

**REVENUE PRODUCTIVITY OF TAX REFORM
AND GROWTH IN PUBLIC EXPENDITURE
IN ETHIOPIA**

TIZAZU ANWAR



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This is to certify that the project prepared by Tizazu Anwar, entitled *Revenue Productivity of Tax Reform and Growth in Public Expenditure in Ethiopia* and submitted in partial fulfillment of the requirements for the Degree of Master of Art (*Trade Theory and Policy Analyses*) complies with the regulations of the University and meets the accepted standards with respect to originality and quality.





Declared by:

Approved by:

Name: Tizazu Anwar

Name: Dr. Tassew Woldehanna

Signature: 

Signature:  -

Date: June 14, 2012

Date: June 14, 2012

ABSTRACT

Revenue Productivity of Tax Reform and
Growth in Public Expenditure in Ethiopia

Tizazu Anwar
Addis Ababa University, 2012



The objective of this paper is to analyze the revenue productivity of the Ethiopian tax system and individual taxes in relation with tax reforms by estimating the coefficients of tax buoyancies and elasticities using OLS method for the sample periods of 1980/81-2009/10. The aim of the tax reforms in the country mainly focus on generating more revenues to mitigate the perpetual fiscal imbalance and financing the increasing socio-economic activities of the government. These objectives are achieved only through tax policies to make the overall taxes responsive to the changes in GDP.

Results of the analyses reveals that the overall tax system is found out income inelastic both in the pre-and post-reform periods, the contributing factors for inelasticity are mainly low tax-to-base elasticities of most individual taxes besides the relatively better performance of base-to-income elasticities during the periods. The low tax-to-base elasticities are attributable to the sloppy tax administration, generous tax exemptions, tax evasions, the significant time lag between tax assessment and tax collection in an environment of rapid inflation; while better performance of base-to-income elasticity shows the capacity of the economy to generate additional revenues. The inelasticity of the tax system indicates that any increase in tax revenue is mainly due to DTMs rather than the automatic change in proportion to the growth in RGDP.

Empirical evidences of this study suggests that, though it is not effective as expected, tax reform had a positive impact more on indirect taxes than direct taxes. These results call for better enforcement of tax laws and further improvement in the tax administration to increase tax collection and to struggle evasion and fraud.



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TABLE OF CONTENTS

PAGES

List of Tablesv
List of Abbreviationsvi

CHAPTER ONE

1. INTRODUCTION.....1
1.1. Evolution of the tax system in Ethiopia.....1
1.2. Statement of the Problem3
1.3. Objective of the study5
1.4. Significance of the study.....6

CHAPTER TWO

2. REVIEW OF LITERATURES.....7
2.1 Theoretical Frameworks.....7
2.1.1 Revenue Productivity of Taxation.....9
2.1.2 Estimating Tax Elasticity and Buoyancy.....10
2.2 Empirical literatures.....15

CHAPTER THREE

3. MACROECONOMIC FEATURES AND TAX SYSTEM IN ETHIOPIA.....22
3.1 Some macroeconomic features.....22
3.1.1 Saving and Investment.....23
3.1.2 Trends in Government Revenues.....24
3.1.3 Patterns of Public Expenditures.....25
3.1.4 Fiscal Imbalances.....26
3.1.5 Deficit Financing.....27
3.2 Purpose and Importance of Taxation.....30



3.3 The Importance of Tax Reforms.....	31
3.4 Tax System and its Reforms in Ethiopia.....	32
3.4.1 Major Taxes and their Reforms.....	33
3.4.1.1 Taxes on Incomes and Profits.....	33
3.4.1.2 Taxes on Goods and Services.....	34
3.4.1.3 Taxes on International Trade.....	35
3.4.1.4 Administrative Reforms	36

CHAPTER FOUR

4. MODEL SPECIFICATION AND METHODOLOGY.....	38
4.1 Model Specification.....	39
4.2 Data sources and Proxy Bases.....	41
4.3 Individual Tax Base Equations.....	42
4.4 Methodology	44
4.4.1 Stationarity and Unit Root.....	44
4.4.2 Co-integration Test	46
4.5 Regression Specifications.....	47

CHAPTER FIVE

5. EMPIRICAL RESULT ANALYSIS.....	50
5.1 Combined Periods Estimation Results.....	53
5.2 Pre-and post-Reform Periods Results.....	56
5.3 Decomposition of Elasticities.....	62

CHAPTER SIX

6. CONCLUSIONS AND POLICY IMPLICATIONS.....	69
6.1 Conclusions.....	69
6.2 Policy Implications.....	72
Bibliography	
Annexes	

List of Tables

pages

Table 5.1 *ADF test for Unit root*51

Table 5.2 *ADF test for Co-integration*52

Table 5.3 *Combined period buoyancy and elasticity*54

Table 5.4 *Pre-and post-reform period's buoyancy and elasticity*.....59



List of Abbreviations

- AACoC - Addis Ababa Chamber of Commerce
- ADF – Augmented Dickey Fuller
- AfDB - African Development Bank
- ASyCuDa - Automated Systems for Customs Data
- BPR - Business Process Reengineering
- CSA – Central Statistics Agency
- DF – Dickey-Fuller
- DTMs – Discretionary Tax Measures
- ERCA - Ethiopian Revenue and Customs Authority
- ECuA - Ethiopian Customs Authority
- ECOC - Ethiopian Chamber of Commerce
- FAD – Financial Affairs Department
- FIRA - Federal Inland Revenue Authority
- GDP - Gross Domestic Product
- GDS - Gross Domestic Saving
- HTSD - Historical Time Series Data
- IMF - International Monetary Fund



MDG - Millennium Development Goals

MoFED - Ministry of Finance and Economic Development

MoR - Ministry of Revenue

NLA - National Lottery Authority

OLS - Ordinary Least Square

RGDP - Real Gross Domestic Product

SAPs - Structural Adjustment Programs

SIGTAS - System Integrated Government Tax Administration System

SSA - Sub-Saharan Africa

VAT - Value Added Tax



CHAPTER ONE

1. Introduction

1.1 Evolution of the tax system in Ethiopia

Typically, taxes are the primary sources of government revenues to finance socio-economic activities of a country. Taxation policies depended on the socio-economic and political structure of a country. In Ethiopia, though taxation came in to being with the emergence of state and government, there exists hardly any reliable documentary evidence as to when exactly taxation system was introduced.

In the 15th century written documents of Atse Zerayacob indicates that taxation was introduced previously in Ethiopia. In those eras tax was paid by different social groups to government, feudal lords and priests. Besides, these documents approve that Atse Zerayacob had for the first time enacted regulation for the collection of tax from those social groups who breed cattle. This regulation can be taken as an evidence for the presence and practice of traditional taxation system before and on that time. This traditional tax system can be explained in the form of payment in kind and unstructured tax system and the system impose many burdens on the farmers. Though such burden was tried to reduce by emperor Tewodros's government, strong change had been taken place by emperor Minelik. In 1903, he had put a regulation to pay farmers only one-tenth of their products and in 1904, service taxation was excluded from the tax system. Great improvements in tax and taxation system were made by emperor Haileselesie (AACoC, 1996 and Lysa Joy, 1998).



Under the emperor, aimed at achieving the fiscal control of collection of all revenues and financing every program by the central government, a legal and institutional mechanism of taxation was established. Consequently, the imperial government relied on individual taxes (customs, excise and sales) to generate revenue. For instance, in the early 1970's taxes on foreign trade accounted for close to two-fifth of the tax revenues and about one-third of all government revenue and at the same time, direct taxes accounted for less than one-third of the tax revenues. During the "Derge" regime, the proclamations related to different components of the taxes were the amendments of the previous proclamations, regulations or decrees. However, during this regime, there was an increase in the coverage of tax bases and tax rates owing to the need to raise more revenue to support war efforts and to finance the ever growing government sector expenditures and needs of the society (MoR, 1995).

During the current regime, a number of changes have been made in the tax policy of the country pursuant to the structural changes. The new tax reform program and restructuring had two major categories aimed at over having the tax legislation and improving the tax administration. As compared to the previous ones, the current tax system reduces tax rates on business income as a measure of the tax reform program in progress because it is believed to serve as an investment incentive. From the sources of revenue, tax is the only sustainable source of government revenues, it can be collected from direct and indirect taxes, and this enables the government to achieve its objectives and reduces the country's dependability on the vulnerable sources like loans and donations (ECoC, 2005).

This paper is organized into five parts. The first section defines the topic, indicates the problem and objectives of the research. Section two, briefly presents about the theoretical

conceptualization of taxation system and tax reforms and empirical evidences from developing countries as well as in the Ethiopian context. Section three presents the macroeconomic features, the tax structure and its major reforms in Ethiopia.. The fourth section deals with the data type and sources, model specification and method of data analysis. Section five, in this section presentation of empirical results has been made. Section six draws main conclusions and forwarded some policy suggestions and lastly followed by the reference and annex parts.

1.2 statement of the problem

Economic growth increases the taxable capacity of a country and enables a larger share of the private sector's resources to be granted to the government as taxes to provide public goods and services. Many countries depend on taxation as a means of generating the required resources to meet their expenditure requirements. The growth in public spending is expected to be financed by public revenues from taxes and non-tax sources, but the revenues always lag behind the level of public spending, leaving large deficits in the fiascoes or in a complete failure (Kafe, 1995).The growth in public revenue in developing countries is restricted by many factors such as low per capital income limiting the base on which direct taxes can be imposed, accelerated depreciation rates and tax credits usually provided to the manufacturing sector, and deficiencies in tax administration.

Fiscal policy consists of the use of taxes, government spending and public debt operations. The role of fiscal policy in the long run in developing countries is more positive, in that it is geared to the mobilization of revenue resources, to their allocation among competing priorities. As a result of the growth and diversification of public expenditures governments





may have different views about the proper size and management of public expenditure, but all have the same task of reconciling it with government revenues. In Ethiopia, like any of other developing countries, public spending shows a continuous increment for the past thirty or forty years. "Before 1975 the ratio of government expenditure to GDP was less than 21.7% which was less than the average of the developing countries (22.4%) but in the post 1975 years this ratio markedly increased and by the year 1990 it reached 45.2%" (Teshome M.,1993). The growth and distribution of public expenditure is the outcome of political decisions that can be attributed to the changing role of government in fiscal policy (Girma, 2006).

Most developing countries started to undertake economic reforms in the early 1990's under the need of IMF and the World Bank. The main concerns of the SAPs program in the public finance sector are: one is reforming the tax system, which is raising more revenue must be weighed against reducing public spending. The other one is improving the allocation of public spending; this means government can promote both economic growth and equity by supplying the physical infrastructure needed for productive private investment and providing social services to meet the basic needs. The requirement for public spending will obviously demand its means of financing. Therefore, the need for financing for economic development could be very well understood to end up at the need for growing tax revenue. However, Ethiopia, being one of the developing countries is characterized by a predominantly subsistence economy which makes it is not an easy task to achieve in raising the level of tax revenue that its development need requires. This reality in Ethiopia is not different in that the revenue side has been slow rate in comparison to the persistent growth in expenditure since the overthrow of the imperial regime in 1974 (Teshome, 1993).

Various studies suggested that the country's tax system is neither efficient nor effective. "Although over the longer term tax yield had a high growth rate, there has been a marked decline in the rate of growth of tax revenues in the recent years and the declines in tax collections have mainly resulted from the erosion of the tax base and marked deterioration in the tax administration (Team, 1985; Teshome, 1993). Thus, we can argue that increasing an income elastic tax system is a major issue in Ethiopia to finance current and development expenditures", (UN Secretariat, 1975). This can be achieved by focusing any action towards reforming the tax system on comprehensive studies to increase the sustainable government's domestic revenue to finance expenditures for the development activities of the country. This study tries to assess the revenue productivity of the tax reform in raising revenue to finance the socio-economic efforts of the country and it also attempt to determine the buoyancy and elasticity of the tax system.

1.3 Objective of the study

In line with the growing and large budget deficits and given the increasing demand for growth and development government expenditures, there is a need to devise a more efficient tax system which will ensure that the government budget maintains macroeconomic stability and supports long run economic growth. Taking Ethiopia's comprehensive economic reforms in the early 1990's, the general objectives of this project are to assess the revenue productivity of the Ethiopian tax reform and growth in government expenditures in light of the base, discretionary measures and economic growth.

The specific objectives of this paper are:

- To investigate the relation between tax reform and revenue productivity of the total tax system and major individual taxes.
- To determine the buoyancy and elasticity of major individual taxes and the overall tax system.

1.4 Significance of the study

The findings of this study would have an important impact on the tax structure and tax administration reforms. During the past four or five decades, many statutory changes have been made in order to raise domestic revenue. It is possible to raise revenue without frequent changes in statutory measures, if the tax system is elastic enough in line with the change in GDP. If the tax system has low elasticity, government must find additional revenue by introducing discretionary changes based on quantitative analysis of the existing tax system.

The outcome of this paper will also help to identify the possible means of rapid potential in generating domestic revenues and to sort out the cause of lagging revenue growth. It will as well provide additional insight into the potential of the tax system to raise adequate revenue to meet the gap between tax revenue and public expenditure in the process of development activities. Finally, the study will try to assess the revenue productivity of the tax system in relation with the reform and it try to incorporate the available data for the recent years, and thus, it is expected to provide additional findings to raise the tax revenues in order to finance the development expenditures of the government.



CHAPTER TWO

2. Review of the Literature

2.1. Theoretical framework

Tax is a compulsory levy irrespective of any corresponding goods or services by the government. Taxes and taxation are generally regarded as unpleasant subjects by taxpayers. Justice John stated that “the power to tax is the power to destroy” represents the historic linkage of taxes and taxation so, taxes are inevitable. But against to this view of unpleasantness must be set the statement of Justice Oliver, Wendell Holmes, Jr. stated that “taxes are the price of the society pay for the process of civilization” (the Encyclopedia Americana, 1997). Tax is a major and sustainable source contributing to state revenue legally levied on person, property and business activities for the development and socio-economic expenditures. Taxes are the burdensome that reduce the economic welfare of the individuals and organizations. On the contrary, activities that are financed from tax revenue will bring benefits to the largest society.

Most developing countries including Ethiopia are faced with ever growing government expenditures over time which leads to unsustainable budget deficits. Given this situation, these countries have to find various ways of revenue sources to finance these growing government expenditures. Tax revenue happens to be one of such an important source of the government revenues and it is quite usual to raise about tax and non-tax revenues of the government. The primary objective of designing a good tax system is to mobilize a large proportion of incremental income due to economic growth (GDP) and hence increases the share of tax revenue as a proportion of GDP over time. In order to enhance the rate structure



of taxation and expanding the tax base to increase tax collections through frequent legislative measures may not be politically flexible. The degree of responsiveness of tax revenue to changes in national income (GDP) is a common measurement of revenue productivity of a tax system and is considered to be essential in the criteria of the tax system both in developed and developing countries (Mansfield, 1972; Team, 1985). Hence, the tax structure should be sufficiently buoyant and income elastic such that the tax to GDP ratio will increase automatically with economic development. According to Osoro (1993) and (Bird and Zolt, 2003), buoyancy of the tax system reflects the overall growth in revenue resulting both from the automatic growth in the tax base caused by the increase in national income (GDP) and from the discretionary changes such as changes in the tax rate structure and/or in tax bases. Thus, the built-in elasticity of a tax system is the responsiveness of its revenue yield to movements in national income (GDP) abstracting from the effect of discretionary tax measures.

