output (Y) is given by:

$$Y_t = K_t^{\alpha} H_t^{\beta} (A_t L_t)^{1-\alpha-\beta} \qquad (4.1)$$

Where K represents physical capital, $H\ is$ stock of human capital and L is labour. The level of technology and economic efficiency(A) is dependent on the policy actions. $\alpha\ and\ \beta$ are the partial elasticities of output relative to physical and human capital. The paths of these variables are defined by the following equations:

$$\dot{k} = S_k y - (n + g + d)k$$

$$\dot{h} = S_h y - (n + g + d)h$$

$$y = k^{\alpha} h^{\beta}$$

$$\dot{A} = gA$$

$$\dot{L} = nL \qquad (4.2)$$

where $h = H/AL$, $y = Y/AL$ and $k = K/AL$ signifies quantities per effective unit of labour. s^h and s^k are the shares of human and physical capital investment in the total output, g stands for the rate of exogenous technological change, n represents the growth rate of labour and d is the rate of depreciation for human and physical capital.

In equilibrium, $\dot{h} = 0$ and $\dot{k} = 0$. From equation (4.2), it can be illustrated that:

$$k^* = \frac{S_k y^*}{n+g+d}$$

$$h^* = \frac{S_h y^*}{n+g+d} \qquad (4.3)$$

Where h^*, k^* and y^* are the quantities in the steady state. Solving equation (4.3), we obtain that:

$$k^* = \left(\frac{s_k^{1-\beta} s_h^{\beta}}{n+g+d}\right)^{\frac{1}{1-\alpha-\beta}}$$

$$h^* = \left(\frac{s_k^{\alpha} s_h^{1-\alpha}}{n+g+d}\right)^{\frac{1}{1-\alpha-\beta}} \qquad (4.4)$$

The steady state level of output per effective worker can be written as:

$$y^* = (k^*)^{\alpha}(h^*)^{\beta} = \left(\frac{s_k^{1-\beta} s_h^{\beta}}{n+g+d}\right)^{\frac{1}{1-\alpha-\beta}} (h^*)^{\beta} \qquad (4.5)$$

Taking the logarithms of equation (4.5), we have:

$$lny^* = \frac{\alpha}{1-\alpha} lns_k + \frac{\beta}{1-\alpha} lnh^* - \frac{\alpha}{1-\alpha} \ln(n+g+d) \qquad (4.6)$$

Moreover, the transitional dynamics can be expressed by the following equation (Romer 1996):

$$\frac{dIny_t}{d_t} = -\lambda(lny_t - lny^*) \qquad (4.7)$$

Where $\lambda = (1-\alpha-\beta)(g+n+d)$, under the assumption that $\alpha+\beta<1$, which means that there are decreasing returns to all capital. The transitional path of output can be written as:

$$lny_t = lny_{t-s} = -_{\varphi}(\lambda)(lny_{t-s} - lny^*) \qquad (4.8)$$

Where s is an arbitrary lag and $_{\varphi}(\lambda) = e^{-\lambda s} - 1$. Substitute equation (4.6) into equation (4.8), the equation is then expressed as:

$$lny_t - lny_{t-s} = -_{\varphi}(\lambda)\left[lny_{t-s} - \frac{\alpha}{1-\alpha}lns_k - \frac{\beta}{1-\alpha}lnh^* + \frac{\alpha}{1-\alpha}\ln(n+g+d)\right] \qquad (4.9)$$

Where $y = \frac{Y}{AL}$. Taking $s = 1$, it is equivalent to express equation (4.9) as:

$$ln\frac{Y_t}{A_tL_t} - ln\frac{Y_{t-1}}{A_{t-1}L_{t-1}} = -_{\varphi}(\lambda)\left[ln\frac{Y_{t-1}}{A_{t-1}L_{t-1}} - \overbrace{\frac{\alpha}{1-\alpha}lns_k - \frac{\beta}{1-\alpha}lnh^* + \frac{\alpha}{1-\alpha}\ln(n+g+d)}^{F}\right] \qquad (4.10)$$

$$\Rightarrow ln\frac{Y_t}{A_tL_t} - ln\frac{Y_{t-1}}{A_{t-1}L_{t-1}} = -_{\varphi}(\lambda)\left[ln\frac{Y_{t-1}}{L_{t-1}} - F\right] + lnA_t - lnA_{t-1} + _{\varphi}(\lambda)lnA_{t-1} \qquad (4.11)$$

$$\Rightarrow \quad ln\tilde{y_t} - ln\tilde{y}_{t-1} = -_{\varphi}(\lambda)[ln\tilde{y}_{t-1} - F] + _{\varphi}(\lambda)lnA_O + g[_{\varphi}(\lambda)t - _{\varphi}(\lambda) + 1] \qquad (4.12)$$

Equation (4.12) can be written as:

$$ln\tilde{y_t} - ln\tilde{y}_{t-1} = -_{\varphi}(\lambda)\left[ln\tilde{y}_{t-1} - \frac{\alpha}{1-\alpha}lns_k - \frac{\beta}{1-\alpha}lnh^* + \frac{\alpha}{1-\alpha}\ln(n+g+d)\right] + \tilde{V}_t \qquad (4.13)$$

Where $\tilde{y} = \frac{Y}{L}$, and $\tilde{V}_t = _{\varphi}(\lambda)lnA_O + g[_{\varphi}(\lambda)t - _{\varphi}(\lambda) + 1]$.

Equation (4.12) shows how per capita income depends on growth of the population and accumulation of physical and human capital. The model predicts coefficients that are functions of factor shares. Whenever, lns_k is not dependent on the right hand side of the variables, the coefficient on lns_k would be greater than $\frac{\alpha}{1-\alpha}$. For instance, if $\alpha = \beta = \frac{1}{3}$, the elasticity becomes 1 rather than 0.5. This is because higher savings leads to higher income and consequently leads to higher steady state level of human capital, even if the proportion of income dedicated to human capital is unchanged. Henceforth, the existence of human capital accumulation raises the impact of physical capital accumulation on income. Also, the coefficient on $\ln(n + g + d)$ is anticipated to be larger in magnitude than of the savings rate,-2. This is because the amounts of human capital and physical capital must be spread more thinly over the population.

Also, in equation (4.13), the level of human capital serves as a component of the error term. This is because the saving and population growth rates affect h^*. Hence; one should anticipate human capital to be positively related with population growth. Since h^* depends on both s_k and n, omitting human capital may result in coefficient bias estimate on these variables. The equation can therefore be estimated depending on whether human capital corresponds to accumulation rate (s_h) or to the levels of human capital (h).

4.2 Model Specification

Next, we add tax policy measures to the right hand side of equation (4.13). As in Arnold et al. (2011), we include first differences of all the independent variables to control for

the transitional dynamics. The functional form of the model is then specified as in equation (4.14)

$$\Delta ln\tilde{y}_t = C_0 - \alpha ln\tilde{y}_{t-1} + a_1 lnk_{t-1} + a_2 h_{t-1} - a_3 gwp_{t-1} + \Psi_i TP_{i\,t-1} + \sum_{i=1}^{n} b_i\, \Delta ln\tilde{y}_{t-1} + \sum_{i=1}^{n} \omega_{1i}\, \Delta lnk_{t-i} + \sum_{i=1}^{n} \omega_{2i}\, \Delta lnh_{t-i} + \sum_{i=1}^{n} \omega_{3i}\, \Delta lngwp_{t-i} + \sum_{i=1}^{n} \gamma_i\, \Delta lnTP_{t-i} + \varepsilon_t \quad (4.14)$$

Where $\tilde{y}$ represents GDP per capita, k for the physical capital accumulation, h is for the stock of human capital, gwp for growth rate of working population, TP_i is the tax policy variables / tax indicators where $i = 1,2,3,4$ and ε_t is the stochastic error term assumed to fellow normal distribution.

