Thesis

By

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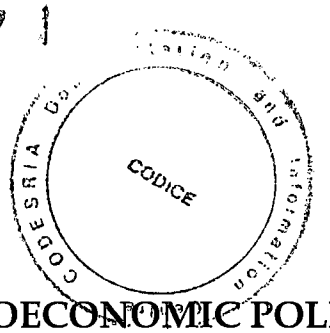
The impact of macroeconomic policies on the level of taxation in developing countries : the case of Tanzania

September 1996



THE IMPACT OF MACROECONOMIC POLICIES ON THE LEVEL OF TAXATION IN DEVELOPING COUNTRIES

The Case of Tanzania

Hamisi Hassan Mwinyimvua

A Thesis Submitted in Fulfilment of the Requirements for the Degree of Doctor of Philosophy (Economics) of the University of Dar es Salaam

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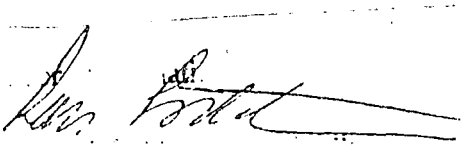
CERTIFICATION

The Undersigned Certify that they have read and hereby recommend for acceptance by the University of Dar es Salaam the thesis entitled: **The Impact of Macroeconomic Policies in Developing Countries: The Case of Tanzania,** in fulfilment of the Requirements for the degree of Doctor of Philosophy in Economics.

Dr. Nehemiah Osoro

(SUPERVISOR)

Date 04/10/96



Professor Lars Söderström

(SUPERVISOR)

Date _____

DECLARATION

I, **Hamisi Hassan Mwinyimvua**, do hereby declare that this thesis is my own original work and it has not been presented and will not be presented to any other University for similar or any other degree award.

Hamisi Hassan Mwinyimvua

Date 4th October 1996

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Hamisi Hassan Mwinyimvua

DEDICATION

To my wife Harriet and our sons Mkuki and Baraka

ABSTRACT

This study investigates the impact of macroeconomic policies on the level of taxation (tax revenue/GDP ratio) in developing countries, with Tanzania as a case study. The study's main hypothesis is that through various channels, macroeconomic policies, in particular, the exchange rate, import substitution, trade liberalisation, external debt, interest rate, public sector and wage policies, and inflation, impacted adversely on the level of tax revenue.

Using an Error Correction Model (ECM) and Ordinary Least Squares (OLS) estimation technique, the above hypothesis is tested empirically for the 1967-91 period using Tanzanian data. At the aggregate tax level, empirical results indicate the following: first, macroeconomic policies are an important determinant of real tax revenue and the level of taxation in Tanzania. Second, the official real exchange rate has a negative impact on the level of taxation. Third, import substitution policies affect negatively the level of taxation. Fourth, real external debt leads to an increase in the level of taxation. That is, increases in real external debt stock and hence debt service payments induce more tax revenue collection, mainly through tax rate increases. Fifth, the impact of real parastatal profits on the level of taxation is negative. Sixth, the impact of real wage bill on level of taxation is positive, implying that wage bill requirements exert pressure on tax collection by inducing tax rate increases. Seventh, inflation has a negative influence on real tax revenue and level of taxation, mainly because some taxes are collected with delay. Eighth, the impact of real interest rate on the level of taxation is negative. Finally, economic performance as measured by real output change negatively affects the level of taxation. The study also singles out the complexity of the tax structure, tax evasion, and weaknesses in tax administration as other factors behind unsatisfactory tax revenue performance.

Accordingly, based on the above findings, the study recommends for the need to 'rightly' conduct macroeconomic policies to minimise their imbalances and consequently their negative effects on output and tax revenue. It also suggests for the need to simplify the tax structure and strengthen tax administration by increasing enforcement and reducing tax revenue leakage and losses.

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CHAPTER 1

INTRODUCTION

1.1. Background

Despite being poor, having a large subsistence sector whose production accounted for about 40 percent of GDP, having limited social and economic infrastructure and high degree of external dependency, within its own logic, the Tanzanian economy was very stable at the time of independence in 1961 (Lipumba, 1983). Inflation was very low[1] and exports and imports accounted for as high as 31 and 30 percent of GDP, respectively, thus making the country's balance of payments stable and the country a net exporter of capital. The openness of the economy and easy flow of imports also ensured that domestic consumer goods supply gap from a not well established domestic manufacturing industry was filled, and consumer goods were readily available to all those who could afford them. Domestic manufacturing production contributed only 5 percent of GDP (BOT, 1983; Lipumba, 1983; Green *et al.*, 1980).