According to Kusi (1998), Osoro (1992), the tax system must be sufficiently elastic in terms of buoyancy and built-in elasticity in order to enable the government to generate sustainable amount of domestic revenue. It is a desirable property that the growth of tax revenue keeps pace with that of GDP of a country without having made frequent discretionary changes on the structure of tax rates and bases. This measure enhances the convenience and efficiency of tax administration mechanism and it as well reduces economic uncertainty associated with the structural tax component changes. This in turn, requires that the coefficient of tax elasticity must be equal to or greater than unity. Such a tax structure enables growth in development expenditures to be financed by enhancing tax revenue without increasing existing tax rates and/or introducing new taxes, which are politically difficult decisions and may be also have



adverse effects on incentives to invest and to take risks (Ariyo, 1997; Suliman, 2002;Zelalem, 1998;). According to the study by Burgess and Stern (1993) related to theory and principles of taxation, they shows that there are a number of features in developing countries which are not presented in the standard tax models and which are critical to tax analysis. These features include the limited availability of tax tools and their restricted coverage, lack of resources and poor administration, various sectoral and institutional structures, and a variety type of market functioning. This makes the analysis of the impact of taxation in developing countries more challenging and more interesting.

2.1.1 Revenue productivity of taxation

The primary economic objective of a tax system in a country is to maximize the volume of domestic revenues and also as a means of stabilization so as to finance the government's capital and recurrent expenditures. According to Mansfield (1972) and Osoro (1993), a criterion for a tax system in developing country, the performance of tax revenue to changes in income has often been the major component of government finance because public expenditures tend to grow at least as fast as the national product (GDP) and the taxes should produce revenues that grow correspondingly. However, the presence of budget deficits in many developing countries indicates that the tax system is not productive in raising government revenues. The productivity of a tax system is traditionally measured by the two concepts of tax buoyancy and tax elasticity.

Conventionally, the elasticity of total tax revenue in relation to income has been presented in aggregate models as a single number. However, it is more realistic to visualize the overall tax elasticity as a weighted average of the sum of the elasticity's of individual taxes that respond

in diverse ways to changes in income. This implies that an evaluation of the overall tax elasticity must begin with an examination of the individual tax elasticity's (Mansfield, 1972)¹. A tax structure contains many individual taxes of diverse nature and rates, so changes in national income affect the yield of individual taxes in a various manner. The elasticity of a tax system can be divided into the elasticity of tax to base and the elasticity of base to income components. The elasticity of the tax system is more realistically visualizable if it is described as a weighted average of the sum of the elasticity of individual taxes. As described by Mansfield (1972) and Osoro (1992), decomposition of elasticity enables to identify the source of fast and lagging revenue growth; and also allow identifying part of growth in tax revenue that tax authority can control. The growth of tax base is mainly determined by the way in which the tax structure of the economy changes as the economy grows and thus it is largely outside the control of the tax policy. While the tax base component of elasticity may be improved by introducing progressive tax structure and/or by improving tax administration mechanisms. This implies that designing income elastic tax structure requires strong consideration of both the predicted response of tax base to income and the potential for an effective tax administration.



2.1.2 Estimating tax elasticity and buoyancy

The buoyancy of tax revenue shows the overall ability of the tax system to mobilize financial resources without other factors stimulating the revenue, and it is measured by the historic aggregate responsiveness of tax revenue to GDP changes with no attempt to control for changes in discretionary tax measures. The traditional way to estimate the elasticity of a particular tax, i , is from a tax model as follows (Osoro, 1993).

¹ Detail discussion of this part is based on the model originally developed by Mansfield (1972).

$$T_i = \alpha_i Y^{\beta_i} \varepsilon_i \dots\dots\dots (2.1)$$

This model is transformed into logarithmic form as follows:

$$\ln T_i = \ln \alpha_i + \beta_i \ln Y + \varepsilon_i \dots\dots\dots (2.2)$$

Where, T= tax revenue

Y=national income (GDP)

β_i = the elasticity coefficient of tax to GDP

ε_i = disturbance term

Estimation of equation (2.2) will provide an estimate of tax buoyancy because it measures the percentage response in tax revenue for a one percent change in the explaining variable(s), this is because of the fact that the equation is in a double log form. Osoro (1993) stated that direct measurement of tax elasticity from a historical revenue series becomes problematic, and even more complex if the tax base itself is not precisely measurable, as most analytical studies on tax responsiveness tend to deal with broad categories of taxes, which are the aggregates of a wide variety of tax rates applied to different tax bases. There are four major adjustment approaches employed to eliminate discretionary tax changes from historical time series data (HTSD) depending on the availability, nature and reliability of information on tax revenue, frequency of discretionary changes in the tax structure and tax bases (Sen, 2001). These approaches are:

Proportional Adjustment Approach (PA)

This approach was first introduced by Prest (1962) in order to eliminate the discretionary effects of tax revenue series. This method of computing tax elasticity involves a series of adjusted tax revenue obtained by first subtracting from the actual tax revenue in each year the budget estimate of the revenue impact of discretionary changes in that year. The tax revenue



series is further adjusted to exclude the continuing impact of each discretionary change on all future year's tax revenue by multiplying the ratio of the previous year's adjusted revenue to the actual tax receipts (Byrne, 1983). The major problem with the proportional adjustment method is that it is unable to completely adjust the historical time-series tax data of discretionary changes, this is because the method uses budget estimate of discretionary tax changes that are hardly easy to obtain in many developing countries (Mansfield, 1972; Kusi, 1998).

Constant rate structure approach (CRS)

The constant rate structure approach, on the other hand, requires data on income brackets, rates and sufficiently disaggregated information on the growth and distribution of the reported tax bases (Bahl, 1972; Andersen, 1973; Chelliah and Sheetal, 1974; Choudhry, 1975). As Kusi (1998) suggested that once such disaggregated data is available, a constant rate base series which represents hypothetical tax revenue under a system assumed to remain unchanged during the period under review. The main problem in using this approach is that it requires information on the distribution of tax bases by rate categories, which are also not readily available. Coudhry (1975) argued that the constant rate structure approach sometimes inefficient where a tax system has many progressive elements, in effect the method does not guarantee that the estimated tax elasticity will be larger or smaller than that of the buoyancy even when discretionary changes produce an overall negative (or positive) effects.

Divisia Index Approach (DI)

Originally Chuodhry (1979) employed this approach to measure the impact of technology on the productivity of labor. This method introduced time trends as a proxy for discretionary tax measures (DTMs) in the tax revenue and tax base functions. This approach causes a

downward or upward bias depending on whether discretionary changes produce positive or negative impacts. The bias may result in over or under estimating the tax elasticity.

Dummy Variable Approach (DV)

This is an alternative approach, Chand and Wolt (1973); Khan (1973) and Artus (1974), incorporate one dummy variable as a proxy for each of the discretionary tax measures introduced by fiscal authorities during the period of their review to estimate the elasticity using a single equation model. Because of the creation of potential multicollinearity problems resulting from the inclusion of more than one dummy variable in to the tax function, the estimate of tax elasticity using this approach may not be precise and reliable. Ehdaie (1990) argued that obtaining precise and reliable estimates of tax elasticity using this approach is empirically impossible, particularly when there are frequent discretionary tax measures during the period under review.

Although there is a general trend of increasing government spending in developing countries, it is argued that there are limits to the level of public expenditure of a country at a given moment of time. In this respect Tanzi (1994) concludes that ex ante, a country can plan to have, for a given fiscal year, any level of public expenditure in nominal value. However, ex post, the country will find that there is a concrete limit to that expenditure in real terms or as proportion of GDP depending on the sources of financing. Regarding domestic sources, the sale of bonds to institutions is limited by the revenue of these institutions. Alternatively, higher levels of public sector borrowing may lead to higher interest rates and less private sector investment, or to further inflation. On the other hand, monetary expansion increases the general price level and reduces the real value of monetary unit. Thus, real revenue from inflationary finance would fall if the rate of monetary expansion is pushed beyond certain



level. In sum, there are clear limits to the size of these financing sources and hence to the size of government expenditure. The growth of government expenditure in Ethiopia as studied by Teshome (1993) concludes that the expenditure of the government behaves like that of Peacock and Wiseman's postulation. Another study by Wogene (1994) also examined the different economic implications of the ever growing government spending focusing on its functional, sectoral and regional classifications. If public capital formation and private capital formation are truly complementary, government spending may stimulate entrepreneurs and enhance private investment and growth (this is sometimes referred to as the crowed-in effect). While in the same token, government regulation may impose excessive burdens on private sector. High taxes, heavy borrowings and higher interest rates to finance government spending may distort private incentives and crowed out private investment and hence slowing economic growth as well as revenues.

After the 1992 wide range of liberalization reform, investment grew rapidly, but this increasing level of investment could not be financed by domestic resources alone. Savings declined sharply in 1990/1. But since then, public saving has shown quite a remarkable recovery in the 1990s. Thus, in this respect the government's fiscal policy seems promising. However, total domestic saving was far below the level of investment, and this resulted in a government deficit of about 10 per cent of GDP per annum in the last decade. The deficit also points to the country's dependence on external resource in bridging its resource gap, this is more obvious in the financing of government capital expenditure than anywhere else, and current expenditure is largely financed by government revenue, which is a positive development (Geda 2005).

2.2 Empirical literature

A considerable number of studies have been made on the topics related to taxation, tax productivity, tax reform and the elasticity and buoyancy measurements of taxes and others which are related to the tax system and growth in government expenditures both in developed and developing countries. A common feature of the tax structures in most developing countries is that they are complex (difficult to administer and comply with), inelastic (nonresponsive to growth and discretionary policy measures), inefficient (raise little revenue but introduce serious economic distortions), inequitable (treat individuals and businesses in similar circumstances differently), and unfair (tax administration and enforcement are selective and skewed in favor of those with the resources to defeat the system). There is a heavy reliance on taxes on international trade, which undermines long-term international competitiveness. User charges and taxes on income and property contribute only a small proportion of total revenues. Agricultural income, fringe benefits and, in some countries, public sector wages are not taxed. Taxes on wealth, bequests, land and property exist in theory but have been rendered ineffective by design problems or the lack of interest in administration, or both, while personal and corporate income taxes are levied on narrow bases at high rates. Sales taxes are levied in a cascading manner, thereby imposing tax pyramiding (Bird, 1995; AERC, 1998). Faced with mounting budget deficits and having to cut expenditures as far as is prudently possible, particularly on public investment and social spending, a number of developing countries have undertaken to restructure their system of taxation to seek higher revenue or improve the revenue elasticity and buoyancy of the tax system. Thus revenue enhancement, economic efficiency, horizontal equity and simplicity issues have dominated the world agenda on tax reform.

Most researchers have tried to link the tax reform measures to revenue productivity performances of the tax system. In order to mention a few studies on the topic related to taxation, revenue productivity performances of the tax system and government expenditures focused on developing countries in general and for the case of Ethiopia in particular. Among those studies including, Sahota (1961); Mansfield (1972); Khan (1973); Choudhry (1975); Osoro (1992,1993); Wogene (1983); Teshome (1979, 1987); Berhe (2006); Kusi (1998); Cobham (2005); Ghirmai (2009); Gorden- Li (2008) and there are also some other similar studies.

The empirical study made by Osoro (1993) to evaluate the revenue productivity performances of the Tanzanian tax reform system, focusing on as a way of raising the productivity of the tax system for the periods of 1979 to 1989. The estimates of the income elasticity of individual and total taxes obtained from his empirical result suggested that the tax reform has failed to raise revenue productivity, as indicated by the elasticities which is less than unity for both individual and total tax system. He suggested that providing generous tax exemptions and poor tax administration mechanisms are the causes for the failure of tax reforms to enhance the revenue productivity performances of the tax system, and he recommended that the authorities should improve tax administration mechanisms and reducing or eliminating tax exemptions, for the direct tax reform, which mainly erode the effective tax bases. Kusi (1998) also made a study focusing on the revenue productivity of the tax reform system in Ghana for the period from 1970 to 1993 by examining the effects of the reform by separating the time for pre- and post- reform periods for major tax types. He found out that the estimates of buoyancies and income elasticities of individual taxes and all the tax system, shows that the tax reform contributed greatly in the growth of revenue productivity as evidenced by the



elasticities are more than unity, this results were attributed to the improvements in the growth of GDP and due to the betterments in the tax administration activities.

Mansfield (1972) studied the buoyancy and elasticity of the tax system for Paraguay using the proportional adjustment approach and he pointed out that a significant discretionary changes resulted in a buoyancy of a much higher figure than the built-in elasticity of the tax revenue to income, however, these results are counter felt by weak tax administration, tax evasion and higher exemptions in the collection of tax revenues. Ariyo (1997) in his part conducted a study on the Nigerian tax system for the time from 1970 to 1990 using the dummy variable method to estimate the buoyancy and elasticity of the tax system, and he argued that the overall revenue productivity of the Nigerian tax system had been satisfactory. Another study made by Byren (1983) for the Zambian tax for the period of 1967 to 1977, he identified that except for import duties, other tax types were elastic because of the fact that during the study period there was a growth in industrial and service sectors and great increase in the consumption of bottled beer. Muriithi and Moyi (2003) made a study on the tax reform and revenue mobilization for the Kenyan tax system for the period of 1973 to 1999 to estimate the buoyancy and elasticity of the tax system, they argued that the tax reform had raised the revenue productivity performances of the overall tax system and individual taxes, even though the impact of the reform on revenue productivity of the tax system was not always uniform in the study periods, it had bigger impact on direct tax than indirect taxes. The tax reform had a bigger impact on direct taxes than on indirect taxes because the reforms made the tax system simpler and also reduced the channel for high tax evasion and severs corruption.

In the context of Ethiopia, Teshome M. (1979) estimated the revenue effectiveness of the Ethiopian coffee export taxation using the built-in elasticity method, and he analyzed the elasticity of the tax revenue with respect to the changes in the tax base (the value and volume of coffee exports). His empirical results suggested that the revenue elasticity of coffee export was inelastic. He also made another study in 1987 by measuring the personal income tax progressivity based on the tax laws and with various notions of progressivity for the period of 1967 to 1984, he concluded that the progressivity is rising with income and hence the personal income tax was highly elastic, and the tax system has been buoyant partly because of the frequent revision of the tax laws since 1944. Wegene Y. (1983) also made another study in an attempt to evaluate the contribution of tax reforms in raising government tax collections for the period of 1975 to 1981. From his result he argued that there was significant improvement in the tax revenue collection because of the tax reform of the country. In the same year, Eshetu C. (1983) on his part made a comparative study on the revenue productivity of taxation in Ethiopia using the buoyancy approach for the pre-and post-revolution periods, and he found out that there were certain improvements in the revenue productivity of tax collections in the post revolution periods.

Zelalem Y. (1998) also made a study to the buoyancy and elasticity of the major individual tax categories and for the overall tax system by using the divisia index method for the period of 1961 to 1998. His findings indicate that in general the tax system was inefficient because the low productivity of the overall tax system was attributed to the problem of extensive tax evasion and weak tax administration. Berhe G. (2006) in his part examines the impact of liberalization on the revenue productivity of the tax system in Ethiopia for the period of 1974/75 to 2004/05 by estimating the buoyancy and elasticity of the tax components.

Based on the results he found out, although there was a slight improvements in the productivity of the overall tax system because of the liberalization reform, he conclude that the tax system as a whole and most of the major individual tax components found to be unproductive and inelastic due to a very low base to income elasticities.

On the government expenditure side, many previous studies suggested that there is a strong relationship between productivity of growth in government expenditures and government policies in all developing countries (World Bank, 1991). Several studies have also done on the structural allocation of government finance mainly generated from domestic resources through taxation. Baffes and Shah (1993) made a study on the productivity of public spending, and their results show that reshaping public spending priorities in favor of human resource development and away from the unproductive military spending would make the economy to stimulate positively. They examined the composition of public spending and its implication for economic growth using a time series data for the period of 1968 to 1984 for 24 different developing countries. They found out, the productivity of government spending on the average go approximately with countries GDP, this productivity in government spending in turn had the implication for the mobilization of domestic resources through raising tax revenues to finance government expenditures on social and development activities of a country.