The coefficients on the level effects are α, α_i & Ψ_i with the long run effects estimated as $-\left(\frac{a_i}{\alpha}\right)$ and $-\left(\frac{\Psi_i}{\alpha}\right)$ where α represents the convergence parameter. That is the speed of adjustment to the long run relationship. Also, the short run coefficients are ω and γ. These coefficients capture the short-run dynamics.

It is conventional to use auto –regressive distributed lag (ARDL) model. This is because it distinguishes between the long-run growth path as well as the short-run convergence dynamics. Estimates of steady state coefficients and the parameters of the production function can be retrieved on the foundation of the estimated coefficients. In particular, estimate of the elasticity of the steady state output to the rate of investment (which is the long-run impact of the investment rate on output) is given by the estimated values of $\frac{a_i}{\alpha}$.

Estimation of the short-run and long-run equation takes into account the revenue neutral tax changes. Thus, the greater use of one tax policy measure would inevitable reduce the amount of taxes needed to be raised from other tax policy measures. So, one tax policy measure enters the equation at a time. The growth equation is subjected to the implicit constraint that the sum of all the tax policy measures is equal to one. This assumption ensures the estimation of the varied tax policy measures under the assumption of revenue neutrality (Arnold et al 2011).

The coefficient (α) on the convergence variable (y_{t-1}) is anticipated to be negative and significant. Also, it is expected that in the long-run, the coefficients on physical and human capital are supposed to be positive whereas that of population growth should be negative. However, the direction in the short-run varies across economies as it would be determined by effective substitution of factors of production.

It is expected that there is a robust negative relationship between the share of taxes on personal income and the growth rate of per capita GDP overtime. This is because reducing direct taxation particularly personal income tax (PIT) would aid as a catalyst for transferring greater spending power of the taxpayer. This would then facilitate an increase in the consumption expenditure, increase savings and then enhance investment ventures as well as promoting economic growth. However, any attempt to increase tax collected from direct taxation may serve as a disincentive to work. Thus, there would be

a reduction in supply of labour since people would prefer leisure to work and hence a fall in production level.

Regarding import tax (IMPDU), it is anticipated to exhibit a positive significant relationship in the short-run and long-run. This is because a tax policy measure that aims at discouraging imports must realise that it cannot generate revenue at the same time.

Also, regarding value added tax (VAT); it is expected to exhibit a positive significant relationship in the long-run.

4.3 Data

The impact that changes in the Ghana's tax structure have on economic growth is assessed with the use of quarterly data from 1970 to 2013. The data set involve GDP per capita, stock of human capital, physical capital, growth rate of working labour force and four(4) tax indicators namely: import duty, excise tax, personal income tax and value added tax. The measurement of each variable is outlined in Table 4.1. These data sets are obtained from Ghana Revenue Authority, Bank of Ghana, Ghana Statistical Service, World Development Indicators as well as ISSER and Government of Ghana Budget Statement.

Table 4.1: Variables and Measurement

Variables	**Measurement / Proxy**	**Data sources**
RGDP Per Capita		World Development Indicator (WDI)
Determinants of Growth		
Physical Capital	Gross Capital Formation as Share of GDP	World Development Indicator (WDI)
Stock of Human Capital	Primary School Enrolment % of Gross	World Development Indicator (WDI)
Population Growth	Population Ages,15-64yrs (% of Total)	World Development Indicator(WDI)
Tax Indicators	Percentage Share of Total Tax Revenue: **Direct Tax :** Personal Income Tax (PIT), **Indirect Tax:** Excise Tax (EXTAX) **Consumption Tax :** Sales Tax / VAT **Trade Tax** : Import Duty	Ghana Revenue Authority (GRA) GRA & BoG Bank of Ghana (BoG)

Source: Bank of Ghana, Ghana Revenue Authority and World Development Indicator

4.4 Techniques of Analysis

4.4.1 Unit Root Test

A major problem which is often associated with time series data is based on its non-stationary property. The use of non- stationary variables is possible to give misleading results especially in classical linear regression. Whenever a time series data is non-stationary, applying the conventional OLS technique would easily result in inaccurate conclusion. This would lead to a high t-statistic and R^2 rendering the estimates significant however with spurious results. Therefore, using a time series data, there is a need to make the observations independent and stationary. Most macroeconomics variables are non-stationary and these series are made stationary by differencing the variable. Differencing the variable some number of times to get a stationary series is known as the order of integration.

The study commences with estimating the types of taxes by testing for stationarity conditions of the variables in questions using a unit root test. The unit root test comprises testing the null hypothesis $(H_0: \rho = 0)$ as against the alternative one $(H_1: \rho \neq 0)$. The null hypothesis implies a non –stationary series while the alternate hypothesis suggests a stationary series one. The t- statistics realised from the estimation are compared to the critical values computed (Mackinnon, 1996). When the t-statistics is more negative as compare to the critical value, then H_0 is rejected and the conclusion is that the series Y_t is either stationary at level or integrated of order zero $\left(Y_t \sim I(0)\right)$. Nonetheless, we fail to reject the null hypothesis, H_0 if the t-statistics is less negative than the critical value with the conclusion that Y_t is non –stationary at level. A series might not necessary be

stationary at level but differencing it at d^{th} level can render it stationary meaning integrated series $(Y_t \sim I(d))$.

The order of integration and the possible co-integration among the variables are determined through Phillips-Perron (1988) and the Augmented Dickey-Fuller (1981) test at 5% level of significance. The Phillips-Perron proposes a non-parametric approach as an alternative method of controlling for serial correlation whenever testing for a unit root. The test gives a robust estimate to the general form of heteroscedasticity and autocorrelation in the error term and then modifies the t-ratio of the slope coefficient so that the serial correlation does not influence the asymptotic distribution of the test statistic. Also, it does not demand a specification of the lag length for the test regression.

The Augmented Dickey Fuller (ADF) test is carried out by estimating equation of each variable as against their respective lag variables and the same lag difference terms. The equation is in the form:

$$\Delta y_t = \alpha_0 + \rho y_{t-1} + \alpha_1(t) + \sum_{i=1}^{k} \rho \Delta y_{t-1} + \varepsilon_t \qquad (4.15)$$

Where y_t represents any variable employed in the model, α_0 is the constant term, t is the linear trend and the lag length of Δy_{t-1} forms the augmentation. The i represents the optimal lag length set to ensure that presence of any autocorrelation in Δy_t is absorbed. The error term, ε_t is distributed as white noise (Dickey and Fuller, 1981).

4.4.2 Pairwise Granger Causality Test

Pairwise Granger Causality tests whether a lag value of one variable predicts changes in the other or if the variable in the system explains the time path of another. A variable x is said to Granger Cause another variable y $(x \rightarrow y)$ when past values of x can predict current values of y. Two cardinal principles postulate by Granger (1988) are the cause preceding the effect and the existence of instantaneous causality from x to y $(y \Rightarrow x)$ meaning the present and past values of x predict present values of y. Unidirectional causality occurs whenever the causality is in one direction from $x\ to\ y$ or vice versa. Also, bi-directional or feedback causality occurs when variable x Granger causes y and y in similar manner Granger causes x $(y \leftrightarrow x)$.