The 1961-66 period saw a continued improvement in the performance of the economy with, for example, real GDP growing at 4 percent, real per capita income at 1.3 percent, manufacturing at 12 percent, public administration at 2.6 percent and subsistence production at 1.4 percent. Available evidence shows that all these occurred amid pursuance by the government of strict fiscal policy in recognition of the dangers of deficit financing in fuelling inflation, and rigid money supply[2] that made the overall monetary and exchange rate system stable and kept inflation at very low levels despite the openness[3] of the economy. They also occurred as a result of the Government's efforts to promote rapid growth in exports[4] that ensured stable balance of payments position and, together with stable monetary system, contributed to macroeconomic stability. Owing to this macroeconomic stability, high output growth, and absence of economic hardships and corruption, tax revenue collection

rose steadily to match GDP growth, and level of taxation as represented by the ratio of tax revenue to GDP was very stable despite averaging only 10 percent (URT, Financial Statement and Revenue Estimates, vol.I, various; Osoro, 1994).

Thus, the Arusha Declaration of February 1967 came amid the background of economic success given the level of economic development at the time of independence as briefly shown above. The Declaration specified the direction and the path through which Tanzania would pass in accomplishing its economic and social development endeavours. It also brought with it nationalisation of all "commanding heights" of the economy and marked the beginning of the significant public sector involvement in directly productive activities and government consolidation of control over all the major aspects of the economy. The government thus was to play the role of both the entrepreneur, controller and initiator of structural change of the economy.

The government tried to attain its objectives, most of which were ambitious, at great strains and consequences mainly because of limited resources. Substantial increase in overall gross investment which was registered, for instance, was at the expense of an increase in saving-investment gap, rise in budget deficits and deterioration of the balance of payments. As percentage of GDP, for example, savings gap (real savings minus real investment) rose from 1.2 percent in 1967 to 14.4 percent in 1974. It declined and was in surplus of 1.2 percent and 2.7 percent during coffee boom years 1976 and 1977, but it rose again beginning in 1978 reaching 19.2 percent in 1985. It hit a maximum of 24.0 percent in 1988, before falling in 1990 to record a surplus of 9.6 percent of GDP, and a fairly lower gap of 6.1 percent of GDP in 1991 (Table 1.1).

Budget deficit position also worsened over time with the overall deficit as percentage of GDP rising from 4.4 percent in 1966/67 to its peak of 19.3 percent in 1978/79, before declining to 8.1 percent and 10.8 percent in 1985 and 1991, respectively (Table 1.1). By the same token, balance of payments position worsened

over time with both the trade and current account deficits widening substantially. Except for the 1967-69 period all other years recorded trade deficits. From US dollars 37.3 million in 1970, for example, trade deficit rose to US dollars 541 million and US dollars 781 million in 1985 and 1991, respectively (Appendix Table A2). Again, except for year 1969 which had a current account surplus, all other years during the 1967-91 period had current account deficits (Table 1.1). Current account deficits widened over time thus reflecting either or both increases in trade account deficit and a decrease in resource inflows.

All the above resource gaps have had different but serious macroeconomic and therefore economic consequences that affected most sectors of the economy. Such consequences include among others, high rates of inflation, rising debt burden, negative real interest rates and crowding-out of private investment, real wage and real per capita income decline, overvaluation of the currency, and fluctuation and ultimate decline in company profits.

For example, from only 2.6 percent in 1967, inflation rose and reached its peak of 36.1 percent in 1984, before declining slightly to 33.3 percent in 1985 and further down to 22.3 percent by 1991 (Table 1.1). Since the Government rarely altered nominal interest rates, inflation reduced real interest rates. From 0.8 percent and 4.4 percent in 1967, real interest rates for saving and lending fluctuated and declined to record their lowest levels of -28.6 percent and -26.6 percent, respectively, in 1984. They recovered afterwards to reach 3.7 percent and 8.7 percent in 1991 after passing a peak of 6.3 percent and 11.3 percent, respectively, in 1990 (Tables 1.1 and 4.4). Inflation also made the government fixed nominal exchange rate overvalued, thus depressing the real exchange rate especially beginning 1970. The real exchange rate recovered and rose following effective devaluation of the shilling during the 1986-91 Economic Recovery Program (ERP) period (Table 1.1)[5].