In the case of Ethiopia, there are no many recent econometric studies regarding the impact and the growth of government spending on economic growth in relation with the productivity performances of the taxation system. The study by Endrias (1996) for the period 1960/61 to 1990/91 indicate that the elasticity estimates of the translog production function show that



government expenditure on human resource development and capital expenditure has the greatest effect on economic growth. Ketema T. (2006) also examines the impact of public spending on economic growth for the period of 1960/61 to 2004/05. The long run result of his study shows that expenditure on human capital has a very significant positive impact on growth of real GDP, and private consumption has significant positive impact on economic growth.

Direction of causal relationship between government revenue and expenditure and its implication in order to budget deficit has not been empirically resolved. Though over the last three decades several studies have been carried out in different countries to investigate the issue in the public economics, findings vary from country to country and also within the country. The nexus between government revenues and expenditures is an issue that has been investigated for several countries though a consensus is yet to be reached. Let's review some of the empirical studies of the relationship between government revenue and expenditure. Shah and Baffes (1994) in their study for Latin American countries concluded bidirectional causality between government revenue and expenditure for Argentina over the 1913-1984 periods and for Mexico over the 1895-1984 periods; while for Brazil they found unidirectional causality running from revenue to expenditure. Abdul-Aziz and Shah Habibullah (2000) investigated causality between taxation and government spending by using an application of Toda-Yamamoto approach in Malaysia for the period 1960 to 1997. Their evidence generally supports the existence of bidirectional causality between government spending and tax revenues. Results of the study made by Wolderufael (2008) for 13 African countries by using Toda and Yamamoto causality test show the direction of causation are mixed and his empirical evidence suggests that there was a bidirectional causality running

between expenditure and revenue for Mauritius, Swaziland and Zimbabwe; no causality in any direction for Botswana, Burundi and Rwanda; unidirectional causality running from revenue to expenditure for Ethiopia, Ghana, Kenya, Nigeria, Mali and Zambia; and an unidirectional causality running from expenditure to revenue for Burkina Faso only.

In general, we can say that from the results of the above studies and from other empirical studies undertaken so far for the developing countries, and specific to Ethiopia, the tax system should be flexible enough to match with the changing conditions of the socio-economic activities of a country in order to enhance the performances of the revenue productivity of the tax system to finance the ever growing recurrent and capital expenditures of the government through improving the efficiency of the tax administration related activities in addition with the focus given to the changes in the structure of the tax bases and rates of the tax system, this is because in most developing countries taxation has an important and strategic role in the process of development efforts of the country. This study tries to in light some additional findings to the revenue productivity of tax reform by estimating the tax buoyancies and elasticities to identify those taxes who are more elastic and those who are lagging behind in generating additional revenues in the tax system of Ethiopia during the sample period.

CHAPTER THREE

3. Macroeconomic features and the tax system in Ethiopia²

3.1. Some Macroeconomic issues

The fundamental soundness of Ethiopia's macroeconomic foundation suggests that if the available resource mobilization can be enhanced properly, drastic expenditure cuts may not be required. However, the uncertainty associated with future revenues and the scope of increasing them substantially, makes it critical that the government allocates existing expenditures more efficiently for the competing priority sectors of the economy (Geda, 2005).

Though Ethiopia's economy is highly vulnerable to exogenous shocks by virtue of its dependence on primary commodities and rain fed agricultural sector, it accounts about 50% of the country's GDP and which provides livelihood about 85% of the population and it is also the major source of foreign exchange earnings, real GDP grows on averaged 11.2% per annum during the years 2003/04 and 2008/09 period. This growth performance is well, as compared to SSA countries, in excess of the population growth rate and the 7% rate required for attaining the MDG goal of having poverty by 2015 (AfDB,2010). The blame for the disappointing economic growth performance of the country for the last many decades had been laid mainly on the poor performances of the agricultural sector. During the "derge" regime, the growth of real GDP was on average 1.9 percent per annum with the face of a 2.6 percent growth of population; this meant that per capital income had been decreasing on average by 0.7 percent per annum (Berhe, 2006). For the post 1991 period the government has been taking general economic reform and the economy has been growing at an average

²Note that numerical values presented throughout this paper if whose sources are not explained is own computation based on the data obtained from MoFED.

growth rate of 5.04 percent per year and the population growth rate has been 2.6 percent with a 2.8 percent per annum growth in per capital income (Jones, 2002). This growth had not been smooth from year to year because the pillar of the economy is continued heavily depending on the agricultural sector (zekarias, 2003).

3.1.1 Saving and investment



At the time of the “derge” regime, the country’s average gross domestic saving (GDS) was only 8.4 percent of the GDP. This growth had been subject to a sizable fluctuations ranging from a high rate of 12.5 percent in 1987/88 to a low rate of 3.4 percent in 1990/91. In the post 1991, may be due to the overall economic reform programs that the country initiated with the advent of the new regime that encouraged private sector and put a restriction on the unproductive public spending, and the average share of GDS to GDP for the period 1992/93 to 2004/05 was 11.4 percent and the investment for the period 1975 to 1991 shows predominance and highly controlled public sector investment, and the ratio of total investment to GDP was on average 14.3 percent, the growth rate reached a high percentage of 14.6 percent and fell down to a negative rate during the last years of the regime (Jones, 2002). During the post 1991 periods, the share of investment to GDP has increased on average to 19 percent but it was not a significant movement in reducing the gap between investment and saving ratios but the public-private investment composition has increased in favor of the private investment from an average share of 7.2 percent during the “derge” regime to 9 percent. But this increasing level of investment could not be financed by domestic resources alone, Savings declined sharply in 1990/1. Since then, there has been some recovery, thus, in this respect the government’s fiscal policy seems promising. However, total domestic saving

was far below the level of investment and this resulted in a government deficit of about 10% of GDP per annum in the last decade (Geda, 2005).

3.1.2 Trends in government revenue

One of the main concerns for the adoption of the so called Structural Adjustment Programs (SAPs) in many developing countries including Ethiopia which encompasses the reform made in the finance sector that means increasing government revenues, which is an important component in the issue of soaring budget deficits of the country. One way to redress the issue of budget deficit is arguably enhancing the capacity of the economy to generate more revenues to finance the ever growing expenditures of the country. During the period 1961 to 1996, the total tax revenue over GDP has grown by an annual average rate of 2.82 percent. The tax performance for all direct and indirect taxes grew at an average growth rate of 3.56 and 2.8 percents respectively and within the indirect taxes the tax effort grew an annual growth rate of 3 and 2.48 percents for domestic transaction tax and foreign trade taxes respectively (Zelalem, 1998). Since the imperial regime, some studies find out that both personal and business income taxes were buoyant and elastic, this means that tax revenues responded significantly both to the changes in tax measures and to the growth in GDP (Fassil, 2000). The individual tax revenues as a ratio of GDP and their share in total tax revenue were increasing for domestic indirect taxes, business and agricultural income taxes; while for import and personal income taxes were decreasing (Zelalem, 1998).

The implication of the above results is that through time the share performances or trends of government revenues, tax revenues, have been declined every year with the comparison of the growth of GDP. For instance, the recent study by the IMF data indicates that total tax and

non-tax revenue collection of the country have declined since 2004/05 from the level of 11.6 percent of GDP in 2004/05 to an estimated 8.1 percent of GDP in 2008/09. On the other hand, according to the AfDB 2010 report, government revenue has increased by about 21 percent per annum on average since 2003/04, even though revenue as a percentage of GDP has declined from about 23 percent in 2002/03 to about 12 percent in 2007/08. Tax revenue reached about 35.7 billion Birr in 2009/10 from about 11 billion birr in 2003/04, up by 37 percent per annum on average. This general downward tendency in revenue performance as a percentage of GDP is attributed primarily to poor tax administration and very low base to income elasticity, lack of systematic management of tax exemptions, and the current division of fiscal powers between Federal and regional levels of government poses great challenges for revenue mobilization and management.

3.1.3 Patterns of government expenditures

Government expenditures have historically been high as a share of GDP and have grown in real terms since five decades. Changes in the functional and economic composition of public expenditures hint at why it has been difficult to adjust them downward for social and political reasons. The pattern of government spending during the “derge” regime shows the nominal public expenditures increased from 777.7 million birr in 1973/74 to 4913 million birr in 1990/91 which is on average 11.07 percent increase per annum. The major share of public expenditure growth was accounted by recurrent expenditures of which defense expenditures contributed more than 40 percent, while the capital expenditure has grown at a rate of 16 percent per annum in 1973/74 to 1990/91 period with 10.7 percent per annum for the recurrent budget expenditures (Bruke, 1996). The anatomy of this expenditure growth is both

from the macroeconomic point view and for an understanding of the efficiency of the use of resources in the economy.

The current government of Ethiopia which accepted the structural adjustment programs (SAP) as a policy to improve the deepening fiscal deficit has to reformulate alternative new policies to curtail the growing public expenditures. During this time, expansion in public expenditure can be explained by the increase in public investments in social and development sectors. The average share of capital expenditures for this period has increased to 7.5 percent and recurrent expenditures to 15.5 percent. The share devoted to pro-poor sectors in the total increased from about 26 percent in 1999/00 to about 43.3 percent in 2002/03 and 64 percent in 2008/09, up by 26.7 percent per annum since 2003. Public expenditure has been growing by about 19 percent per annum since 2003/04, which is concentrated in infrastructure and human capital development. In particular, there has been a major expansion in social services through the construction of new primary schools and health facilities (AfDB, 2010).

3.1.4 Fiscal imbalances

The fiscal system of Ethiopia has historically been characterized by high centralization and concentration of fiscal decision-making power at the center. Moreover, the structure of the fiscal system shares important features with other underdeveloped economies in terms of reliance on indirect taxes, dependency on international trade taxes, and persistent fiscal deficits. There is a striking characteristics of the imbalances between government revenues and expenditures in Ethiopia, it is not only the result of rapidly increasing public expenditures but also slower growth rate in government revenues due to sluggish economic performances, unfavorable terms of trade and failure to adjust public expenditures to the scares resources to



make balance (Moges, 2011). The share of government revenues to GDP was too low with an average of 17.3 percent while that of public expenditures was about 20.1 percent in GDP of the country for the 1974/75 to 1990/91. On the contrary, for the post 1991 period, the share of total public expenditures has increased to 23.4 percent and the share of the government revenue in GDP was on average 15.2 percent for the period starting from 1991/92 to 2004/05 from which the share of total tax revenue to GDP on average was 11.6 percent and its average annual growth rate was 4.8 percent and 2.9 percent respectively. The study conducted by the IMF fiscal affairs department (2009) indicates that total tax and non-tax revenue collections have declined every year since 2004/05 from a level of on average 11.6 percent of GDP in 2004/05 to an estimated rate of 8.1 percent of GDP in 2008/09, while government expenditures has been dramatically increased from time to time with an alarming rate. That is, there has been a consistent excess of government expenditure over total domestic government revenues and the country has been living with the problem of budget deficits almost for all the past five decades.

3.1.5 Deficit financing

Financing mechanisms of deficit remained at the heart of academic and political debates and policy making in less developed countries throughout the post colonial era. The results of empirical studies based on macroeconomic models, although rare for less developed countries, shows that the impact of public sector deficit on macroeconomic indicators, such as inflation and private investment (capital), differs across countries and with the alternative ways of financing the deficit. The demonstrated poor performances of current revenue and the rapid increase in public spending seem to explain the high and persistent deficits. If expenditures are considered growth enhancing, then a government deficit exhibits an indirect effect on long

term economic growth (Carneiro et al, 2005). It is important to note that a debt financed deficit could induce the government to absorb additional resources from the private sectors. But the overall growth effect would be negative if the revenue raised in such a means is spent in less productive way than it would have been by the private sector. The fiscal deficit started to increase following the 1974 revolution; this was partly due to the relatively higher growth of expenditure than revenue caused by the increasing spending on defense (Teshome, 1994).

During the period 1962/63 to 1974 as a result of big reforms (such as tax reforms and export diversification) and the associated enhancement in internal capacity, government expenditures were systematized and increased regularly but domestic revenues were not systematized and regularized as that of expenditures. Because of such fiscal practices, manageable deficits were registered and about 80 percent of these deficits were financed by borrowing from external sources and an extensive use of domestic bank borrowing was not made due to relatively lower deficits. In the derg regime, large budgetary deficits were sustained due to excessive growth in government spending relative to its revenue. Due to the protective policy and import substitution strategy, the relative shares of foreign trade taxes were felled and the deficit as a ratio of GDP reached 12 percent from 5 percent of the early periods of the regime. This growing level of deficit was financed by and large through borrowing from the central bank and external loans (Siraj, 2002 and Teshome, 1993).

The current government's policy has been aimed at a gradual elimination of inflationary financing, though inflation is increasing over time, through borrowing from the banking system and more reliance was made on external finances for deficits. The ratio of deficit to nominal GDP, excluding grants dropped from 10 percent in 1991/92 to 5 percent in 1996/97

which however rose moderately to 6.8 percent in 1997/98 fiscal year, and the annual average deficit during 1996/97 to 2000/01, excluding grants was 12 percent of GDP which decreased to 10.9 percent in 2001/02 to 2003/04 periods. In 1990/91 about 25 percent of the deficit was financed from external borrowing rose to as high as 79 and 97 percents in 1993/94 and 1994/95, and in 1995/96 and 1997/98, however, net inflow of external borrowing covered 65 and 44 percents of the deficit including grants respectively. This is due to the reduction in total government spending particularly in defense expenditure and increase in domestic revenue especially from import taxation as a result of trade liberalization. In the post 1991 periods, domestic revenue has fully covered the current expenditures and in the period 1994/95 to 1997/98, it partly financed the capital expenditure (Siraj, 2002), and external borrowing has also growing at annual average rate of 16.2 percent. This increasing trend of external borrowing and declining trends of domestic borrowing since 1991/92 reveal the shift of financing our deficit from domestic to external sources.

However, in the recent years the impact of the financial crises will be reflected in both government revenues and expenditures. The possible contraction in tax revenue resulting from the slowdown in GDP growth (since tax revenue is closely related to GDP growth) and the decline in international trade may derive down government revenues. Moreover, there will be pressure to cut expenditures as a result of the decline in revenue and possibly grants. According to the IMF (2009b), the fiscal impact of the crises in Sub-Saharan African countries will be large; in particular revenues have suffered because of less economic activity and lower primary commodity prices. Government revenues show on average a declining trend during 2003/04 to 2008/09 from a level of 16.1 percent of GDP to 12.2 percent. Tax revenue, which accounts on average 77 percent of total revenue, has a consistent straight

decline and hence places significant constraints on government's ability to finance its spending. The overall development of fiscal deficit and its mode of financing reveal that both external assistance and loan had significant role in reducing the deficit. Although foreign aids and loans has helped government to get on huge development projects and reduce inflationary financing of the deficits, its impact on debt accumulation, reliability and the associated conditional ties need to be closely monitored. Hence, the fact that Ethiopia still depends on foreign sources for deficit financing has created its own adverse effect in an effort to achieve sustainable economic growth.



3.2 Importance and purpose of taxation

The best instrument which governments can use as a source of revenue is taxation. It can be said, therefore, that a major function of taxation is to collect the necessary funds to finance the ever-expanding level of public expenditures. In developing countries personal savings are usually low; this is because the per capita income of the population in these countries is very low. Moreover, the population in these countries is so high that it demands their governments to spend much of their limited revenues on public goods, such as infrastructures, education and health. Thus the governments of these countries normally have to look into various sources of finances, one of which is tax revenue, so that public goods and services which in turn positively impact development are supplied in reasonable quantities. In general the fundamental principle of the tax structure is the mobilization of economic surplus, and the tax system in Ethiopia is not only meant to raise revenue for current expenditures but also aims at directing economic agents to the development goals foreseen by the government through the incentive schemes embedded within the prevailing tax laws. If the investments are of high priority in-terms of the country's overall development goals, then they are entitled to better

tax incentives like tax holidays and the vice versa if otherwise, and through the tax system government can protect domestic industries from competing imported goods through levying high tariff on the later. Hence, some of the specific purposes of taxation in Ethiopia can be summarized as follows:

- Rising of as much revenue as possible to finance the country's social and economic development programs and to alleviate poverty;
- Promotion of capital investment and trade;
- Ensuring equity, fairness and consistency in the administration of tax laws;
- Encouraging certain industries which are held important in developing the country;
- Discouraging other industries which are likewise not important to the long-run development of the country.