The main aim why Granger Causality Test is preferred among other test procedures is based on its robust response to both large and small samples

The Granger causality test is carried out by estimating the equations of the form

$$\Delta y_t = a_0 + \sum_{i=1}^{m} a_{1,i}\, \Delta y_{t-1} + \sum_{i=0}^{m} a_{2,i}\, \Delta x_{t-1} + \delta ECM_{t-1} + \varepsilon_t$$

$$\Delta x_t = \beta_0 + \sum_{i=1}^{m} \beta_{1,i}\, \Delta x_{t-1} + \sum_{i=0}^{m} \beta_{2,i}\, \Delta y_{t-1} + \gamma ECM_{t-1} + \mu_t \qquad (4.16)$$

Where the white noise disturbance terms are ε_t and μ_t, m represents the number of lags necessary to induce white noise in the residuals, and ECM_{t-1} represents one period lag error correction term captures from the long run relationship. The error correction model has interesting causal interpretation in the sense that a bivariate cointegrate system must have a causal ordering in at least one direction (Engel & Granger, 1987). x_t & y_t represent tax variable and economic growth respectively. x_t Granger causes y_t when one or more $a_{2,i}$ $(i = 1, \ldots m)$ and δ are statistically different from zero. In a similar

manner, y_t Granger causes x_t if one or more $\beta_{2,i}$ $(i = 1, \ldots m)$ or δ and γ are statistically different from zero. However, if $a_{2,0}$ or $\beta_{2,0}$ are statistically significant, then there is an instantaneous causality between y_t and x_t.

In this study, Granger Causality Test is carried out to investigate the causal relationship between per capita GDP and the explanatory variables. This is done to resolve the issue of causality. The causality test can be performed using either the significance of the t-statistic of the lag error correction term or the significance of the F-statistics of the sum of lags on the right hand side of each variable. The null hypotheses are economic growth does not granger cause the explanatory variables and the explanatory variables also does not granger causes economic growth. The probability value used is at 5% level of significance. The analysis helps in providing some insight into the correlation between taxation and economic growth.

4.4.3 Durbin Watson Statistics (DW)

DW is used to detect the presence of serial correlation in the data set (Henry and Doornik, 2001). The coefficients in the estimated regression models are used to denote the tax indicators and the economic growth.

4.4.4 Bounds Testing Approach

Testing for the presence of a long run relationship among the variables in this study is done within the framework of a bound testing techniques developed by Pesaran, Shin and Smith (2001). The bounds testing approach employs Autoregressive Distributed Lag

(ARDL) models for co-integration by checking for the long run movement of the variables in question and then considering the robustness of the results.

The ARDL model is preferred on the ground that the model specification has no bias to the order of integration of the variables in question whenever assessing the long run relationship as compared to the vector ECM which requires that the entire variable should be integrated of the same order. This means that the ARDL has a merit of yielding consistent estimates especially for the long run coefficients that are asymptotically normal. Also, the ARDL estimation can be pursued using the Ordinary Least Square (OLS) from which the long run correlation can be ascertained. Again, the technique provides unbiased estimates of the long run model as well as a valid t-statistics even in situations when the variables are endogenous.

The various equations are estimated from general to specific. As in equation (4.14), four lags are included for the short run after which the model is pared down. The estimation for the entire equations is done with the E-view package and Microfit, employing OLS and then incorporating the Newey –West correction. The Newey –West correction yields consistent coefficients in the presence of heteroscedasticity and unknown correlation.

The coefficient (α) on the convergence variable (Y_{t-1}) is anticipated to be negative and significant. In selecting the optimum number of 2 lags, we employ the use of Akaike Information Criterion (AIC). The long run relationship is ascertained by restricting the coefficients of the lag level variables to zero. The null hypothesis representing no co-

integration is tested against the alternative hypothesis of co-integration among the variables by means of an F-test with an asymptotic non-standard distribution.

The hypothesis testing is as follows:

H_0 : The coefficients on the lag level variables are not jointly significant

H_1 : The coefficients on the lag level variables are jointly significant

Whenever the F-statistics computed lies above the value of the critical upper bound, reject the null hypothesis (H_0) which indicates co-integration among the variables. But, if the computed F-statistic lies below the lower critical bound value, the null hypothesis of no co-integration relationship among the variables is failed to be rejected indicating absence of long run relationship. It is worth noting that the test for long run relationship becomes inconclusive if the test statistics falls within the bound. Establishing that the variables are co-integrated, the study proceeds to estimate the long run ARDL model in order to obtain the long run coefficients and their asymptotic standard errors. The long run estimated model is as follows:

$$\Delta lnY_t = C_0 - \alpha lnY_{t-1} + \alpha_1 lnk_{t-1} + \alpha_2 h_{t-1} - \alpha_3 gwp_{t-1} + \Psi_i TP_{t-1} + \sum_{i=1}^{n} b_i \, \Delta lnY_{t-i} + \varepsilon_t \quad (4.17)$$

Thereafter, the estimation of the short run elasticity of the variables possessing error correction representation of the ARDL model is performed. This is done to determine the speed of adjustment towards equilibrium. One merit of the ECM is that it distinguishes between the short run convergence dynamics and the long run growth path. It is this characteristic that enables us to examine the link between the level of taxation and the long run level of income per capita and also at the same time to impose varied

homogeneity restrictions on the short and the long run parameters. We include first difference of all the explanatory variables to control for the short - run dynamics as indicated by Arnold et al (2011). The error correction model (ECM) of the ARDL for estimation is as follows:

$$\Delta lnY_t = \sum_{i=1}^{n} \omega_{1i}\, \Delta lnk_{t-i} + \sum_{i=1}^{n} \omega_{2i}\, \Delta lnh_{t-i} + \sum_{i=1}^{n} \omega_{3i}\, \Delta lngwp_{t-i} + \sum_{i=1}^{n} \gamma_i\, \Delta lnTP_{t-i} + \varepsilon_t \quad (4.18)$$

Numerous diagnostic tests are performed to check for normality, heteroscedasticity, autocorrelation, stationarity of the residual and to ascertain the long run relationship. The residuals are then tested for stationarity in avoidance of producing spurious outcomes. CUSUM and CUSUMSQ are also conducted to ascertain the parameter stability tests. The diagnostic test as well as the parameter stability test is employed to ensure reliability of the goodness of fit of the model.

4.5 Summary

This chapter discusses the methods and the various techniques used to estimate the impact of the tax policy measures on economic growth. The model employed in this study is the human capital augmented Solow growth model with a standard Cobb-Douglas Production function.

Pairwise Granger Causality is then carried out to test whether a lag value of one variable predicts changes in the other or if the variable in the system explains the time path of another.

Testing for the presence of a long run relationship among the variables in this study is done within the framework of a bound testing techniques developed by Pesaran, Shin and Smith (2001). The bounds testing approach employs Autoregressive Distributed Lag (ARDL) models for co-integration by checking for the long run movement of the variables in question and then considering the robustness of the results.

CHAPTER FIVE

PRESENTATION AND DISCUSSION OF RESULTS

5.0 Introduction

This section presents the analysis of the empirical results of this study. The unit roots of the variables and their order of integrations were determined using Augmented Dickey Fuller and Phillips Perron tests. Also, we used the bounds test technique for cointegration and thereafter ascertained both the long and short run relationship among the variables through Autoregressive Distributed -Lag (ARDL) model. Additionally, Granger Causality test was used to illustrate the causal link between the various categories of taxes and economic growth.

5.1 Unit Root Test Results

Ascertaining time series property of the various variables in question, we tested for a unit root[4] using Augmented Dickey Fuller (ADF) and Phillips-Perron (PP) unit root tests.