In addition, inflation also eroded nominal wages and salaries. It also contributed to the reduction of the real per capita income, which was declining either due to the fall in real GDP growth, increase in population, or a combination of both. Real wage rates as proxied by minimum real wage rates, for example, fluctuated since 1967 but fell continuously beginning 1974 up to 1991 (Table 4.3). For instance, as a percentage of the 1967 real wage rate the 1991 real wage rate was 23.8 percent, whereas as a percentage of the 1972 real wage rate the 1991 real wage rate was only 18.2 percent. A part of the answer to the government infrequent adjustment of the nominal wage rate and hence a fall in real wage rate, it seems, lies on the share of the national income that was allocated towards wage bill. Despite the number of employees increasing over time, the share of wage bill to national income declined substantially. As a percentage of GDP, for example, total wage bill decreased from 18.5 percent in 1967 to 8.1 percent and a mere 5.8 percent in 1985 and 1991, respectively (Table 1.1).

The rise in external debt was also substantial between 1967 and 1991. As percentage of GDP, external debt rose from 14.8 percent in 1967 to 259.9 percent in 1991, after passing a peak of 306.3 percent in 1989 (Table 1.1). This rise in debt burden was also accompanied by a rise in debt service payments as percentage of exports from 4.4 percent in 1967 to 33.2 percent in 1985, before declining slightly to 21.3 percent in 1991 following debt rescheduling and forgiveness that came with ERP (Table 1.1). The 1967-91 period was also marked by unstable parastatal enterprise profits record. The profits fluctuated much, although they had an upward trend and rose as a percentage of GDP from 5 percent in 1967 to 8.1 percent in 1978 before assuming a declining trend to hit their minimum record of 3.1 percent in 1986. They then rose to set the highest profit record of 12.7 percent of GDP in 1990 before falling to 8.7 percent of GDP in 1991, marking a 31.5 percent fall (Table 1.1).

Table 1.1: Tanzania's Important Macroeconomic Indicators, 1967-91

Year	Savings Gap as % of GDP	Budget Deficit* as % of GDP	Current Account Balance ($ m.)	Inflation (%)	Real Interest Rate (Saving) (%)	Real Exchange Rate (1976=100)	Wage Bill as % of GDP	External Debt as % of GDP	Debt Service as % of Exports	Parastatal Profits as % of GDP	Real GDP Growth (%)	Tax Revenue as % of GDP
1967	1.16	4.36	-2.4	2.62	0.88	104.54	18.54	14.8	n.a	4.99	4.13	11.04
1968	3.53	3.89	-6.1	2.81	0.69	106.02	18.32	16.9	n.a	3.66	5.21	11.52
1969	0.80	5.05	25.2	1.99	1.51	108.31	18.56	21.6	n.a	4.13	2.30	13.56
1970	6.07	6.83	-35.6	3.41	0.09	105.92	18.28	23.03	4.85	3.40	3.95	14.67
1971	12.45	8.77	-99.8	3.77	-0.27	105.23	17.95	26.36	4.68	4.62	3.52	15.64
1972	8.15	6.58	-65.7	8.64	-5.14	103.07	16.84	28.61	11.15	5.00	6.40	14.22
1973	9.24	4.90	-108	10.46	-6.46	102.81	18.76	30.63	6.78	5.45	2.70	16.40
1974	14.36	10.03	-285	19.51	-15.51	103.24	22.94	37.81	4.85	4.62	1.27	18.77
1975	7.78	13.19	-230	26.15	-22.15	101.03	19.00	45.95	6.41	5.92	5.13	19.84
1976	(1.19)	9.47	-34.5	6.91	-2.91	100.00	15.28	52.03	4.49	5.78	6.10	15.94
1977	(2.70)	7.07	-71.4	11.63	-7.63	88.78	13.58	55.23	5.59	6.40	0.40	18.81
1978	10.15	9.84	-473	12.21	-7.21	81.79	14.17	51.31	6.26	8.09	2.13	19.16
1979	8.81	19.29	-347	12.95	-7.95	89.26	15.55	55.14	9.04	5.88	2.91	18.54
1980	10.41	17.77	-522	30.15	-25.15	89.92	14.85	56.17	10.74	7.74	2.49	18.32
1981	2.90	13.72	-408	25.65	-19.65	84.04	13.66	51.05	9.55	6.28	-0.50	18.56
1982	9.09	14.16	-524	28.95	-21.45	80.76	14.05	54.36	11.28	6.40	0.59	17.57
1983	6.69	10.98	-305	27.06	-19.56	80.45	12.37	67.27	12.75	6.46	-2.38	17.48
1984	15.11	10.82	-359	36.14	-28.64	93.67	10.38	79.54	15.27	6.42	3.38	17.53
1985	19.62	8.11	-375	33.29	-23.29	78.97	8.14	57.25	33.24	6.43	2.63	15.94
1986	13.08	8.8	-322	32.42	-22.42	113.87	6.87	157.78	24.94	3.09	3.26	13.96
1987	7.87	12.02	-446	29.95	-8.45	161.77	5.26	214.92	29.39	5.14	5.09	14.62
1988	24.00	10.49	-376	31.19	-9.69	199.57	4.01	237.29	28.52	6.76	4.23	15.10
1989	8.44	10.87	-359	25.85	0.15	267.03	5.60	306.26	26.48	8.08	4.00	20.70
1990	(9.56)	9.15	-426	19.70	6.30	322.22	5.80	292.75	22.43	12.71	4.77	20.03
1991	6.08	10.78	-269	22.30	3.70	266.67	5.80	259.91	21.29	8.68	3.89	20.29