3.3 The importance of tax reforms

The dominance motivation of taxation in developing countries is to finance public administration and the provision of economic and social services. The distribution of income and the correction of market imperfections are the other motivations. Although some level of taxation is necessary to achieve these goals, taxation always has costs both direct administration cost and indirect costs associated with misallocation of resources and with consequences for the distribution of income. According to World Bank, the rationale for tax reform has two fold. First, as part of structural adjustment, tax reform is designed to reduce sever distortions in economic incentives and the resulting inefficiencies and inequalities in the allocation of resources. Second, as part of efforts to stabilize the economy, tax reform in cycle with cuts in public expenditures, may be needed to generate public revenue in a reasonable non-distorting, equitable and sustainable manner. A poorly designed tax system can lead to

the problems of insufficient revenue, distortions that reduce economic welfare and growth, inequalities and administrative problems.

Tax reform measures are mainly undertaken in order to restore buoyancy to revenues, strengthen modern taxes, and drastically reduce the complexity and lack of transparency of the system (World Bank, 1990). The main factors contributing to an improved revenue performance are changes in tax legislation, broadening tax bases, efficient tax administration and minimal tax evasion. Generally, tax reform in developing countries involves broad issues of economic policy as well as specific problems of tax structure design and administration (Musgrave, 1987). Reform of tax structure is generally more effective when accompanied by improvements in tax administration. A major contributing factor to weak tax administration is the excessive complexity of tax laws, so simplifying tax laws and procedures can facilitate compliance and can make tax administration efficient.

3.4 Tax system and its reforms in Ethiopia

The evolution of tax revenue and its structure in Ethiopia is closely related to the three distinctive policy regimes that existed in the country over the last four decades. During the imperial period the policy regime can be characterized as loose-control regime. This was the period when major taxes and the requisite tax administration institutions were built. The government was dependent on taxes from international trade. This era was followed by the hard-control regime that enacted tax laws consistent with its socialist economic policy. As all privately owned firms had been nationalized, the source of government revenue as such was significantly reduced. The end of the hard-control regime in 1991 witnessed the coming into power of the current government. This regime, which can be termed as loose-control regime

has engaged in the general liberalization of the economy since 1992, it extended among other things, to reform in taxation and tax administration (Berhe, 2006). The subsequent taxing system in Ethiopia can be divided into three broad categories: (i) taxes on income and profits, (ii) taxes on goods and services and (iii) taxes on international trade. Most of these taxes have been reformed and amended in the last two decades especially following the 1992 general liberalization (reform) policy. Some institutional reforms aimed at enhancing the government's capacity to raise tax revenue have also been made.

3.4.1 The major taxes and their reforms

3.4.1.1 Taxes on income and profits

Tax on employment income used to be guided by Income Tax Proclamation No. 173/1961. Proclamation No. 155/1978 replaced this law by raising monthly exemption from birr 25 to 50 and the rates were made more progressive and ranged from 10% to 85%, it also required organizations to pay 50% of their taxable income and the rate on persons (who run business activities) were made more progressive ranging from 10% to 89% for incomes below 300 and exceeding birr 36,000 respectively. The maximum rate was lowered from 89 to 59% of taxable annual income above birr 24,000 and it exempted annual taxable income up to birr 1200 and imposed a 10% income tax on dividend to shareholders on business activities as decreed by No.18/1990. The monthly exemption on employment income was raised to birr 105 and the rates were revised downward from 85% to 50% by proclamation No. 30/1992 and proclamation No. 107/1994 also raised the monthly employment income exemption from birr 105 to 120 and the rate applied on the upper employment incomes and for incorporated business bodies were lowered from 50 to 40%, this law was amended by No. 36/1996 to lower the rate from 40 to 35% for annual incomes of incorporated business bodies. Finally

proclamation No. 286/2002 revised the monthly exempted income level to birr 150 and 1800 for employment and business activities respectively and the maximum tax rate to be paid would be lowered to 30 and 35% on annual income for incorporated bodies and monthly employment income exceeding birr 5000 (Tax reform office, 2002).

In the 1990s, there was many amendments with modifications to the legislation regulating income tax on employment; rural land and agricultural income tax; rental income tax; taxes on business and other profits; tax on income from mining activities; capital gains tax, and taxes on other sources of income such as chance wining (which carries a tax rate of 15 per cent), royalties (with a tax rate of 5 per cent) and tax on non-resident persons offering services in Ethiopia (which carries a tax rate of 10 per cent). Compared to the marginal tax rate of 89 per cent during the military (*Derg*) period; the current reform which reduced the maximum marginal tax rate to 35 per cent was quite radical and it also reduced corporate income tax from 35 to 30 percent and the maximum income tax rate applicable to a sole proprietor was reduced from 40 to 35 percent. The land use fee for state farms is Birr 15 per hectare. A novel aspect of the latest tax policy concerning the agricultural sector is the fact that an agricultural investor is exempted from income tax for two consecutive five-year periods. A progressive marginal tax rate schedule was also enacted in 2002 for income derived from the rent of houses including manufacturing plants.

3.4.1.2 Taxes on goods and services

This tax category contains indirect taxes the burden of which can be shifted from the legal taxpayer to consumers through the price of goods and services. The major components of this category are excise tax, transaction tax on domestic products, turnover taxes and sales or

value added taxes. The main tax laws declared before the 1992 economic liberalization that affected this tax category were proclamation No.114/1977, 162/1978, 160/1979. The reform in this category refers to Excise Tax Proclamation (No. 68/1993, 77/1997, and 149/1999), and the applicable tax rate ranges from a low of 10 per cent on textiles and television sets to 150 per cent for alcohol, perfumes and automobiles. Proclamation No.307/2002 was declared by keeping the minimum rate of 10% but it reduced the maximum rate on alcohol to 75% while stating the maximum rate to be paid will be 100% on perfumes, some vehicles and toilet waters. A turnover tax Proclamation No.308/2002 was decreed a 2% tax rate on goods sold locally and 10% on services rendered on those who are not eligible to VAT. Proclamation No.228/2001 of sales tax on goods constitutes the second category and these ranges from 5 per cent (mainly for agricultural goods) to 15 per cent, and many basic goods are exempted from taxation. The reform also introduced a 5 per cent tax rate for work contracts and financial services, while a 15 per cent rate is applied to the sale of other services. Since January 2003, a 15% Valued-added tax (VAT) proclamation No.285/2003 was introduced by replacing the former sales tax and may mean a shift from Ethiopia's dependence on foreign to domestic trade. It is not, however, difficult to see that its implementation is challenging, owing to the predominance of small and informal operators in the country, its history of tax evasion and corruption, lack of standard recordkeeping systems as well as the lack of knowledge about VAT and a tax base for its computation.

3.4.1.3 Taxes on international trade

The reform of taxes on international trade relates to levies on imports (customs duty, import excise tax, import sales tax) and tax on exports. According to the 1976 Customs duty reform, the tariff rate structure were ranged from a minimum of 5% to a maximum of 125% based on

the assumptions made on imported goods that are judged to be necessity and luxury. It allows duty free imports of fertilizers and exemptions to some capital goods. The customs tariff reform that took place between 1993 and 2002 grouped imports into 97 categories based on the Harmonized System of Tariffs Classification Code. Proclamation No.122/1993 was replaced the 1990 law by reducing the Customs tariff rates from a range of 5 to 230% to a range of 5 to 80% and it was amended by proclamation No.2/1996 which reduced the highest tariff rate from 80 to 60% and increased the number of freely imported items. An *ad valorem* rate ranging from 0 to 35 per cent was introduced, these rates were applied for import excise and sales taxes as those established for goods and services. An important development in the export sector was the abolition of all export taxes, with the exception of coffee. Other miscellaneous tax-related reforms have been carried out in the last decade. These include the amendment of stamp duties (Proclamation No. 110/1998); the introduction of a 3 per cent withholding tax (Proclamation No. 227/2001), a 2 per cent withholding tax on income (Proclamation No. 227/2001), as well as a 5 per cent withholding tax on interest income (Proclamation No. 227/2001).



3.4.1.4 Administrative reform

The tax to GDP ratio of about 13.7% calls for reform not only on the tax rates but also on its administration (Geda, 2005). Tax reform began in 1999 and one of the changes was to scale up the 'revenue board' to ministerial level to become the Ministry of Revenue. This ministry controls the three revenue collection institutions: Federal Inland Revenue (FIRA), Ethiopian Customs Authority (ECuA) and the National Lottery Administration (NLA). In conjunction with this reform, the Ministry of Revenue re-organized FIRA by introducing and improving operational programs, systems and procedures. The other reform measures include the

establishment of additional branch offices, training and recruitment of qualified personnel, introduction of performance and accountability measures, setting up a taxpayer education program and similar initiatives aimed at implementing the new income tax, VAT, turnover tax and excise tax proclamations. The government is currently in the process of upgrading its computer system (SIGTAS and ASICUDA programs), implementing the use of a taxpayer identification number for the enforcement, verification and processing of sales tax and VAT refund claims (MoR, 2003).

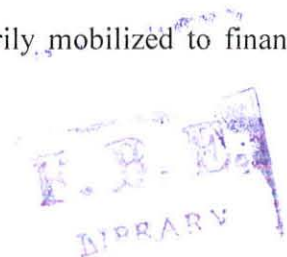
Since 2005, Ethiopia has been undertaking a serious of revenue sector reforms primarily based on the nationwide business process reengineering (BPR) exercise. This reform in the revenue sector includes tax policy, legislation and tax administration. Following the recommendations of the BPR results, the Ministry of Revenue (MoR), the Federal Inland Revenue Authority (FIRA) and the Ethiopian Customs Authority (ECuA) were merged in to the Ethiopian Revenue and Customs Authority (ERCA) on July 2008 with the main driving force of providing the basis for modern tax and customs administration (IMF-FAD, 2009). Ethiopia, like most countries in Africa, has been making considerable efforts in recent years to restructure its tax system with a view to increase tax revenue as well as reduce distortions in the economy. The impact these reforms have had on the poor is considerable importance to policymakers, given that the poor and the vulnerable constitute a significant majority of the population in Ethiopia.

CHAPTER FOUR

4. Model specification and methodology

As the government embraces the tax modernization and budget rationalization programs, it is crucial that the revenue structure be designed to be flexible enough to guarantee increased revenues during the growth process without necessarily resorting to discretionary policy or inflationary financing. Such a structure would ensure that tax revenue grew as faster as national income as required by the growth in expenditure. To achieve this, the tax policy has to ensure two things: one, every individual tax be designed so that its yield is responsive to national income changes, and two, predominant taxes in the revenue be those with a highly elastic yield with respect to national income (or proxy bases). If these attributes feature in a tax system, then the tax measures can be applied to mitigate the dangers of perpetual fiscal imbalances. For developing countries such as Ethiopia, the impact of government spending on economic growth can be explained by many factors such as the productivity and composition of public expenditure, the political platform and the way expenditures are financed.

In this study, the productivity of the tax system is determined by applying the concepts of tax buoyancy and elasticity. High revenue productivity is usually considered as one of a good tax system in developing countries. Assessing tax productivity is important not only because it allows us to examine the responsiveness of the tax system, but also because it affects the system's equity and efficiency effects (Amin, 2000). The income elasticity of a tax can be broken down into tax-to-base and base-to-income elasticities. Therefore, the elasticity of a tax is essentially the product of the elasticity relative to the base and the elasticity of the base-to-income. The relative composition of tax revenue has implications for government revenue growth and stability when it is considered that tax may be primarily mobilized to finance



government expenditures, both recurrent and capital. In considering criteria for a tax system in developing countries the response of tax revenue to changes in income has often been singled out as a vital ingredient (Mansfield, 1972).

Conventionally, the elasticity of total tax revenue in relation to income (GDP) has been presented in aggregate models as a single number. But it is more realistic to depict the overall tax elasticity as a weighted average of the sum of the elasticity's of individual taxes that respond in diverse ways to changes in income. This indicates that an evaluation of the overall tax elasticity must begin with an examination of the individual tax elasticity's symbolically as defined by Mansfield (1972) and presented in chapter two of this paper. Traditionally, there are two methods employed to estimate the elasticity and buoyancy of the tax system. These methods are the Historical Time-Series Tax Data (HTSD) adjusted to discretionary tax measures (DTMs) and the unadjusted HTSD with time trends or dummy variables as a proxy base for DTMs.

4.1 Model specification

The model to be employed in this study will be basically a log linear form of Mansfield's (1972) tax equation as a function of GDP to determine the buoyancy and elasticity of the tax system and its major individual taxes as formulated below.

$$\text{Log}T = \text{log}\alpha + \beta_i \text{log}Y_t + \varepsilon_t$$

Where, Y_t = real gross Domestic Product

T = tax revenue

B_i = the elasticity (buoyancy) of the individual tax bases

ϵ_t = disturbance term as representative of the explanatory variables excluded from the model with standard classical assumptions

The model used to estimate the tax elasticity in this study is directly from unadjusted HTSD using dummy variables as a proxy for discretionary tax measures (DTMs). As Chandy and Wolf (1973), and Artus (1974) incorporate one dummy as a proxy for each of the DTMs introduced during the period under review to estimate tax elasticity by means of a single equation for each tax revenue components in the form:

$$\text{Log}(T)_i = \alpha + \beta_1 \log(Y)_t + \sum_{i=1}^n \beta_2 i D_i + \epsilon_i$$

Where, T_i = individual tax revenue

Y = tax bases (or real GDP in aggregate level)

D_i = dummy variable as proxy for the i^{th} DTMs taken during the period under review

β_1 = tax elasticity defined as the responsiveness of revenue yields to movements in the base (real GDP in aggregate level)

ϵ_i = disturbance terms as representative of other sources of variation of T_i resulting from the factors excluded from the model

i = represents the individual tax under review (i.e. personal income tax, business income tax, agricultural income tax, domestic indirect tax, import tax)

The estimates of tax elasticity obtained from this approach may not be precise and reliable because of the creation of potential multicollinearity problems resulting from the inclusion of more than one dummy variable in to the tax function (Ehdaie, 1990). This indicates that, when there are frequent DTMs during the review period, obtaining a precise and reliable estimate of tax elasticity by means of this method is empirically difficult. On the other hand, the estimates

of tax buoyancy with respect to their bases (or GDP) is derived from logarithmic regressions of the total revenue data on these bases; that is,

$$\text{Log}(T)_i = \alpha + \beta \log(Y)_i + \varepsilon_i. \quad \text{Where, } \beta_1 \text{ is the buoyancy ratio and } Y_t \text{ is real GDP}$$

4.2 Data sources and Proxy bases

For the purpose of this study the total tax revenue is classified in to five major tax components based on their contribution to the total revenue; these are: 1) employment income tax; 2) business income tax, which include business profit tax and other business taxes; 3) domestic indirect taxes, it includes VAT/sales tax and excise taxes on local products and transactions; 4) agricultural income tax including rural land use tax; and 5) import taxes. But export tax is excluded from this study due to its insignificance share in the total revenues.