This is done to ensure that the variables are not integrated of order greater than one to meet the ARDL conditions. Initially, we verified whether the variables were stationary at levels or not. However, if not we tested for the first differences to ascertain their stationary. In each case, we tested the null hypothesis (presence of unit root) as against the alternative hypothesis (thus, no unit root). The results of the unit root test is presented in Table 5.1

[4] The existence of unit root for y_t implies that a shock in the error term, ε_t has a permanent impact on y_t

Table 5.1: **Results of Augmented Dickey Fuller (ADF) and Phillips-Perron (PP) unit root test at levels**

Variables	**Augmented Dickey Fuller test**		**Phillips-Perron test**	
	t-statistics	critical value at 5%	Adj.t- statistics	critical value at 5%
LnRGDPPC	- 0.727563	-3.520787	0.332700	-3.518090
LnGCF	-2.677099	-3.523623	-2.661424	-3.523623
LnPSE	-7.300283 ***	-2.931404	-7.319742***	-2.931404
LnGWP	-1.541491	-2.943427	1.589702	-2.935001
LnVAT	-2.576121	-3.518090	-2.615197	-3.518090
LnIMPDU	-4.140602 **	-3.518090	-4.111701**	-3.518090
LnPIT	-2.180883	-3.518090	-2.180883	-3.518090
LnEXTAX	-1.713755	-2.931404	-1.326320	-2.931404

Source: Author's computation using E-views7, *** denote significance at 1% & ** at 5%

The Mackinnon (1996) critical values were employed in making decision rule as to whether to reject or fail to reject the null hypothesis. When the calculated statistical value in absolute term is greater than the critical obtained value, we proceed by rejecting the null hypothesis. However, if in absolute terms the calculated statistical value is less than the critical value we fail to reject the null hypothesis. Hence, we conclude based on the results from the decision rule whether the variables are stationary or not. Testing the variables at level (Table 5.0), it is realised that, primary school enrolment (LnPSE) has significant probability value with the absolute calculated statistical value greater than the critical value at 5 per cent level of significance in both the Augmented Dickey Fuller (ADF) and Phillips-Perron (PP) case whereas in similar manner, the absolute calculated

statistical value of import duty (LnIMPDU) is also greater than the critical value but significant at 5 per cent. We thereafter reject the null hypothesis and conclude that LnPSE and LnIMPDU are stationary at levels (integrated of order zero).

The study proceeded to test for those variables that were not stationary at levels.

Table 5.2 present results of variables that are integrated of order one (at first difference) since they are not stationary at levels. After first differencing, the variables :value added tax (LnVAT), excise tax (LnEXTAX), personal income tax (LnPIT), real GDP (LnRGDP) and growth rate of working population (LnGWP) are statistically significance with the calculated statistical values greater than their critical values in absolute terms for both PP and ADF tests at 5 per cent level. We then reject the null hypothesis that the variables. Thus, LnVAT, LnEXTAX, LnPIT, LnRGDPPC, LnGWP and LnGCF are stationary at first differencing.

Table 5.2: **Results of Augmented Dickey Fuller (ADF) and Phillips-Perron (PP) unit root test at first difference**

Variables	**Augmented Dickey Fuller test**		**Phillips-Perron test**	
	t-statistics	critical value at 5%	Adj.t- statistics	critical value at 5%
LnRGDPPC	-5.758541***	-3.520787	-7.223060***	-3.520787
LnGCF	-5.587348***	-3.529758	-6.719968***	-3.526609
LnGWP	-1.972713**	-1.950117	-3.742823***	-2.936942
LnVAT	-7.614981***	-3.520787	-7.614981***	-3.520787
LnPIT	-6.289113***	-3.523623	-7.593600***	-3.520787
LnEXTAX	-9.069571***	-2.933158	-10.08426***	-2.933158

Source: Author's computation using E-views7, *** denote significance at 1% & ** at 5%

Table 5.3 presents the summary of order of integration at levels and at first difference of all the variables employed in the study.

Table 5.3: **Order of Integration of the Regression Results**

Variables	**Order of Integration**
LnRGDPPC	I (1)
LnGCF	I (1)
LnPSE	I (0)
LnGWP	I (1)
LnVAT	I (1)
LnIMPDU	I (0)
LnPIT	I (1)
LnEXTAX	I (1)

Source: Author's computation using E-views 7

5.3 Cointegration Analysis

We test for a long run relationship using Wald test[5] among the variables. This is done by comparing the computed F-statistics with the lower and upper critical bound values. The F-statistics tests the joint null hypothesis that the coefficients of the lagged levels are zero. The result of the bound test for the presence of long run correlation among the variables is presented in Table 5.4. The presence of a long run relationship between per capita GDP and the determinants of growth variables is confirmed based on the calculated F-statistics of 5.011063, which lies above the upper critical bound of 3.11, thus signaling the existence of long run relationship between the variables at 5 per cent level of significance. This implies the null hypothesis (H_o) of no cointegration among the variables of our ARDL model is rejected at 5 per cent level of significance.

[5] The Wald test is employed to determine the significant of the explanatory variables in the model. So if the teat statistics is greater than the critical value we then conclude that the independent variables are significant to be used in the model.

Table 5.4: Results of the testing between long run relationships of the variables

Critical Value Bounds of the F - statistics (No Intercept & No Trend)					
90% Level		**95% Level**		**99 % Level**	
I(0)	I(1)	I(0)	I(1)	I(0)	I(1)
1.66	2.79	1.91	3.11	2.45	3.79
Calculated F-statistics : 5.011063**					
Number of explanatory variables : K= 7					

Source: Author's computation ** indicates 5 % significance level

5.4 Long -Run Analysis of Tax Policy and Economic Growth

The long- run impact of the regressors on per capita real gross domestic product is illustrated in Table 5.5. The long run estimated result is selected based on Akaike Information Criterion (AIC). The estimated Long Run coefficients is based on AIC–ARDL (1,1,0,0,0,2,2,2) and the dependent variable is LnRGDPPC.

The result of the diagnostic test section of Table 5.5 shows that the model passes the test for serial correlation, functional form, normality and heteroscedasticity. The decision rule is that we fail to reject the null hypothesis whenever the probability value for the diagnostic tests is at least significance at 10 per cent, 5 per cent and 1 per cent levels and conclude that there is no residual serial correlation, no heteroscedasticity, no functional form misspecification and non- normal errors.

Table 5.5: Estimated Long Run Coefficients Using the ARDL Model

Regressor	Coefficient	Standard Error	T -Ratio	P - Value
GCF	1.3215	1.0583	1.2487	0.223
PSE	0.37744	0.29618	1.2744	0.214
GWP	-1.1599	0.94612	-1.2259	0.231
PIT	-2.1554	0.94994	-2.269	0.032**
EXTAX	-0.67569	0.34521	-1.9573	0.061*
VAT	-3.2236	0.91316	-3.5302	0.002***
IMPDU	1.9113	0.74274	2.5734	0.016**
T	0.29247	0.076377	3.8294	0.001***

Diagnostics Tests

Test Statistics	**LM Version**	**F Version**
Serial Correlation	CHSQ(1) = 0.37807[0.539]	F (1, 25) = 0.22708[0.638]
Functional Form	CHSQ(1) = 0 .22466[0.636]	F(1, 25) = 0.13445[0.717]
Normality	CHSQ(2) = 0.67292[0.714]	Not applicable
Heteroscedasticity	CHSQ(1) = 2.4870[0.115]	F(1, 40) = 2.5177[0.120]

Source: Author's computation *** denote significance at 1%, ** at 5% & * at 10% level

In the long run, the negative coefficient on the changes in the share of consumption tax (Sales/VAT) indicates that a fall in this tax has a significant impact on real gross domestic product (RGDP) per capita at 5% per cent. In this regard, the result suggests that one per cent increase in the share of this tax will lead to 3.2236 per cent fall in RGDP per capita. This is because as taxes on consumption increases excessively, savings and investments would definitely fall and hence lead to contraction of economic growth. This is in line with the findings of Milesi-Ferretti and Roubini (1995), Widmalm (2001) and Xing (2011).

The poor performance of the consumption tax revenue from 1970 to 1982 was due in part to the decline in real private consumption spending and poor administration of the sales tax system. Similarly, the declined in the contribution of VAT was due to the weak performance in the domestic VAT collection which was explained by the under performance of the CST as well as non-payment of the inter-connection charges by the telecommunication companies to the Ghana Revenue Authority.

Following the general deterioration of the economy, real income per capita fell by about 30 per cent between 1970 and 1983 (World Bank, 1984). This was accompanied by deteriorating income distribution as well as growing unemployment together with increased incidence of absolute poverty. This in turn caused a sharp decline in real private consumption spending and hence consumption tax revenue. The use of controlled ex-factory prices as a basis for computing sales tax liability particularly during high inflation periods contributed to the erosion of sales value with base on which tax was

levied. Tax evasion and laxity in the tax collection system also contributed to the contraction of the economic growth.

An increase in the share of personal income tax (PIT) results in a negative coefficient of 2.1554 in the long run and has 5 per cent significant impact on growth over time. This is because an increase in personal income tax reduces growth by discouraging entrepreneurship. This finding is in line with that of Kusi (1998), Myles (2007) and Arnold et al, (2011).

The very low productivity of personal income tax from 1970 -1982 stemmed partly from the low taxation of non-wage income earners particularly income earners in the trading and commercial sectors. Also, the decline in wages and salaries of workers in the public sectors which is as a result of minimum wage legislation has the greatest harm on economic growth. The minimum wage legislation was implemented since 1960 and had been revised upwards several times; however, the policy does not only fail to sustain the real wage of workers at subsistence level. It also discriminated more against skilled personnel. The average wages in reality declined at a rate of 13.3 per cent in real terms (Ewusi, 1987).

The declined in the share of income tax revenue was largely the result of an income tax policy that sought to lower the tax burden on personal incomes. Even though, taxes on incomes of self –employed persons expanded, the increases were very slow compared with the reduction in taxes of incomes of employees'. Again, although personal income

tax was the most reliable source of government revenue because its deductions were made from source through PAYE however, its revenue contribution to the government was low. On the other hand, due to extensive evasion with lags in collection and assessment, revenue realised from self- employed tax was far below targeted deed.

Moreover, the compression of the wage structure, the disparity between the lowest and the highest paid in the public sector, where most wage and salary workers were employed, drop to 1:8:1 as compared to the ratio of 10 :1 in the private sector (Joner, 1989). Based on the severity of the circumstances, a lot of skilled personnel left the public sectors to work in the neighboring countries where terms of service were relatively better or left their professions for trading. This as a result caused the base of the personal income tax to shrink. In addition, the existence of a multitude of non-taxable allowances was also another factor leading to contraction of economic growth.

An increase in the share of revenue via import duty (IMPDU) has a positive and significant impact in the long - run at the 5 per cent level on economic growth. In this regard, a percentage increase in the share of import duty will result in an increase of 1.9113 per cent on economic growth over time in the long run. The high productivity of the import tax revenue was based on the success of measures taken to address the import tax problems. First, the improved performance of import duty was attributed to improvement in tax administration and abolishment of import licensing system which allowed a comprehensive recovery of imports. Also, the introduction of ad valorem duty and uniform tariff rates to replace specific duty rates allowed more import tax to be

collected. This increased in the tax collection was also supported by enhancement in the tax administration system. Again, the successive devaluation of the exchange rate contributed considerably to the restoration of the import tax base (Kusi, 1998). The significant positive impact of import tax on economic growth is in line with the findings of Scarlett (2011) as taxes collected from import duty exhibits positive significant impact on economic growth.

An increase in the share of excise tax (EXTAX) has a negative and marginally significant impact in the long run at the 10 per cent level. This means there is the potential for growth to benefit more from this tax component if more efforts are targeted at reducing the bottlenecks that thwart the efforts of tax collectors in determining the correct tax assessment to be paid by prospective tax payers in this category. This could be due to the decline in growth of excisable commodities and fall in collection.

Also another factor accounting for the low productivity of excise tax revenue was based on the conversion of excise duties on all products other than tobacco and beverages to sales tax. The declined in excise tax revenue was based on the re-classification of petroleum tax as a separate tax. The successive reduction in the duty rates of some excisable commodities accounted for the low performance of excise duty. Similarly alcoholic beverages such as beer, cigarettes and other excisable goods are price inelastic and hence attributed to the fall in the economic growth. This is in line with Kusi (1998). Again, Younger (1993) findings reveal that excise tax on tobacco and alcoholic

beverages are regressive and therefore expected to be price inelastic and consequently does not promote economic growth.

5.5 Short -Run Analysis for Tax Policy and Economic Growth

The F-statistics provides evidence that the variables in questions are cointegrated[6] and hence provides strong foundation for the use of error correction mechanism (ECM) representation of the ARDL model in analysing the short run dynamics. The outcome of the short –run dynamics based on AIC with ARDL (1,1,0,0,0,2,2,2) is illustrated in Table 5.5. The coefficient of the error correction term is -0.021545 which is statistically significant at 5 per cent level. The negative coefficient assists in re-enforcing the findings of a long run relationship in the model. The magnitude of the coefficient signifies that 2.15per cent of the deviation from the equilibrium level of the dependent variable is corrected each year. The R-squared value of 0.76820 explains that the independent variables in the model explain about 76.82 per cent of the level in the dependent variable. Again, the negative as well as the significant of the one period lag error correction term (ECM_{-1}) for the entire short run representation of the ARDL model could simply imply that there are economic forces that operate to restore the long run equilibrium path of the accumulated revenue based on the short run disturbances. This means that the variable in question adjust to its long run equilibrium level at a speed of 2.15 per cent.

[6] Thus provide existence of long run equilibrium and presence of stochastic trend as well as introducing additional causal channel (ECM) for a variable to affect the other.

Table 5.6: Short -Run Estimation of the ARDL model

Regressor	Coefficient	Standard Error	T –Ratio	P-Value
dGCF	-0.011277	0.021715	-0.51933	0.607
dPSE	0.008132	0.0061362	1.3253	0.195
dGWP	-0.024989	0.015157	-1.6487	0.110**
dPIT	-0.046439	0.01331	-3.4891	0.002***
dEXTAX	0.0044656	0.0057514	0.77644	0.444
dEXTAX1	0.021442	0.0062913	3.4083	0.002***
dVAT	0.0013187	0.017176	0.076772	0.939
dVAT1	0.041727	0.017128	2.4363	0.021**
dIMPDU	0.045255	0.015928	2.8413	0.008***
dIMPDU1	0.040531	0.015736	2.5758	0.015**
Dt	0.0063014	0.0014178	4.4445	0.000***
ecm(-1)	-0.021545	0.008184	-2.6326	0.013**

ecm = RGDPPC -1.3215GCF - 0.37744PSE + 1.1599GWP + 2.1554PIT + 0 .6

7569EXTAX + 3.2236VAT -1.9113IMPDU - 0.29247T

R- Squared	0.7682	R- Bar - Squared	0.63447
S.E. Regression	0.029592	F-Stat. F(11, 30)	7.8332[0.000]
Mean of Dependent Variable	0.010129	S.D of Dependent Variable	0.048945
Residual Sum of Squares	0.022768	Equation Log-Likelihood	98.3262
Akaike Info. Criterion	82.3262	Schwarz Bayesian Criterion	68.4248
DW- Statistic	1.8119		

Source: Author's computation using Microfit Version 4.0

NB: ***indicates significant at 1%, ** at 5% and * 10% level

The results from growth model which includes the impact of short run increases in the varied shares of tax revenue are shown in Table 5.6. It is vital to note that the various tax measures have varied impact on RGDP per capita.