Availability of data has been a main constraint on the study because data have been collected in bits and pieces from a variety sources. This study uses the time series data and the theoretically justifiable respective bases and proxy bases for the overall tax system and major tax components. The proxy bases for income taxes are domestic factor incomes derived from the data on the sources of income side of the national accounts. Since sales tax/VAT has been levied at retail and wholesale levels private final consumption, which is the function of disposable income (i.e. GDP minus total direct taxes) was used as the proxy base for domestic indirect taxes. The share of agricultural income in GDP is the proxy base for agricultural income tax. The proxy base for business income tax is the share of industry in GDP. The proxy base for import duty was taken to be total imports from the balance of payments. The proxy base for the overall tax system was nominal GDP. The choice of the proxy bases are used as applied by Ehdaie (1990) and Osoro (1992) for other SSA countries, this is due to the unavailability of data on legal bases for each individual taxes.

The data sources for this study include time series secondary data on component and overall tax revenues. The data on GDP, imports, private final consumption, tax revenues and expenditures were derived from Economic Surveys and Statistical Abstracts, both published and unpublished materials from the Ministry of Finance and Economic Development (MoFED), the Ethiopian Revenue and Customs Authority (ERCA), National Bank of Ethiopia (NBE), and Central Statistics Agency (CSA). The sample period for the econometric analysis covers the period from 1980/81 to 2009/10, the years for which the data are available and the reform has undertaken.

4.3 Individual tax base equations

To develop the tax base equations for each individual taxes using the proxy base variables for potential tax bases. As described before tax elasticity is the product of the tax to its base and the base to income elasticity. Hence, there will be a need to have equations that relate the base of an individual tax to income (RGDP).

Employment income tax base function

The proxy base for employment (personal) income tax is taken to be the public sector wage bill dispersment. It is the potential base as used by other similar studies such as Osoro (1993) and Ehdaie (1990); due to lack of reliable and organized data on the personal income tax revenue derived from non-public sector and its contribution to government revenue is not known with certainty, non-public sector's personal income tax revenue is not included (omitted) in this study. The base of personal income tax is a function of RGDP as shown below.

$$\ln(WB)_t = \alpha_p + \beta_p \ln(Y)_t + \varepsilon_{pt}$$

Where, Y = real gross domestic product

WB = real wage bill

β_p = the elasticity of the wage bill with respect to RGDP

ε_{pt} = disturbance term assumed to be normal

Business income tax base function

The share of industry in RGDP is the potential proxy base for business income tax, which is assumed to be the function of RGDP as written in the following form:

$$\ln(SI)_t = \alpha_b + \beta_b \ln(Y)_t + \varepsilon_{bt}$$

Where, Y = real gross domestic product

SI = the real value of the share of industry in RGDP

β_b = the elasticity of the share of industry in RGDP

ε_{bt} = the disturbance term assumed to be normal

Agricultural income tax base function

The potential proxy base for agricultural income tax is taken to be the share of agricultural income in RGDP, which is taken as a function of RGDP. The agricultural income tax base equation is assumed to have the functional form as presented below.

$$\ln(SA)_t = \alpha_a + \beta_a \ln(Y)_t + \varepsilon_{at}$$

Where, Y = real gross domestic product

SA = the real value of the share of agricultural income in RGDP

β_a = the elasticity of the share of agricultural income in RGDP

ε_{at} = the disturbance term assumed to be normal



Domestic indirect tax base function

Domestic private consumption is the potential proxy base for domestic indirect taxes. This proxy base is a function of real disposable income (Y_d), which is RGDP minus total direct taxes. The functional form for this tax base is given below:

$$\ln(PC)_t = \alpha_d + \beta_d \ln(Y_d)_t + \varepsilon_{dt}$$

Where, Y_d = real disposable income

PC = real value of private consumption

β_d = the elasticity of domestic indirect taxes with respect to disposable income

ε_{dt} = the disturbance term assumed to be normal

Y_d = RGDP minus direct taxes (i.e., RGDP minus $T_p + T_b + T_a$)

Import tax base function

The potential proxy base for import tax is taken to be the value of total imports net of total import taxes. The value of import is a function of real RGDP. The functional form is given as follows:

$$\ln(VM)_t = \alpha_m + \beta_m \ln(Y)_t + \varepsilon_{mt}$$

Where, Y = real gross domestic product

VM = real value of imports net of import taxes

β_m = the elasticity of import taxes with respect to RGDP

ε_{mt} = the disturbance term assumed to be normal

4.4 Methodology

4.4.1 Stationarity and unit roots

Testing of macroeconomic time series data will incorporate stationarity testing to avoid the spurious correlation regressions associated with time series trends and to allow for an analyses of the long run equilibrium relationship between the variables included in the model. The standard classical methods of estimations are based on the assumptions that all variables are stationary³(Enders, 1995; Gujarati, 2003). However, most economic time series data are non-stationary in the sense that the mean and variances depend on the time and thus there are no tendencies for them to hold back to a given value. Non-stationarity is a very serious problem in that regression of one non-stationary variable on another is very likely to yield impressive seeming regression results but which are totally spurious (forged). Such a regression results suggests that there are statistically significant long run relationship between the variables in the regression model when in fact all that is being obtained is evidence of contemporaneous correlations rather than meaningful causal relations.

Therefore, it is important to test for stationarity of time series variables before running any type of regression analysis. Often, non-stationary variables become stationary through the process of differencing. The Dickey Fuller (DF) and the Augmented Dickey Fuller (ADF) test. These methods are used to test the null hypotheses that the series contains a unit roots (non-stationary) against the alternative hypothesis of stationary. Based on DF test, the series

³ Stationary implies that the distribution of a process remains unchanged when shifted in time by an arbitrary value. A stationary time series exhibits mean reversion in that it fluctuates around a constant long run mean has a finite variance that is time invariant and has a theoretical correlogram that diminishes as lag length increases.

Y is stationary if the absolute value of λ is less than unity otherwise it is non-stationary as presented in the following functional form:

$$Y_t = \lambda Y_{t-1} + \varepsilon_t$$

However, testing a null hypothesis that the absolute value of λ is equal to one is statistically problematic (Harris, 1995). Hence, the above equation can be rewritten as follows:

$$\Delta Y_t = \alpha Y_{t-1} + \varepsilon_t$$

$$\text{Where, } \alpha = (1 - \lambda)$$

Hence, the null hypothesis that $\lambda = 1$, is equivalent to $H_0: \alpha = 0$. But DF test assumes that the data generating process follows the Autoregressive of order one (AR (1)) which biases the test in the presence of serial correlation. The ADF test is used as a means of conducting a DF test in the presence of auto-correlated errors; it is constructed in the regression model of the form:

$$\Delta Y_t = \alpha Y_{t-1} + \sum \gamma_i \Delta Y_{t-1} + \varepsilon_t$$

4.4.2 Co-integration test

Time series variables may be non-stationary but their linear combination is stationary. So, one possible way of eliminating spurious regression is the application of co-integration procedures which allow the estimation of non-spurious regressions with non-stationary data. There is a need to test for co-integration (long run relationship) between variables included in the model to identify the existence of linear combination of the series. For the purpose of this study the Engle-Granger two steps procedure is used. In the Engle-Granger two step procedure, variables entering the co-integrating vector are tested for integration of the same order of one I (1). The first step of this test is to estimate the long run static model of the order I (1) variables and obtain the residual. If this residual is the linear combination of the variables, it is stationary, then the variables are said to be co-integrated. The second step in this procedure is

to test for a unit root in the residual process of the co-integrating regression obtained in the first step. The next step is to assess the properties of ε_t . Since the error term is not observable, the estimated error term will be obtained from the estimation of the following model based on the estimator of ε_t (i.e., $\widehat{\varepsilon}_t$).

$$Y_t = \widehat{\delta}_1 + \widehat{\delta}_2 X_t + \varepsilon_t \dots\dots\dots (4.1)$$

The test for a unit root can be undertaken based on the following regression equation.

$$\varepsilon_t = \theta_1 \varepsilon_{t-1} + u_t \dots\dots\dots (4.2)$$

Where $\theta_1 = 1$, it indicates non-co-integration and $-1 < \theta_1 < 1$ indicates co-integration.

By subtracting ε_{t-1} on both sides from equation (4.2), a convenient regression equation can be obtained as follows.

$$\Delta \widehat{\varepsilon}_t = \widehat{\alpha \varepsilon_t - 1} + u_t \dots\dots\dots (4.3)$$

Here, $\alpha = \theta_1 - 1$

This regression model can be augmented by including k lagged values of $\widehat{\Delta \varepsilon_t - 1}$ to ensure that the estimated u_t is free from serial correlation. The following equation is referred to as the co-integrating ADF (k) regression.

$$\Delta \varepsilon_t = \widehat{\alpha \varepsilon_t - 1} + \sum_{i=1}^k \beta \widehat{\Delta \varepsilon_t - 1} \dots\dots\dots (4.4)$$

4.5 Regression specifications

The following basic equations are given for the analyses of the data to estimate the elasticity and buoyancy of the variables provided the availability of data.

Tax to income – Buoyancy

1) $\text{LnEIT} = \alpha_e + \beta_e \text{Ln} Y_t$

2) $\text{LnBIT} = \alpha_b + \beta_b \text{Ln} Y_t$

$$3) \text{LnAIT} = \alpha_a + \beta_a \text{LnY}_t$$

$$4) \text{LnDIT} = \alpha_d + \beta_d \text{LnY}_t$$

$$5) \text{LnMT} = \alpha_m + \beta_m \text{LnY}_t$$

Tax to income – Elasticity

$$6) \text{LnEIT}_e = \alpha_e + \beta_{e1} \text{LnY}_t + \beta_{e2} D_e$$

$$7) \text{LnBIT} = \alpha_b + \beta_{b1} \text{LnY}_t + \beta_{b2} D_b$$

$$8) \text{LnAIT} = \alpha_a + \beta_{a1} \text{LnY}_t + \beta_{a2} D_a$$

$$9) \text{LnDIT} = \alpha_d + \beta_{d1} \text{LnY}_{dt} + \beta_{d2} D_d$$

$$10) \text{LnMT} = \alpha_m + \beta_{m1} \text{LnY}_t + \beta_{m2} D_m$$

Tax to Base – Elasticity

$$11) \text{LnEIT} = \alpha_e + \beta_{e1} \text{LnWB} + \beta_{e2} D_e$$

$$12) \text{LnBIT} = \alpha_b + \beta_{b1} \text{LnSI} + \beta_{b2} D_b$$

$$13) \text{LnAIT} = \alpha_a + \beta_{a1} \text{LnSA} + \beta_{a2} D_a$$

$$14) \text{LnDIT} = \alpha_d + \beta_{d1} \text{LnPC} + \beta_{d2} D_d$$

$$15) \text{LnMT} = \alpha_m + \beta_{m1} \text{LnVM} + \beta_{m2} D_m$$

Base to income – Elasticity

$$16) \text{LnWB} = \alpha_e + \beta_e \text{LnY}$$

$$17) \text{LnSI} = \alpha_b + \beta_b \text{LnY}$$

$$18) \text{LnSA} = \alpha_a + \beta_a \text{LnY}$$

$$19) \text{LnPC} = \alpha_d + \beta_d \text{LnY}_d$$

$$20) \text{LnVM} = \alpha_m + \beta_m \text{LnY}$$

Where, Y = real gross domestic income

Y_d = real disposable income

EIT = tax revenue from employment income

BIT = tax revenue from business income

AIT = tax revenue from agricultural income

DIT = revenue from domestic indirect taxes

MT = tax revenue from imported goods and services

WB = real wage bill

SI = the real value of the share of industry in RGDP

SA = the real value of the share of agricultural income in RGDP

PC = the real value of private consumption

VM = real value of imports net of import taxes

D_e = dummy for discretionary changes made on employment income tax

D_b = dummy for discretionary changes made on business income taxes

D_a = dummy for discretionary changes made on agricultural income tax

D_i = dummy for changes made on domestic indirect taxes on rate, and inclusion
of new taxes

D_m = dummy for discretionary changes made on import tax on rate and inclusion
of new tax.



CHAPTER FIVE

5. Empirical Result Analysis⁴

As discussed in chapter four, this study has used a log linear time series data for the period 1980/81-2009/10 to estimate the buoyancy and elasticity parameters of the overall tax system and individual tax revenue equations. The estimated parameters for each equation were obtained by running OLS methods and their estimation results indicate that the parameters have a plausible magnitude with the expected sign⁵. The response of a tax system to changes in real national income (RGDP) can result from either built-in-elasticity or the buoyancy of the tax structure. A tax structure is said to be buoyant if the buoyancy index is greater than unity, suggesting that as national income changes tax revenue changes by a larger proportion as a result of both built-in-elasticity and discretionary policy . Elasticity measures the responsiveness of revenue yields to changes in economic activities alone. It is important to note that discretionary measures are manifested in tax increases rather than base expansions. Based on the DF and ADF, tests for unit roots are performed with the null hypothesis that the variables exhibits unit root relative to the alternative hypothesis that the variables are stationary. The decision criteria of this test is that when the absolute value of a calculated statistic is greater than the absolute value of the critical value we can conclude that a given variable is stationary, i.e., accepting the alternative hypothesis that the variables are stationary. The time series characteristics of all variables are considered and all variables are non-stationary in levels but they are found to be stationary after differencing once as presented below in table 5.1.

⁴ Note that in this analysis part the estimation results do not incorporate the causal effect of public expenditures on taxes but only focused on the revenue productivity of tax reforms in the tax system. All estimation values of the variables except the share values as a percentage of total tax and GDP are expressed in real terms.

⁵ The econometric regression results on elasticities and buoyancies are presented in Annex C

Table 5.1: ADF Test for Unit Root

<i>Variables</i>	<i>Calculated value</i>	<i>1%</i>	<i>5%</i>	<i>Inference</i>	<i>Variables</i>	<i>Calculated value</i>	<i>1%</i>	<i>5%</i>	<i>Inference</i>
<i>LTR</i>	-0.205	-3.723	-2.989	<i>NS</i>	<i>LY</i>	0.493	-3.723	-2.989	<i>NS</i>
Δ <i>LTR</i>	-6.163	-3.730	-2.992	<i>S</i>	Δ <i>LY</i>	-3.596	-3.736	-2.994	<i>S</i>
<i>LEIT</i>	-0.230	-3.723	-2.989	<i>NS</i>	<i>LWB</i>	-2.316	-3.730	-2.992	<i>NS</i>
Δ <i>LEIT</i>	-5.951	-3.730	-2.992	<i>S</i>	Δ <i>LWB</i>	-6.341	-3.736	-2.994	<i>S</i>
<i>LBIT</i>	-0.650	-3.723	-2.989	<i>NS</i>	<i>LSI</i>	-0.936	-3.730	-2.992	<i>NS</i>
Δ <i>LBIT</i>	-5.476	-3.730	-2.992	<i>S</i>	Δ <i>LSI</i>	-5.676	-3.736	-2.994	<i>S</i>
<i>LAIT</i>	-1.028	-3.723	-2.989	<i>NS</i>	<i>LSA</i>	0.046	-3.736	-2.994	<i>NS</i>
Δ <i>LAIT</i>	-6.690	-3.730	-2.992	<i>S</i>	Δ <i>LSA</i>	-5.245	-3.736	-2.994	<i>S</i>
<i>LDIT</i>	-0.223	-3.723	-2.989	<i>NS</i>	<i>LPC</i>	-0.009	-3.730	-2.992	<i>NS</i>
Δ <i>LDIT</i>	-5.321	-3.730	-2.992	<i>S</i>	Δ <i>LPC</i>	-5.739	-3.736	-2.992	<i>S</i>
<i>LMT</i>	-0.140	-3.723	-2.989	<i>NS</i>	<i>LVM</i>	0.100	-3.730	-2.992	<i>NS</i>
Δ <i>LMT</i>	-6.387	-3.730	-2.992	<i>S</i>	Δ <i>LVM</i>	-5.906	-3.736	-2.994	<i>S</i>

Note: NS= non-stationary, S= stationary, and the variables are in levels and differences

After testing for unit roots, a co-integration test were carried out based on the Engle-Granger two step procedure to avoid spurious regression and to determine any long run economic relationship between the dependent and explanatory variables. The ADF test shows that stationary of the saved residuals from the long run regressions. Therefore, rejecting the null hypothesis of no co-integration and accepting the alternative that there exists a long run relationship between the variables. The result of this test is summarized below:

Table 5.2: ADF Test for Co integration

<i>Models</i>	<i>ADF-Test</i>	<i>Order of Integratio</i>	<i>Models</i>	<i>ADF-Test</i>	<i>Order of Integratio</i>
<i>TR</i>	-2.629 ^a	<i>I(1)</i>	<i>WB</i>	-3.498 ^b	<i>I(1)</i>
<i>EIT</i>	-3.207 ^b	<i>I(0)</i>	<i>SI</i>	-2.713 ^a	<i>I(0)</i>
<i>BIT</i>	-3.646 ^b	<i>I(1)</i>	<i>SA</i>	-3.584 ^b	<i>I(0)</i>
<i>AIT</i>	-4.577 ^c	<i>I(0)</i>	<i>PC</i>	-3.490 ^b	<i>I(0)</i>
<i>DIT</i>	-3.445 ^b	<i>I(1)</i>	<i>VM</i>	-2.672 ^a	<i>I(0)</i>
<i>MT</i>	-3.562 ^b	<i>I(0)</i>	<i>Yd</i>	-6.008 ^c	<i>I(0)</i>

Note: a, b and c represents the level of significance at 10%, 5% and 1% respectively.