The positive significant coefficient of the one period lagged VAT on economic growth in the short run as in Table 5.6 could be attributed to the following factors. One, the administrative restructuring that saw the establishment of VAT services as an independent body whose broader base was very responsive to the growth of the economy. Also, there was significant improvement in the tax administration and collection. This could be attributed to the abolition of the price control system which as a result created wide divergence between the market price as well as the official ex-factory prices. Similarly, the conversion of excise duties into sales tax imposed on locally produced goods (with the exception of alcoholic beverages and tobacco) contributed significantly to the growth of the economy. Again, the recovery of real GDP growth in 1984- 1993 for the first time allowed sustained improvements in real private per capita income of about 2.8 per cent a year. The improvements permitted an expansion in real consumption spending in terms of the base of sales tax of about 2.5 per cent in each year (Kapur et al., 1991). These results conform to the findings of Osoro (1993) and Anderson (2013).

The negative impact of personal income tax (PIT) on real GDP per capita at 5 per cent level of significant is evident in the short run. A percentage increase in the share of this tax will lead to a respective contraction in economic growth of 0.046439 per cent in the short run. This is because personal income taxes are progressive in nature having a higher

marginal tax rates that discourages economic growth as compared to the lower average rates intended to generate more revenues. This finding is in line with that of Scarlett (2011) and Arnold et al (2011). Scarlett and Arnold suggest that it would be more advantageous to reduce taxes on personal income with the intention of increasing expenditure and further promote economic growth.

Also, a one per cent increase in the share of import duty (IMPDU) would result in an increase of 0.045255 per cent on per capita RGDP in the short run. In this regard, tax policies directed towards import duty would be beneficial not only to increase government revenue but also increase per capita GDP. The finding is in line with that of Ariyo (1997) and Kusi (1998). During 1983-1984, adjustment of exchange rate was aimed at increasing receipts from cocoa export taxes together with import duties. Further, increment in the availability of foreign exchange as a result of donor inflows stimulated expansion of imports and hence the base of import taxes. This is because the substantial inflow of foreign exchange arising from exports expansion, increment in foreign loans and then improvement in tax administration are the immediate factors contributing to the significant impact on real GDP per capita in the short run.

The coefficient of the excise tax is positive in the short run and one period lag excise tax (EXTAX) exerts a positive and statistically significant effect on economic growth. Thus, one per cent increase in the share of this tax will result in expansion of 0.021442 per cent in economic growth over time. This confirms the findings of Fumey et al. (2009). Excise tax levied on few manufactured products from 1970-1986 made collections relatively

easy and evasion relatively difficult and as a result increased the revenue realised from excise tax. Besides, the revenue from taxes on petroleum until 1986 caused the productivity of excise tax to rise as prices of petroleum products increased especially in the late 1970s and 1980s.

5.6 Pairwise Granger Causality Tests Analysis

According to Granger (1969), a causality[7] test is conducted in order to ascertain whether there is any potential predictability influence of one indicator for another. A notable thing about cointegration correlation is that although it reveals existence of relationship, it does not necessarily points to the direction of causality between the variables. Therefore this calls for an appropriate Granger Causality test technique after testing for the cointegration. The Granger causality test result is presented in Table 5.6. The results indicate existence of unilateral relationship between real GDP per capita and personal income tax (PIT), value added tax (VAT) and real GDP per capita, gross capital formation (GCF) and real GDP per capita, growth rate of working population (GWP) and real GDP per capita. The bi-directional relationship is between real GDP per capita and excise tax (EXTAX).

The results indicate that value added tax does not Granger Cause economic growth meaning the null hypothesis that the coefficient of the lag value is jointly different from zero is rejected at the 5 per cent significant level and we conclude that VAT does Granger cause RGDPPC since there is a unidirectional causal link flowing from past value of VAT to economic growth. This means that information about the past value of VAT

[7] Require also that the series have to be covariance stationary in order to estimate ADF test

reduces the variance of the errors in forecasting RGDPPC that is beyond the variance of the errors determined from the information of the past RGDPPC alone. Also, the result indicates that RGDPPC does not Granger cause PIT at 5 per cent level of significant. This implies that we reject the null hypothesis since the lag information on RGDPPC provides statistically significant information about PIT in the presence of lag value of PIT.

In addition to that, we reject the null hypothesis since EXTAX does not Granger cause RGDPPC at 10 per cent significant level. This is because there is bi-directional causality between EXTAX and RGDPPC.

Table 5.7: **Results of Granger Causality**

Pairwise Granger Causality Tests
Sample: 1970 2013
Lags: 2

Null Hypothesis	F-statistics	P-value	Conclusion
EXTAX does not Granger Cause RGDPPC	3.02916	0.06049	Bi-directional causality
RGDPPC does not Cause EXTAX	2.61290	0.08680	
PIT does not Granger Cause RGDPPC	0.64673	0.52957	
RGDPPC does not Granger Cause PIT	4.33477	0.02035	Unidirectional causality
VAT does not Granger Cause RGDPPC	3.66639	0.03526	Unidirectional causality
RGDPPC does not Granger Cause VAT	0.59601	0.55621	
IMPDU does not Granger Cause RGDPPC	2.14201	0.13175	
RGDPPC does not Granger Cause IMPDU	0.11291	0.89354	
GCF does not Granger Cause RGDPPC	2.69445	0.08158	Unidirectional causality
RGDPPC does not Granger Cause GCF	1.26115	0.29589	
GWP does not Granger Cause RGDPPC	11.4263	0.00015	Unidirectional causality
RGDPPC does not Granger Cause GWP	1.80395	0.17962	
PSE does not Granger Cause RGDPPC	1.55292	0.22872	
RGDPPC does not Granger Cause PSE	1.93392	0.16278	

Source: Author's computation

5.7 Diagnostic and Stability Tests Results

In Table 5.3, the ARDL (1, 1, 0, 0, 0, 2, 2, 2) model passes the standard diagnostic tests. However, it is essential to investigate whether the long and short run relations establish in the study are stable over the entire period. For this reason, the stability of the long run coefficient is tested by the short run dynamics over the entire period of study. Pesaran and Pesaran (1997) posits that the cumulative sum of recursive residuals (CUSUM) and the cumulative sum of recursive residuals squares (CUSUMSQ) tests provide an assessment of the parameter stability of a model after estimating the ECM model. Figures 5.1 and 5.2 respectively illustrate the results of (CUSUM) and (CUSUMSQ) tests. The null hypothesis representing stability of all the coefficients cannot be rejected whenever both (CUSUM) and (CUSUMSQ) stay within the 5 per cent critical bound. The results portray the absence of any instability of the coefficients since (CUSUM) and (CUSUMSQ) plot statistically fall within the critical bound of the 5 per cent confidence interval of the parameter stability.