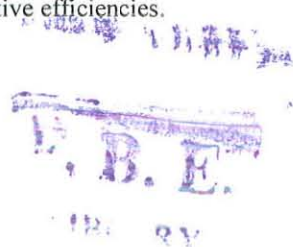
The coefficients of all explanatory variables in the models are significantly different from zero at least more than 90 percent of probability. Using coefficient of determination, residual sum of squares and F-statistics to examine the overall significance of the models and the goodness fit of the predicted value is made and in all equations the F-statistics shows that there is a good fit at 10% level of significance, the residual sum of squares are small and the R-squares indicates the existence of correlation between explanatory and dependent variables not less than 85 percent. The following section provides the overall buoyancy and elasticity estimates (tax-to-income, tax-to-base and base-to-income), though the periods will be short from the point of view of time series data, three regressions are carried out to estimate for the combined period of 1980/81-2009/10, the pre-reform period 1980/81-1991/92 and the post-reform period 1992/93-2009/10 of the sample period, this is because the government takes major tax reforms since the 1990's general SAPs, to examine the effect of the reform.

5.1. Combined period results (1980/81-2009/10)

Table 5.3 below, presented the total and individual taxes buoyancy and elasticity of the Ethiopian tax system for the sample period of 1980/81-2009/10, as well as the difference between the two measures which shows the importance of discretionary tax measures (DTMs)⁶, while the comparison of the two measures for individual taxes help to identify those taxes for which DTMs are most important to raise tax revenues. Based on the regression results, the buoyancy and built-in-elasticity of the overall tax system for the sample periods are 1.23 and 0.94 respectively. These results indicates that a 1% increase in RGDP will lead to an automatic change in total tax revenue by 0.94%, and by controlling the effect of DTMs the tax revenue will change by 1.23%. Basically this is interpreted as for the sample period the tax system of Ethiopia is buoyant but income inelastic. Hence the major contributing factor for the increase in total tax revenue over the period is attributable to the legal changes (DTMs) undertaken by the tax authority. This result shows that, the higher effectiveness of DTMs over the automatic changes, so the government has the controlling power to increase the tax revenue.

The estimated income elasticity of the overall tax system of the country for the period 1980/81-2009/10 was inelastic, 0.94, this is brought about because all individual taxes had estimated tax-to base elasticities of less than unity and the estimated buoyancy of the overall tax was 1.23. This result suggests that a lower proportion of incremental income was transferred to the government in the form of tax revenues, meaning that the revenue generating power of the Ethiopian tax system has been growing relatively below the growth in RGDP. The comparison of individual taxes result reveals that business income tax had the highest tax-

⁶ Discretionary Tax Measures represents the legal action of a government to change tax rates, widening and expansion of tax bases, legislative enactments and improvements in administrative efficiencies.



to-income elasticity coefficient, 1.17, whereas agricultural income tax had scored the lowest. The low income elasticity of agricultural income tax was probably due to the combined effect of a very low tax-to-base elasticity of 0.53, with a 1.34 elasticity of base-to-income. The low tax-to-base elasticity is mainly due to either inefficiency in tax administration which is resulted in low compliance or the existence of high tax evasion. The higher unitary proxy base-to-income elasticity of agricultural income tax shows that a proportional growth in agricultural income relative to RGDP. On the other hand, the tax-to-income elasticity of employment income tax and import taxes are found to be elastic and domestic indirect taxes are found to be income inelastic with the respective coefficients of 1.14, 1.13 and 0.88.

Table 5.3: The combined Period Buoyancies and Elasticities for 1980/81-2009/10

<i>Tax Category</i>	<i>Buoyancies</i>	<i>Elasticities</i>			<i>Difference</i>
		<i>Tax-to-Income</i>	<i>Tax-to-base</i>	<i>Base-to-Income</i>	
<i>Total Tax Revenues</i>	1.23	0.94			0.29
<i>Employments income Tax</i>	1.28	1.14	0.97	1.18	0.14
<i>Business Income Tax</i>	1.19	1.17	0.66	1.77	0.02
<i>Agricultural Income Tax</i>	0.93	0.71	0.53	1.34	0.22
<i>Domestic Indirect Taxes</i>	0.91	0.88	0.91	0.97	0.03
<i>Import Taxes</i>	1.21	1.13	0.91	1.24	0.08

Note: Difference, in the table shows the difference between Buoyancies and Elasticities.

: The coefficient of all variables is significantly different from zero at 90% level of probability.

The value of buoyancy for the sample period varies from the higher of 1.28 for employment income tax to the lowest of 0.91 for domestic indirect tax. The value of buoyancy for total tax,

employment income tax, business income tax, and import taxes is greater than unity, while that of agricultural income tax and domestic indirect taxes has the buoyancy value less than unity. Therefore, the major contributions to the buoyancy of the overall tax system come from employment income tax, import tax and business income tax. This results of buoyancy for total tax revenue indicating that there is a higher rate of growth in tax yields in response to RGDP. A comparison of the estimated buoyancy and built-in-elasticity is important because it shows the revenue impact of discretionary measures. For the major tax components the highest difference between buoyancy and income elasticity was recorded by agricultural income tax followed by employment income tax, this difference implies that the main cause of growth in the tax collection lies in DTMs undertaken over the period and the same for the overall tax system, because the responsiveness of these taxes to income is relatively low. The difference for other taxes such as business income tax, domestic indirect taxes and import taxes is very small suggesting that the major causes for the growth of these tax revenue lies in the automatic changes, i.e., the extent to which discretionary tax policies were used to increase additional revenue from these taxes are lesser over the sample periods.

For the combined period, a decomposition of the tax-to-income elasticity in to its constituent parts (i.e., tax-to-base and base-to-income elasticities), this decomposition of elasticity of a tax provides an important analytical insight in to the productivity of a tax in relation to the efficiency of tax administration and potential taxable capacity of the economy. It is evident that the overall inelasticity of the Ethiopian tax system is mainly because of the low tax-to-base elasticity of individual taxes, while the base-to- income elasticities of individual taxes except domestic indirect taxes have a more than unitary value for the period, which shows an obvious net effective tax collections arising not from effective tax administration but from the

underestimate of the budget which might not have based on adequate information. According to the estimation results presented in table 5.3, the tax-to-base elasticity of individual taxes for the period 1980/81-2009/10 are 0.97,0.66,0.53,0.91 and 0.91 for employment income tax, business income tax, agricultural income tax, domestic indirect tax and import taxes respectively. These results suggest that, except employment income tax, all tax components are income inelastic with respect to tax-to-base elasticities. This low tax-to-base elasticity could arise because of either of the following factors such as poor tax administration, high tax avoidance and evasion, provision of numerous allowances and exemptions and the use of specific instead of ad valorem tax rates. On the contrary, table 5.3 also shows the base-to-income elasticity of individual taxes ranging from the lowest of 0.97 for domestic indirect tax to the higher value of business income tax, 1.77 including 1.18 for employment income tax, 1.34 and 1.24 for agricultural income tax and import taxes respectively. Based on these results, the base-to-income elasticity of all individual taxes have more than a unitarily income elastic value excluding domestic indirect taxes. Therefore, the base-to-income elasticity is greatly influenced by the change in the structure of the economy; hence the tax authority does not have the controlling power over the base-to-income elasticities.

5.2. Pre-and post-reform period results

The results presented in table 5.4 below, shows the estimated buoyancies and elasticities of both the total tax system and individual taxes as well as the decomposition of tax-to-income elasticities of each individual tax components for the periods of 1980/81-1991/92 and 1992/93-2009/10. In the pre-reform period of 1980/81-1991/92, each individual tax had an estimated buoyancy of 0.92, 1.72, 0.43, 0.49 and 1.19 for employment income tax, business income tax, agricultural income tax, domestic indirect taxes and import taxes respectively. In this period,

all individual tax components, except business income tax and import taxes had an estimated buoyancy of less than unity, thereby causing the overall tax system to have a buoyancy value of less than unity, 0.72. During the post-reform period of 1992/93-2009/10, however, all individual tax components, except agricultural income tax and domestic indirect taxes, showed an increase in their value of buoyancies as compared with the pre-reform period and most of them have a buoyancy values more than unity, causing the buoyancy of the total tax revenue to increase to 1.23. This result implied that as compared with the 1980/81-1991/92 period, the tax buoyancy of the 1992/93-2009/10 period was increased by 41%. Therefore, both growth in national economy and discretionary tax policies have made the overall tax system more buoyant than before, the contribution of business income tax and import taxes was significant in the pre-reform period, whereas except agricultural income tax and domestic indirect taxes, all taxes had significant contribution in the productivity of the total tax revenue buoyancy in the post-reform period.

The estimated tax-to-income elasticity of the total tax for the pre-reform period of 1980/81-1991/92 was very low, 0.42, which is brought about because all individual taxes had an estimated elasticities of less than unity. The income elasticity of employment income tax, business income tax, agricultural income tax, domestic indirect tax and import taxes are 0.43, 0.41, 0.23, 0.62 and 0.34 respectively. The implication of these results is that a 1% increase in RGDP will result in a 0.43, 0.41, 0.23, 0.62 and 0.34 percents increase in employment income tax, business income tax, agricultural income tax, domestic indirect taxes and import taxes respectively. It can be seen that the elasticities of all major tax components for the pre-reform period are very low and income inelastic, that means the value of their estimated elasticities are less than unity; this causes the total tax revenue to have an inelastic value of 0.42. This period

recorded the lowest elasticity values for the whole tax system as compared with the post-reform periods and the combined periods. A very low base-to-income elasticities of all individual taxes except domestic indirect taxes dampened the responsiveness of the tax system.

Hence, any growth in the tax revenues was the contribution of the discretionary tax measures undertaken during the pre-reform periods in all tax components. Though the tax-to-base elasticities of individual taxes are less than unity, the base-to-income elasticities of all individual taxes except domestic indirect taxes are very small and less than unity. During the pre-reform period, the overall tax system was income inelastic with respect to RGDP, whereas all individual taxes show the same trend; the main contributors to the overall income inelasticity are the low base-to-income elasticity of each major tax besides the low tax-to-base elasticities. It can be concluded that during the pre-reform period the response of the tax system was sluggish, not only because of the low response of base-to-income but also the low response of the taxes to their respective bases.

In the post-reform period of 1992/93-2009/10, however, the estimated built-in-elasticities for total tax revenue and all individual tax components, except employment income tax and agricultural income tax, were slightly increased their elasticities as compared with the pre-reform period but the income elasticity of all individual taxes and the total tax have a very low elasticity value and remains inelastic both in the pre-and post-reform periods. This slight increase in elasticity of the overall tax revenue represents an increase of 45% over the estimated income elasticity for the overall tax system in the 1980/81-1991/92 pre-reform period. As compared with the increase in RGDP of the country over the periods, the tax revenue performance exhibited a lower productivity. The revenue productivity performance of

the total tax revenue in 1992/93-2009/10 period relative to its performance in 1980/81-1991/92 was high and this can be inferred from the results of estimated higher buoyancies and elasticities during the periods.

The relative better revenue performance of the post-reform period is may be explained by the diversification and increase in the volume and size of the economy accompanied by the increase in DTMs. In this period, the overall tax system was inelastic with a buoyancy value of 1.23 and the tax-to-RGDP elasticity is less than unity, 0.76. The individual taxes have a buoyancy of greater than unity, except for agricultural income tax, 0.92 and domestic indirect taxes, 0.70, with the value of 1.30, 1.17 and 1.22 for employment income tax, business income tax and import taxes respectively. During this period, all individual taxes and total tax had an estimated built-in-elasticity value less than unity, with the elasticity value of 0.35, 0.48, 0.24, 0.71 and 0.77 for employment income tax, business income tax, agricultural income tax, domestic indirect tax and import taxes respectively.

Table 5.4: Pre-and Post-Reform Periods Buoyancies and Elasticities

<i>Tax Category</i>	<i>Buoyancies</i>	<i>Elasticities</i>			<i>Differ- ence</i>
		<i>Tax-to-Income</i>	<i>Tax-to-Base</i>	<i>Base-to-Income</i>	
<i>Pre-Reform Periods from 1980/81-1991/92</i>					
<i>Total Tax Revenues</i>	0.72	0.42			0.30
<i>Employment Income Tax</i>	0.92	0.43	0.70	0.62	0.49
<i>Business Income Tax</i>	1.72	0.41	0.92	0.45	1.31
<i>Agricultural Income Tax</i>	0.43	0.23	0.58	0.37	0.20
<i>Domestic Indirect Taxes</i>	0.49	0.62	0.51	1.21	-0.13

<i>Import Taxes</i>	<i>1.19</i>	<i>0.34</i>	<i>0.93</i>	<i>0.36</i>	<i>0.85</i>
<i>Post-Reform Periods from 1992/93-2009/10</i>					
<i>Total Tax Revenues</i>	<i>1.23</i>	<i>0.76</i>			<i>0.47</i>
<i>Employment Income Tax</i>	<i>1.30</i>	<i>0.35</i>	<i>0.92</i>	<i>0.37</i>	<i>0.95</i>
<i>Business Income Tax</i>	<i>1.17</i>	<i>0.48</i>	<i>0.72</i>	<i>0.66</i>	<i>0.69</i>
<i>Agricultural Income Tax</i>	<i>0.92</i>	<i>0.24</i>	<i>0.29</i>	<i>0.81</i>	<i>0.68</i>
<i>Domestic Indirect Taxes</i>	<i>0.70</i>	<i>0.71</i>	<i>0.76</i>	<i>0.94</i>	<i>0</i>
<i>Import Taxes</i>	<i>1.22</i>	<i>0.77</i>	<i>0.87</i>	<i>0.88</i>	<i>0.45</i>

Note: Difference, in the table shows the difference between Buoyancies and Tax-to-Income Elasticities.

: The estimated coefficients of all variables are significantly different from zero

at least 90% level of probability, except agricultural income tax which is insignificant

in both pre-and post-reform periods at this level.