Fig 5.1: Plot of Cumulative sum of recursive residuals

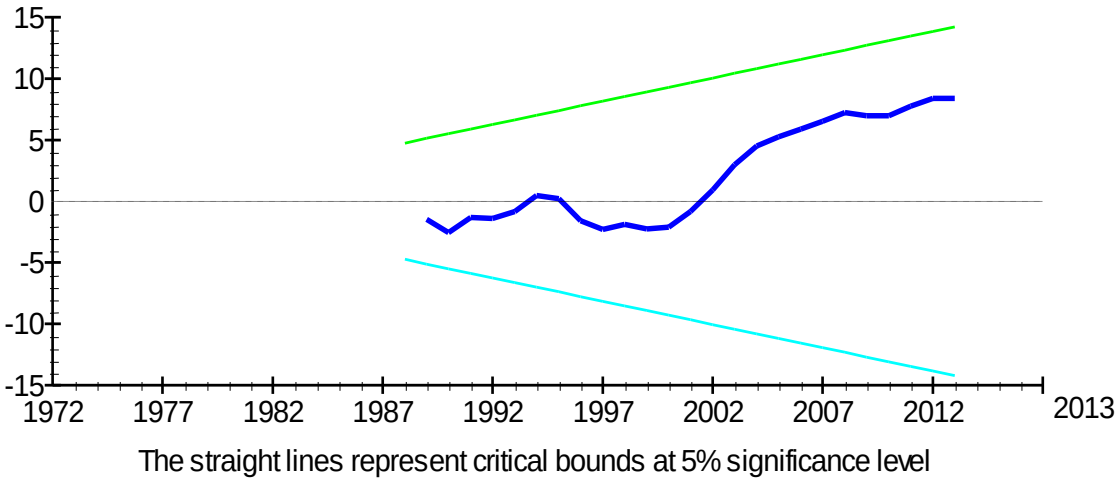
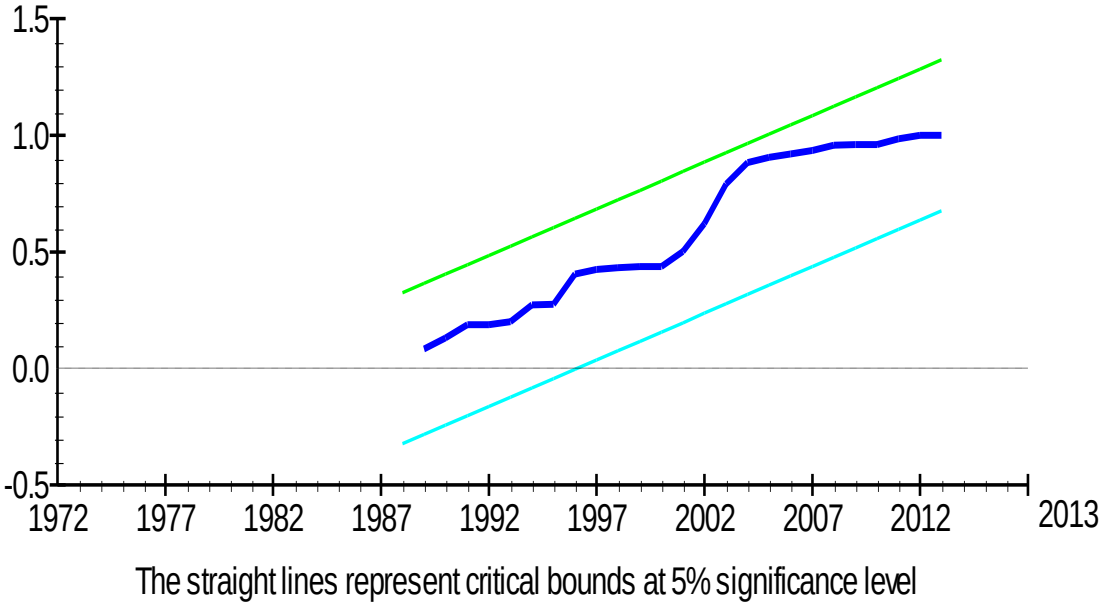


Fig 5.2: Plot of cumulative sum of squares of recursive residuals



5.8 Summary

In this chapter, we obtained estimates of correlation between types of taxes and economic growth as well as the impact of types of taxes on economic growth using Granger Causality Test and Autoregressive Distributed Lag model respectively. To achieve this, the chapter examined the stationarity status of the variables using Augmented Dickey Fuller Test and Phillips Perron Test. Primary school enrolment (LnPSE) and import duty (LnIMPDU) are stationary at levels whereas GDP per capita (LnGDPPC), Value Added Tax (LnVAT), personal income tax (LnPIT), excise tax (lnEXTAX), growth rate of working population (LnGWP) and gross capital formation (LnGCF) are stationary at first differencing.

The results estimate from Granger causality show that there are unidirectional causal link between RGDPPC and PIT, VAT and RGDPPC, GCF and GDPPC, GWP and RGDPPC. Also, there is bi-directional causality between RGDPPC and EXTAX. This means that past values of the first variable contains information that helps in predicting the second variable in question. Long and short run estimates are obtained using ARDL model.

The significant and positive result of the import tax both in the long and short run is based on the success of measures taken to address problems encountered in import taxation. Also, the foreign exchange substantial inflow that arose mainly from export expansion, increment in foreign loan and remittances together with the abolishment of the import licensing system contributed to the massive recovery of imports. Again, replacing all the specific duty rates by the ad valorem duty rates in addition to establishing uniform

tariff rate for most of the imports contribute to collection of more import tax. However, value added tax depicts a negative and statistical significant result on growth in the long run. Thus a percentage increase in VAT would lead to a fall in per capita RGDP. Similarly, in the short run VAT depicts a positive and statistical significant result on economic growth.

In sum the diagnostic and parameter stability tests reveal that the model in question passes the diagnostic tests[8]. Likewise, the graphs of CUSUM and CUSUMSQ depict absence of any instability meaning all the coefficients of the estimated ARDL model are stable over the study period.

[8] Diagnostic tests involve testing for heteroscedasticity, serial correlation, functional form and normality.

CHAPTER SIX

SUMMARY, CONCLUSION AND RECOMMENDATIONS

6.0 Introduction

This chapter focuses on the summary and conclusion of the study. The study's policy implications and suggested recommendations out of the findings of output from Ghanaian tax policies aim at promoting economic growth are presented in this section. Limitations and suggestions for further studies are also discussed.

6.1 Summary

The rapid expansion of government expenditures in the midst of lower growth of revenue since 1983 led to serious fiscal imbalances in the economy of Ghana. This development created the need for a greater share of private sector's resources to be surrendered to government as taxes as a way of financing the ever increased expenditures. The tax system in Ghana since 1983 had therefore undergone major reforms which aimed at enhancing revenue generation as well as maximizing the efficacy of collection. Tax policy measures have been used as an instrument for increasing the revenue productivity of the tax system.

The study set out to examine the impact taxation has on the growth of the economy using a time series data from 1970-2013 in an Autoregressive Distributed Lag (ARDL) model.

The study provides an added value to the ongoing research. Theoretically, the anticipation and the prediction is that changes towards more reliance on consumption

taxes imply higher economic growth. The empirical results that support this notion has however, been thin and not robust and has resulted into mix findings.

Interestingly, results in this finding are not similar for the varied tax policy measures. Some negative effects from consumption taxes are found in the long –run in the estimation and as a result retard rather than promote economic growth. This suggests that composition of consumption tax needs to be re-examined and re-organized to contribute to economic growth. Similarly, results pointed towards negative effects from taxes on personal income in both regressions. Thus, the share of taxes imposed on personal income is robust and negatively related with economic growth.

An important distinction, however, lies in the difference between the analyses of taxes on import. The results are both positive in the short-and long run regressions. The results show that an increase in the share of import duty would lead to a corresponding expansion in real per capita GDP overtime. Similarly, a one percent lag import duty in the short run exerts a positive and statistically significant effect on economic growth. This is because the successive devaluations supported by abolition of price control as well as import licensing systems allowed a recovery in international trade and hence the base of import tax and export duties. Again, the tax policy measures allowed an increased inflow of much needed imported inputs to rehabilitate the devastated industrial sector and then enhance capacity utilization. In addition to that, the simplification of the import tariff rates and the complete overhaul of the entire tax administration permitted more taxes to be collected and as a result contributing to the growth of the economy.