As indicated in table 5.4, during the post-reform period, all individual taxes relatively performed well as compared with the pre-reform period mainly because of the relatively higher base-to-income elasticities except for employment income tax and domestic indirect taxes. On the other hand, except employment income tax and domestic indirect taxes, other tax components performed poorly because of the sluggish response of tax revenues to changes in their bases, this is mostly due to inefficiencies in tax administration, exemptions and evasions during the post-reform period. A comparison of the estimated buoyancies and elasticities of the total tax revenue and that of individual taxes in both periods shows the revenue impact of the discretionary policies undertaken during the periods. The results under

table 5.4 reveals that, buoyancies exceeded tax-to-income elasticities in all cases during the pre- and post-reform periods, the difference between buoyancies and income elasticities were positive and large for all taxes. Hence, from these results we can observe that the discretionary tax measures undertaken during the post-reform periods have relatively greater impact on tax revenue productivity than the post reform period as compared with the increase in tax revenue productivity due to automatic changes.

For the overall tax system, the difference between buoyancy and tax-to-income elasticity were about 30% in 1980/81-1991/92 period and 47% in the period of 1992/93-2009/10, for the individual taxes the differences were ranging from the smallest value of -13% for domestic indirect taxes to the highest value of 131% for business income tax for the pre-reform period. While the difference between buoyancy and income elasticity of the post-reform period for the overall tax system becomes larger than the pre-reform period, 47%, and for individual taxes the differences were ranging from the smallest value of 0% where the elasticity equals the buoyancy for domestic indirect taxes to the highest value of 95% for employment income tax for the post-reform period of 1992/93-2009/10. From the estimated results on the bases of change in the buoyancy and elasticity values, it can be concluded that the reforms improved the response of the tax revenue in a very low term to the automatic changes in RGDP but very high to changes in discretionary tax measures, though it is not well enough effective as expected. However, the difference between buoyancy and income elasticity indicates that the revenue productivity impact of DTMs undertaken during the post-reform periods exceeded the pre-reform periods in raising tax revenue.

5.3. Decomposition of Elasticities⁷

As we have demonstrated earlier the tax-to-income elasticity of a given tax system is decomposed in to the products of tax-to-base and base-to-income elasticities. These relationships for individual taxes are presented in table 5.4 and the results are discussed as follows.

Employment income tax

The estimated tax yields from this tax reveals that a buoyancy of 0.92 and the income elasticity of 0.43 for 1980/81-1991/92 pre-reform period, as compared with the corresponding coefficients of 1.30 and 0.35 for the post-reform period of 1992/93-2009/10. We can observe that the employment income tax performance was relatively low in the post-reform period; this tax had contributed on average about 11.4% of the total tax revenues and 1.5% on average a tax to GDP ratio in the pre-reform period. While this tax category had the average revenue contribution of 9.7% of the total tax revenues and 1.1% share in the tax to GDP ratio in the post-reform periods, this result shows that ahead of time there was an average decline in the employment income tax collections from the pre-reform period to the post reform periods. The low base-to-income elasticity of 0.62 and the low tax-to-base elasticity of 0.70 had causing the tax-to-income elasticity of this tax to be inelastic in the pre-reform periods. On the other hand, the same trend was followed by the post-reform period; even though due to the reform the nominal value had increased relative to the pre-reform period, the income inelasticity of employment income tax was remained as low because of the product of low base-to-income elasticity of, 0.26 with that of a low tax-to-base elasticity of 0.70.

⁷ In this section the tax revenue share value of each individual tax components as a percentage of total tax revenues and GDP is computed based on the data obtained from MoFED for the sample periods which is presented in Annex A.

The low productivity of this tax during the pre- and post-reform periods was mainly stemmed from the low base-to-income elasticity, in turn the low base-to-income elasticity was mainly due to the low wage rate of employees especially in the formal sector, and partly from the low taxation of non-wage income earners and self-employed workers the majority of whom were in the trading and commercial sectors. The reduction in rates of this tax from 89% to 35% in different years of the sample period, the transfer of publicly owned enterprises from government to private sector due to the 1990's general economic liberalizations (this reduces employment in the public sectors), and tax exemptions and evasions could be pointed out as the cause of low tax-to-income elasticity for the periods and clearly the tax collections have lagged behind the growth of economy.

Business Income tax

This tax category contains the most important components of direct taxes mainly business profit tax. This tax had contributed on average about 24.7% of the total tax revenues and also had a share of 3.2% of the tax to GDP ratio in the pre-reform period of 1980/81-1991/92 and this tax revenue had contributed for total tax revenues on average about 14.6% and it also had about 1.6% share of tax to GDP ratio in the 1992/93-2009/10 post-reform periods. As table 5.4 indicates, the estimated coefficient of business income tax buoyancy and tax-to-income elasticity for the pre-reform period were 1.72 and 0.41 respectively. As compared with the corresponding coefficients of 1.17 and 0.48 for the post-reform periods, this is to mean that a 1% increase in RGDP will automatically lead to a 0.41 and a 0.48 percent increase in revenue from business income tax for the pre-and post-reform periods respectively. The above results show that there is a vast deterioration in the revenue productivity of business income tax from time to time as indicated by the decrease in its shares of total tax revenues from 24.7% in the



pre-reform period to 14.6% in the post-reform period and the same decreasing trend is recorded from business income tax as a percentage of GDP on average from 3.2% to 1.6% from pre-to post reform periods.

During the pre-reform period, the estimated buoyancy and tax-to income elasticity of this tax has been lesser by 10.5% and 7% due to the tax reforms in business income tax. The relative poor performance of business income tax during the early time of the pre-reform periods could be attributed to the nationalization and capital limit of private enterprises and the structure of the tax laws (this means that for example, the annual income of above Birr 36,000, companies have obliged to pay their tax by applying the highest marginal tax rate of 89%, this higher rate leads taxpayers to evade their income or to negotiate with the tax officers). The low productivity of this tax in the post-reform periods may be because of the denationalization of public enterprises due to the general economic liberalization programs, because most private businessmen would not give legal receipts while effecting transactions, so this give them a ground easily to escape and evade their tax obligations and there are also many people who participate in the underground economic activities who do not often pay tax from their business incomes.

On the contrary, the low base-to-income elasticity of 0.45 and 0.66 for the pre- and post-reform periods respectively had causing this tax to be income inelastic. The decline in the tax-to-base elasticity from 0.92 to 0.72 from pre- to pos-reform periods reveals that there was relatively low compliance and the existence of huge amount of tax exemptions and evasions in addition to the provision of tax holidays for business enterprises in order to invite domestic and

foreign investors to invest in the country, and a continuous decrease in the tax rate from 89% to 30% might also cause the inelasticity of the tax.

Agricultural Income Tax

Agricultural income tax constitutes income from agricultural activities and rural land use fees, it is surprising when we recall that agricultural sector accounts about 50% of the country's GDP and which provides a livelihood about 85% of the population, but it had an average tax revenue share from the total tax revenues only about 5% and also on average this tax accounted a tax to GDP ratio of only about 0.7% for the 1980/81-1991/92 pre-reform period. There was also a decline in the relative share of this tax performance from the pre-reform periods of total tax revenues and as a percentage of GDP in to 2% and 0.2% respectively in the post-reform period. The estimated coefficient of tax buoyancy and built-in-elasticity for this tax were 0.43 and 0.23 for 1980/81-1991/92 period and the corresponding estimated coefficients of 0.92 and 0.24 for the post-reform period respectively.

This weak revenue productivity of agricultural income tax could be attributed to a very low tax-to-base and base-to-income elasticities of 0.58 and 0.37 respectively in the pre-reform period and a smaller tax-to-base elasticity of 0.29 with a relatively higher value of, 0.81, base-to-income elasticity. This low performance could be explained by the inadequacy of tax laws (for example, there is fixed tax rate structure for land use fees), inefficiency in the collection and administration of the tax though this sector has huge economic potential to generate additional revenue as indicated by the relatively higher value of base-to-income elasticity in the post-reform periods. Therefore, the reform undertaken on this tax was not effective to raise revenue from agricultural incomes but DTMs contribute more to raise tax revenues from this source during the reform period.

Domestic Indirect Taxes

This tax category includes taxes related to domestic transactions and it is levied on locally manufactured goods and services such as sales tax/VAT and excise taxes. The average revenue contribution of this tax category to the total tax revenue for the period of 1980/81-1991/92 was about 31.4% and the average revenue to GDP ratio of this tax was about 4.1% at this time. On the other hand, the average tax revenue contribution of this tax to total tax revenue and GDP were about 22.9% and 2.4% for the post- reform period. From these results we can infer that the revenue productivity of this tax category had been relatively declined through time as observed from the decrease in its share value as a percentage of total tax revenues from 31.4% in the pre-reform periods to a post-reform periods value of 22.9%, besides this the average tax revenue to GDP ratio of this tax had been reduced from 4.1% in the period of 1980/81-1991/92 to 2.4% in the post-reform period of 1992/93-2009/10.

During the pre-reform period, the coefficient of the estimated buoyancy and tax-to-income elasticity of domestic indirect taxes were 0.49 and 0.62; and the corresponding estimated coefficients of 0.70 and 0.71 for the period of 1992/93-2009/10 respectively. The low tax-to-income elasticity of 0.62 for this tax category during the pre-reform period was due to the product of a low tax-to-base elasticity of 0.51 and a relatively higher unitary base-to-income elasticity of 1.21. This low tax-to-base elasticity suggests the existence of the combined effect of granting generous exemptions and inefficient tax administration. While the relatively low tax-to-income elasticity of 0.71 for domestic indirect taxes for the post-reform period was the product of a nearly unitary base -to-income elasticity of 0.94 and a relatively low tax-to base elasticity value of 0.76 caused this tax to be income inelastic.

From these results we can conclude that the low tax-to-base elasticity was partly due to the slow growth in real private consumption expenditures the base on which the tax is imposed and the massive tax evasions because this tax revenue collection is mostly based on the invoicing methods which becomes easier for taxpayers to create various loopholes that makes tax administration very difficult and tax avoidance and evasion easy. Whereas the relatively higher base-to-income elasticity apparently shows the growth in private consumption expenditures, this shows the economy has the potential to generate additional revenues from this tax category. Therefore, tax reforms may not have helped as required to seal the loopholes through which revenue loss occurred.

Import taxes

Import taxes are one of the most important sources of indirect tax revenues which comprise mainly customs duty and taxes which are levied mostly on imported products, the tax reform measures had great impact in the productivity of this tax revenue. This tax revenue contributes on average about 19.2% of the total tax revenues and the average contribution of import tax to GDP ratio was about 2.5% during the pre-reform periods, whereas the average tax revenue contribution of this tax category during the post-reform period of 1992/93-2009/10 were about 44.9% of the total tax revenue collections and 4.8% tax to GDP ratio. From these results we can observe that the tax reform had improved the revenue performances of import taxes by increasing its revenue share as a percentage of total tax revenues and tax to GDP ratios from 19.2% to 44.9% and from 2.5% to 4.8% respectively after the introduction of import tax reforms.

The estimated import tax buoyancy and tax-to-income elasticity in the period of 1980/81-1991/92 were both less than unity, 1.19 and 0.0.34 respectively. While as compared with the corresponding estimated coefficients of 1.22 and 0.77 for each measure for the 1992/93-2009/10 period, as a result the productivity of import tax revenue was lower in the pre-reform period than in the post-reform periods. This low revenue productivity of the tax in the pre-reform period could be attributed partly to a very low base-to-income elasticity of 0.36, while the tax-to-base elasticity approaches to unity and the large amount of exemptions granted to imports of some capital goods, raw materials and consumer goods; the valuation of imports at the artificially over-valued exchange rate and import substitution policy during the period. The high productivity of import taxes in 1992/93-2009/10 period was due to the success of import tax reform measures which improves the tax-to-base elasticity from 0.93 to 0.87 and the base-to-income elasticity from 0.34 to 0.88 from the pre-to post-reform periods. Here the base-to-income elasticity was 0.88 in the post-reform periods mean that a 1% increase in GDP will lead to the value of import, the proxy base in which the taxes are levied, grows by 0.88%. Hence we can conclude that during the 1992/93-2009/10 period, the estimated income elasticity of import tax revealed that there was huge dependence on international trade taxes in the tax system of the country.

Generally, the decomposition analysis of the overall tax-to-income elasticities of a tax system as a whole and the individual tax components have inelastic coefficients, this is mainly due to low tax-to-base elasticities for most of the tax categories and partly due to a relatively low base-to-income elasticities for some taxes. Most of these results are in line with the assertions of other studies by Mesfine (1994), Zelalem (1998), but it is slightly different from the results of Girma (2006).

CHAPTER SIX

6. CONCLUSION AND POLICY IMPLICATIONS

6.1 Conclusions

One of the main objectives of developing countries in their effort to abolish poverty and achieve sustainable development is through growth in their economy which can be defined as sustainable growth in real GDP. These countries need to spend much of their scarce resources in an effort to achieve those broad goals so as to get out themselves from the trap of low position through effectively using their fiscal instruments. Among the fiscal instruments taxation, the main focus of this study, is an important source of government revenues to finance public expenditures in the process of economic growth and development for a country. Taxation is the most rational means of raising the revenue to government spending on goods and service, and the absolute tax system in a country should raise essential revenues without excessive borrowing and discouraging economic activity. Among the main concerns for the adoption of the SAPs reform in Ethiopia, in the finance sectors are increasing government tax revenues, cutting unproductive public expenditures and effectively using the scarce resources in social and development activities of the country, which are an important component in the issue of soaring budget deficits.

This study was driven by setting the objectives of investigating the relation between tax reform and revenue productivity of the tax structure of Ethiopia, estimating buoyancy and income elasticity of the total tax revenue and individual taxes using OLS econometric method. Within these circumstances, the study analyses the revenue productivity of the total tax revenue and major individual taxes in the context of the tax reform. Hence it used an econometric method

of estimating tax buoyancy and elasticity as well as determining the revenue impact of DTMs during the sample periods.

Based on the empirical evidences, as shown by the estimates of buoyancies and elasticities of individual taxes and the total tax system, the tax reform measure had a positive relationship with the overall tax structure and on individual tax components, even though the impact of the reform was not always uniform and very effective as expected in mobilizing additional revenues. In general, the reforms had a relatively better impact on indirect taxes than direct taxes; this is suggesting that revenue leakage is still the main problem for direct taxes. Elastic tax structure is essential in a developing economy because it implies that tax collections will grow automatically with the growth in GDP without the need to resort to any politically sensitive increase in tax rates (Osoro, 1993). However, the overall estimates of income elasticities of individual taxes and total tax as a whole in this study found out that the Ethiopian tax system is still income inelastic but it is buoyant. To enhance the income elasticity, the tax system requires focusing on those taxes which are most income elastic in addition with assessing the best way how to make other taxes that are less elastic to improve their capacity to generate additional revenues in relation to the change in national income.

The empirical evidences from the estimation of buoyancy and income elasticity of this study shows that during the pre-reform periods all individual taxes and the overall tax system are found out to be unproductive and income inelastic. This low tax elasticity of the overall tax system is attributable to the very low base-to-income elasticity of individual tax categories during the period, this is because for most taxes the proxy bases are growing less than the growth in national income and the difference between buoyancy and income elasticity for all

tax components are relatively high. This shows the increase in tax revenue was mainly due to discretionary tax measures undertaken during the period. Whereas the reform programs in the post-reform periods have relatively improved the productivity of the tax system as a whole and for most individual taxes especially for domestic indirect taxes and import taxes though the reform is not that much effective by improving the productivity of the overall tax system to make highly elastic. Here we can observe from the results of contribution of individual taxes to total tax revenues and as a percentage of GDP, like other developing countries the tax structure of Ethiopia is mostly dominated by indirect taxation mainly by a sensitive foreign trade taxes especially import taxation. In the post-reform period the low tax-to-base elasticity of all individual taxes mainly agricultural income tax and business income tax causing the total tax to be income inelastic, but the relatively higher base-to-income elasticity of all tax components except employment and business income taxes indicates the potential of the economy to generate additional revenues and the impact of discretionary policies undertaken during the post-reform periods are more effective than the pre-reform period in raising more revenues.

In analyzing the overall tax system and the decomposition of elasticity and buoyancy of individual taxes, empirical evidences suggest that tax reform, though it improves the performance of most individual taxes productivity relative to the pre-reform period, has failed to raise the revenue productivity as required by the government. This is reflected in the elasticities less than unity for the total tax and major tax components. The implication of the low income elasticity indicates that the additional tax revenue was mainly obtained through DTMs that the government undertaken rather than the automatic increase in RGDP; this is indicating that discretionary changes were important in raising additional tax revenues which is mostly needed in the collection of business income tax, employment income tax, import taxes

and agricultural income taxes. The failure of the tax reform to improve the revenue productivity of the tax system might be the low tax-to-base elasticities of most individual taxes and the relatively low performance of base-to-income elasticities during the post-reform periods mainly caused by granting generous exemptions, sloppy tax administration, inefficiencies and tax evasions occasioned by the current division of fiscal autonomy and sharing of taxation powers between the federal and sub-national levels of government tax authorities, large economic operators and business activities that are not in the tax net. These low tax-to-base elasticities shows that the extent to which tax authorities can influence in raising revenues but much work is expected from tax policies and administration, whereas the relatively better base-to-income elasticities highlight the conduciveness of those taxes to changes in the structure of national economy as it grows, however, there is very small flexibility for the tax authorities to improve the base-to-income elasticity because the growth of the tax bases is a macroeconomic problem and beyond the power of the tax authorities.

6.2 POLICY IMPLICATIONS

Based on the results obtained from this study which in lights, some additional information about the productivity of the tax system as a whole and each individual tax components of the country, the following policy suggestions are forwarded.

Government should cautiously pursued fiscal policies to widen and strengthen the domestic tax revenue bases in order to avoid costly or distortionary financing of the ever-growing public expenditures and to mitigate the persistently increasing budget deficits. The analysis for revenue estimation of the overall tax system clearly shows the areas where the potential for revenue generation through base broadening is greatest and also special attentions must be

made to enhance taxpayer's compliance through rewarding compliances and by detecting and penalizing non-compliances by providing taxpayers extensive information about taxation through different mass Medias. However, the current range of taxpayer services in the tax authorities are limited and ineffective as well as there is fragmentation of some processes in the service delivery structure, and compliance will come about only if the tax laws are designed to reduce the incentives for tax evasions and the tax administration is strengthened to provide both better services and tax enforcements.

Though the tax reform experience seems somehow encouraging, there is still scope for better improvements. Empirical analysis of this study indicates that tax reform has raised relatively the productivity of the tax system with the exception of employment and agricultural income taxes. The low income elasticity of employment income tax both in the pre-and post-reform periods is because of the low value of base-to-income elasticities, this is mainly attributed to the real wage rate is not increasing in relation with the growth in real national income (RGDP), from this reason perhaps improving the growth of wages especially in the public sector could enhance the proxy base of this tax category by strengthening the efficiency of tax administration and by incorporating the non-public sector employment income in to the tax net. On the other hand, for business income tax the low tax-to-base elasticity and low base-to-income elasticity for the post-reform and pre-reform periods respectively have causing this tax to have an overall inelastic index in both periods. This is due to poor tax administration, provision of huge amount of exemptions, unsystematically controlled tax holidays, tax evasions and avoidances as well as the slow increase in business income relative to the growth in RGDP. Thus attempts should be made to increase the productivity of business income tax through assessing the taxable incomes and improving the enforcement and proper

implementation of the existing tax laws by improving its administrative deficiencies, reducing or eliminating high tax exemptions and tax holidays, because exemptions have particularly reduced the effective base on which the tax levied, by introducing a reasonably lower tax rates which provide tax incentives for all business activities, in addition with the requirement for improvements in administration capacity in such areas as automation, efficiency in auditing and risk profiling and general skill development in the tax authorities officials.

The productivity performance of agricultural income tax as evidenced by the estimated insignificant result is characterized by a very low value of income elasticity both in the pre-and post-reform periods as a result of low base-to-income and tax-to-base elasticities in the pre-reform periods and a very low tax-to-base elasticity in the post-reform period. The poorly productivity of this tax category in the pre-reform period may be due to low base-to-income elasticity which is attributed to the slow growth in the share of agricultural income it is the base on which the tax is imposed, as a result of subsistent farming, at a rate that is less than the growth in RGDP during the periods under consideration, while the low tax-to-base elasticity both in the pre-and post-reform periods probably stems from weak administration and a wider range of tax evasions and avoidance accompanied by a flat and fixed tax rate applied to this tax category. Thus improvements may need to increase the efficiency of this tax administration besides the adjustment in the flat rate applied to the land use fees based on the productivity, size, use and occupation of land, and improving the productivity of the agricultural sector may be the cornerstone of raising the income elasticity of agricultural income tax.

The estimated income elasticity of domestic indirect taxes during the pre-reform period is inelastic, 0.62, which is the combined effect of a very low tax-to-base elasticity with a higher unitary base-to-income elasticity. Whereas in the post-reform period, both the estimated buoyancy and income elasticity of this tax category have increased relative to the pre-reform period but it is still income inelastic, showing the relative positive effect of the tax reform that played in the revenue growth. The low performance of this tax in the pre-reform period is mainly attributed to a very low tax-to-base elasticity because of a higher degree of tax evasion and avoidance with the low rate of compliance as a result of administrative deficiency, while the higher unitary value of base-to-income elasticity reveals the capacity of the economy to generate more revenues. On the contrary, the tax reform undertaken during the post-reform period relatively improves the revenue productivity of the tax but it is still income inelastic.

In both periods of the reform, the elasticity of domestic indirect taxes have been undermined because of the low performance of tax-to-base elasticity which is attributable to weak tax administration, high tax evasion and avoidance, provision of generous exemptions that affect the base. Despite the fact that the relatively high base-to-income elasticity in both periods revealed that the growth in private consumption expenditures, the proxy base on which the tax is imposed, is proportional to the growth in disposable income that is the result of the increase in national income. Therefore, the policy implication forwarded here is that, as already the country is underway towards liberalizing and reducing the tax burden on income, the tax authorities must gradually move away from income based taxation which discriminates against saving and investment towards in favor of the broadly based consumption taxes, improving the efficiency of tax administration using automation and skilled manpower because this tax category is difficult to administer since it is mainly based on invoicing and recordkeeping

process otherwise it gives a loopholes as incentives for taxpayers to evade and avoid their tax payment obligations.

Many findings show that most developing countries including Ethiopia are largely dependent on international trade taxes; this is explained in the case of Ethiopia by the average share of import taxes to total tax revenues was about 19.2% in the 1980/81-1991/92 period and it reached by increasing to 44.9% in the post-reform period of 1992/93-2009/10 and its average tax revenue to GDP ratio was about 4.8% in this period. The estimated income elasticity for import taxes was very low and inelastic for the pre-reform period; this is due to the product of a very low base-to-income elasticity with a nearly unitary value of tax-to-base elasticity. Whereas the empirical results revealed that tax reform has played some role in the revenue productivity of import tax because the results show that the built-in-elasticity coefficient of this tax is better as compared to the pre-reform period even if it is inelastic. This low productivity or inelasticity might be due to granting generous exemptions, poor tax administration, and shortage of foreign exchange. Exemptions are seriously undermining revenue collections because it have particularly reduced the effective base of the tax, as an example, in the fiscal year of 2008/09, customs exemptions is 14 billion birr exceeded customs collections which is 12 billion birr, because of this although the nominal value of imports has been rising from birr 46.9 billion in 2006/07 to 85.1 billion birr in 2008/09, import tax as a percentage of GDP have been falling from 27.3% to 24.1% of GDP for the same period. Therefore, the tax authorities should focus on tax reforms towards further improving the tax administrations to improve this tax collection and struggle evasions and fraud, increasing formal imports of dutiable products to widen the tax base, minimizing or totally eliminating tax exemptions, by setting alternative

reasonable minimum rates, which often abolish the effective tax base. So exemptions deserve better management attention and dedicated enforcement efforts to prevent abuse.

Generally, as noted in this study and other similar discussions there are serious deficiencies in the tax administrations mechanism of Ethiopia. Tax administration reform has to be made based on further detailed studies by identifying the major causes that hinder the effectiveness of tax administration by drawing the experiences of other developing countries to design income elastic taxes apart from improving the level of administration. Here high revenue productivity of the tax system alone may not be enough to increase the growth of the economy, optimal allocation of the generated revenue have to be made, so government has to keep controlling on recurrent expenditures which accounts on average about 70% of the total expenditures and welcoming capital expenditures if the projects are productive. Finally, this paper could not properly address by incorporating the effect of public expenditures which may alter the results of this study. I therefore urge others for continual assessment of the revenue productivity of the tax reform in Ethiopia in addition with further studies to capture the effects of public expenditures and new developments that may influence the tax system.

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Annexes

Annex A: Total and individual taxes and their respective bases

<i>Total and individual tax revenues (in millions of birr)</i>							<i>Respective Proxy tax bases (in millions of birr)</i>					
<i>Year</i>	<i>TR</i>	<i>EIT</i>	<i>BIT</i>	<i>AIT</i>	<i>DIT</i>	<i>MT</i>	<i>RGDP</i>	<i>WB</i>	<i>SI</i>	<i>SA</i>	<i>PC</i>	<i>VM</i>
1980/81	1361.9	128.3	210.8	149.9	387.4	296.7		2361.8	1011.8	5384.8	7886.5	1675.5
1981/82	1436.4	136.7	326.2	100.1	396.2	284.7	7913	2540.4	1097.6	5189.7	8374.9	1833.2
1982/83	1558.1	153.5	344.7	103.9	443.2	306.8	9374	2550.2	1162.3	5895.3	9157.8	1855.9
1983/84	1731.4	171.4	384.5	96.7	495.5	321.2	10327	2754.3	1231.8	5155.9	8192.3	2125
1984/85	1677.5	186.1	416.5	83.3	52.7	293	9676	3303.2	1284.8	4079	10661.2	2082.8
1985/86	1876.1	203.4	467.9	90.9	553.8	293.3	8735	3654.5	1369.2	4732.6	10261	2326.3
1986/87	2092.2	226.5	582.1	95.8	623	409.2	9597	3796	1478.6	5620.4	11036.1	2338.4
1987/88	2317.4	244.3	662.1	104.4	720	437.8	10949	3820.9	1422.5	5465	10396.1	2398.4
1988/89	2371	270.3	683.9	106.7	784.5	360.2	10948	3295.2	1327.8	5521.3	11281.1	2292.3
1989/90	2159.2	280.9	553.4	88.8	759.4	418.1	10986	3164.6	1265.3	5814.4	12258.2	2060.3
1990/91	2053.4	267.7	474	88.2	757.8	443.3	11433	3379	1024.1	6114.9	15369.2	2398.2
1991/92	1618.2	269.1	386.7	7.1	534.5	410.8	10938	4113	951.3	5947.6	18059	2223.4
1992/93	2205.8	277	366.5	92.8	746	703.5	10535	4516	1221.9	6308.3	22358.5	4520.5
1993/94	3076.5	283.7	557.7	99.2	834.1	1250.6	11799	4726	1307	6078	23747.5	6090.5
1994/95	3878.6	307.7	851.4	126.5	945.5	1420.1	11999	4726	1412.5	6284	27346.7	7950
1995/96	4723.3	337.4	1222.3	159.7	1155.6	1694.4	12644	5301	1488.9	7206.2	31045.3	8721.5
1996/97	5358.9	375.3	1262.1	195.4	1291.5	2025.1	13931	5426.9	1530.6	7453.9	33743.8	10584.7
1997/98	5292.2	439.1	1050.7	199.4	1188.7	2051	14640	5892	1566.6	6620.6	35122.6	11341.2
1998/99	5522.9	515.5	1155	221.7	1200.9	2155.7	14429	6337	1700.9	6873.5	38631.6	14101.5
1999/00	6130.6	584.2	1361.5	229.3	1442.3	2180.3	15294	7025	1731.3	7024.7	40041.3	15969.3
2000/01	7393.1	704.6	1443.7	233	1381.1	3230.6	16112	7124.5	1821.4	7831.1	41946.5	16193.6
2001/02	7857.9	789.3	1534.6	232.6	1539.4	3278.1	17354	7174.4	1864	7651	52690	17709.5
2002/03	8194.3	868.5	1479	229.1	1687.2	3632.7	17567	7224.6	1943.4	6687	60645	20136.8
2003/04	10771	957.1	1481.2	272.4	1831.2	5258.5	16942	7275	2080.6	7953.8	65026	27367
2004/05	12397	1132	1714	290	2721	5746	18901	7276.1	2228.6	9154.8	87012	37776
2005/06	14158.8	1413.6	1741.4	205.7	3110.8	6587	83804	7842	5533.5	58369.1	109546	48092
2006/07	17353.1	1828.1	2305	228.3	3996.5	8188.7	93474	8427.6	7136	75802.2	139012	55088
2007/08	23802	2667.4	3040.4	285	5093	11693	104499	8716.2	9251.4	117003.9	210958	76564
2008/09	29007	3530	4327	485	7325	11814	116190	9246.5	11813.2	160491.1	286320	96285
2009/10	43318	4391	7391	659	10727	17685	127844	9835.4	13821.1	165489	330262	126319
							141188					

Source: Ministry of Finance and Economic Development (MoFED).

Where: - TR, EIT, BIT, AIT, DIT and MT represents total tax revenues, employment tax, business income tax, agricultural income tax, domestic indirect taxes and import taxes respectively.

- RGDP, WB, SI, SA, PC and VM represents real gross domestic product, wage bill, RGDP share of industry, RGDP share of agriculture, private consumption and value of import respectively.

Annex B: Total revenues, expenditures and deficit financings (in millions of birr)

Year	Total Revenue and Grants	Total Expenditures	Overall Balances	Financing	
				External	Domestic
1980/81	1947.4	2281.5	-334.1	203.6	130.5
1981/82	2138.3	2629.7	-491.5	474.9	16.5
1982/83	2433.8	3786.1	-1352.4	422.5	929.9
1983/84	2547.5	3169	-621.5	208.5	413
1984/85	2954.6	3823.4	-868.8	335.7	533.1
1985/86	3249.00	4062.2	-813.2	470.4	342.8
1986/87	3247.9	4003.1	-755.2	392.6	362.6
1987/88	4103	4820.9	-717.9	402	315.9
1988/89	4697.9	5725.8	-1027.9	601.6	426.3
1989/90	3544	5283	-1739	495.9	1243.1
1990/91	3169.6	4854.2	-1684.6	420.8	1263.8
1991/92	2750.9	4205.4	-1454.5	299.2	1155.3
1992/93	3657.3	5219.4	-1562.1	720.6	841.5
1993/94	4926.1	7093.8	-2167.7	1690.6	477.1
1994/95	7044.5	8372	-1327.5	1245.8	81.7
1995/96	8062.9	10194	-2131.2	1436.8	694.4
1996/97	9378.4	10014.9	-636.4	679.4	-43
1997/98	9566.6	10898.8	-1332.3	578.2	754
1998/99	11195.3	14677.2	-3482	1746.4	1735.6
1999/00	11300.6	17533.5	-6232.9	1133.8	5099.1
2000/01	13735.7	17120.7	-3788.9	2347.4	1441.5
2001/02	11754.3	19329.8	-8546.5	5926.4	2620.00
2002/03	13890.9	18801.7	-5565.5	3460.4	2105.5
2003/04	17713.1	21543.5	-4102.4	2841.79	1260.61
2004/05	20157	24579.3	-4646.3	3171	1475.55
2005/06	23262	29276	-6064	1512	4552