In the same vein, an increase in the share of excise tax leads to contraction of economic growth over time. This implies that the flow has been ineffective in stimulating economic growth. However, the coefficient of the excise tax is positive in the short run and a one period lag excise tax exerts a positive and statistically significant effect on economic growth.

6.2 Recommendations

The empirical results in this study have important policy implications for Ghanaian fiscal system. To enhance high revenue yields through taxation, the individual tax yield should be responsive to changes in national income in such a way that the major tax types should be productive with respect to national income.

The results show that any policy action intended to increase VAT would have a negative and significant impact on per capita GDP over time. The government must therefore skew the tax policy towards equity in order to meet the average Ghanaian worker. Therefore, the VAT rate should not be increased arbitrary but rather broadening the tax base should be the utmost target of policy.

Also, the finding for personal income tax underscores the need to pursue policies aim at changing the negative effect of the personal income tax (both in the short and long run) to positive levels in order to promote economic growth. A policy suggestion is that the authorities should adopt measures such as gradually move away from income-based taxation which discriminate against saving and investment. Similarly, various

enhancement options such as reviewing the definition of income for the purposes of income tax, reducing the income tax burden and the multitude of the non -taxable allowances and improving the tax administration to improve tax collections must be pursued relentlessly as a way of broadening personal income tax base to promote economic growth. This is because greater benefit would be obtained by reducing the taxation on personal income if the objective is to stimulate demand.

Further, an important policy implication can be inferred from the finding of excise tax. The short run dynamic results indicate that one period lag of excise tax exerts a positive and statistically significant effect on per capita real GDP. The result underscores the need to pursue policies aimed at altering the negative effect of excise tax in the long run to positive level in order to enhance economic growth. The policy suggestion is that the authorities should adopt measures of strengthening the capacity of revenue agencies to register a lot of eligible tax payers, design tax stamps for various groups and identify new items to bring into the tax net would serve as a way of widening the tax base.

Furthermore, in addressing the fiscal deficit issue, this study's findings suggest room for much improvement in revenue collection more especially from import taxes. This is because better monitoring and transparency in the import duty collection will also further ensure a significant increase in total government revenue.

In sum, the authorities must identify that tax policy must conform to the society's commitment to the rule of law. That is the system must ensure that the citizen's right to

be taxed should be protected in the designing of the tax policy and its implementation. In other words, tax policy measures must be set up on a wide and transparent consultation. Thus, it must be built on a moral consensus around the need to nurture the tax system as key component of the national existence together with the valued ownership of all citizens of the country.

Also, the composition of the tax system is probably as essential for the growth of the economy as is the absolute level of taxation. This is because countries that are able to mobilize tax resources through broad –based tax structures with efficient administration as well as enforcement will be likely to enjoy faster growth rates than the counterpart countries with lower overall tax collection assessed inefficiently.

6.3 Limitations of the Study

The study could only estimate the major tax types and not the minor tax types with small yields (e.g. fees and licensing, communication tax, airport tax and freight charges). This is because the revenue effect of these types of taxes is given as the global figure in the budget statement.

The investigation only gives aggregate level information which reflects the impact of tax policy measures on growth. It is incapable of disaggregating these impacts into varied sources of change for each tax under consideration taking into account the effects of changes in efficiency of tax administration.

Nevertheless, the fact that this study has some restrictions specifically those arising from variable measurement, its findings suggest some major policy issues for Ghana's growth strategy in far as tax policy measures are concerned. Thus, the study stimulates some exciting argument on the effectiveness of tax components of Ghana as an aid to promote growth.

In all, notwithstanding these limitations, the findings of this study retain a considerable degree of reliability and exactness that render this dissertation suitable for academic reference and formulations of policies.

6.4 Suggestions for further study

In future research, extra care and ample time should be spent on debates regarding the choice of policy measures.

Also, future research can be reinforced using combination of heterogeneous time series data and good exogenous instrument.

This study could be carried out in microeconomic level to supplement the findings obtained here.

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APPENDICES

DESCRIPTIVE STATISTICS

The average rate of import duty is very high. This result may be accounted for the moderate rate of RGDPPC and the Tax System.

The negative minimum value of PIT, EXTAX and VAT denote low level of RGDPPC dominated high level ones. But the positive value implies high level of RGDPPC dominated low levels. This means that there are many years with high levels of RGDPPC than years having low levels.

Appendix 1A: Descriptive statistics

Variables	Mean	Standard Error	Minimum	Maximum	observation
	Growth (%)				
RGDP Per Capita	6.584852	0.205389	6.252247	7.148754	44
Capital Accumulation	2.602937	0.582886	1.217176	3.36737	42
Primary Institution Enrolment	4.366899	0.145373	4.167191	4.702949	40
Working Population	3.982611	0.042119	3.93541	4.055724	42
	SHARE OF TAX REVENUE (%)				
Excise Tax	-0.523717	2.216941	-4.265833	3.266914	44
Value Added Tax	0.662475	1.237311	-1.935561	2.197682	44
Import Tax	1.055736	0.429536	0.276232	2.110268	44
Personal Income Tax	0.223162	0.591160	-1.150376	1.637512	44

Source: Author's computation using E-views 7

Appendix 1B: Variables and Measurement

Variables	**Measures/Proxy**	**Data Sources**
GDP Per Capita	RGDP per head of the working age population 14years and over	World Development Indicator (WDI)
Determinants of Growth : (X)		
Physical Capital	Gross capital formation share of GDP	WDI
Stock of Human Capital	Primary institution enrolment	WDI
Population Growth	Growth rate of the working age population	WDI
Tax Indicators	Percentage share of Tax Revenue:	Ghana Revenue Authority/ BoG
	1. Direct Taxes : PIT, Company taxes, self-employed taxes, others	
	2. Indirect Taxes: Domestic VAT, Import VAT, Petroleum taxes, Excise Taxes, CST,NHIL	
	3. International Trade taxes: Import Duties, Export Duties	

Appendix 1C: Definition of Variables

Name	**Definition**
y	Real Gross Domestic Product per Capita
K	Physical Capital Accumulation
H	Stock of Human Capital
gwp	Population Growth
	Tax Indicators
PIT	Personal Income Tax
VAT	Value Added Tax
EXTAX	Excise Tax
IMPDU	Import Duty

Appendix 1D: **Explanation of Various Taxes**

Tax Type	**Definition**
Total Tax Revenue(TTR)	Summation of all individual tax revenue in the Ghanaian Tax system
Personal Income Tax(PIT)	Tax imposed on personal incomes and earnings of employees based on the principle of "Pay as You Earn"
Excise Tax(EXTAX)	Tax imposed on locally produced goods
Value Added Tax(VAT)	Tax levied on goods and services & covers both the wholesales & retail sectors
Import Duty (IMPDU)	Tax imposed on all eligible goods entering the country

Appendix 1E: Cointegration Results from Wald Test

Wald Test:
Equation: Untitled

Test Statistic	Value	df	Probability
F-statistic	5.011063	(8, 20)	0.0016
Chi-square	40.08850	8	0.0000

Null Hypothesis Summary:

Normalized Restriction (= 0)	Value	Std. Err.
C(1)	-0.033107	0.011124
C(2)	0.065818	0.037033
C(3)	1.184837	0.379716
C(4)	0.018416	0.019336
C(5)	0.032939	0.022138
C(6)	0.106870	0.172993
C(7)	-0.010104	0.013276
C(8)	-0.803898	0.185243

Restrictions are linear in coefficients.