* Overall budget deficit

Source: Computed from Bureau of Statistics (various publications); BOT, Economic and Operations Report (various); World Bank, World Debt Tables (various); and Ministry of Finance, Financial Statement and Revenue Estimates, Vol.I, (various).

1.2. The Problem

Problems of widening savings gap, rising budget deficit and worsening balance of payments position are to a great extent a consequence of poor macroeconomic management and policies: policies related to savings and investment decisions, fiscal and monetary conduct, trade, exchange and balance of payments management, wage and incomes policies, and pricing policies, among others. As already shown these have consequently manifested themselves in the form of high rates of inflation, high external debt, negative real interest rates and crowding out of private investment, decline in real wages and real per capita income, overvaluation of the domestic currency, fall in company profits and overall economic decline, among others. That a budget deficit leads to an increase in money supply and hence inflation when it is financed by printing money, is one of the examples of the linkage and therefore manifestation of the budget deficit in the form of an inflation problem.

It would be interesting to investigate the consequences of each of these policy problems on different aspects of macroeconomic variables. However, resources and time would not allow such an exercise to be undertaken in this study. It is of interest to investigate the impact of the various macroeconomic policies on the level of taxation in Tanzania. As Mtatifikolo (1986) and World Bank (1990) have argued, the fiscal deficit in Tanzania has been a result of *less dynamism* in tax revenue compared to government expenditures, especially since the 1970s. From 11 percent of GDP in 1967, for example, total tax revenue-GDP ratio rose to 19.8 percent in 1975, declined to record a low tax level of 14 percent in 1986, before rising to a record high of 20.7 percent in 1989 and then declining slightly to 20.3 percent level in 1991 (Table 1.1).

Since tax revenue became less dynamic and prone to fluctuations during the period when almost all macroeconomic policy indicators were pointing in the wrong direction, it is probable that these policies affected tax performance. Because macroeconomic policy variables are capable of leading to contraction in different tax revenue bases, either directly or indirectly through adversely affecting economic activities, one may contend that this is what might have happened in Tanzania.

Policies of interest, as summarised by Tanzi (1989), include: the exchange rate policy, the degree of import restrictions, the level of public debt, the level of interest rates, and the rate of inflation. Others are public enterprise sector policies and wage policies. Such policies, argues Tanzi, form a set of important factors that determine the level of taxation at a given moment in time and how that level changes over time, since in most cases substantial changes in tax levels can be traced directly or indirectly to these macroeconomic policies. This is a relationship that so far has not received the attention it deserves in the literature, and particularly in Tanzania.

Until recently, most of the studies that have examined the determinants of the level of taxation in developing countries have concentrated mainly on factors that can be grouped under three categories, i.e., statistical determinants, institutional or social determinants, and tax policy determinants[6]. The ability of these factors to explain relatively short period dramatic changes in the level of taxation in many developing countries has, however, been questioned. At best what they can explain is the long-run or potential level of taxation. Empirically they have proved unable to explain more than a small fraction of the variation of tax revenue levels in cross-section studies (Tanzi 1989). Short period dramatic changes in the tax level, argues Tanzi, "are too large and too sudden to be attributed fully to a deterioration in tax administration or to changes in the traditional determinants of tax levels. They can be attributed, to a considerable extent, to the connection between tax levels and macroeconomic policies, in particular, exchange rate, import substitution, trade liberalisation, inflation, public debt and financial policies. Thus, more attention should be paid to these relationships, and tax reforms should aim to neutralise some of their effects" (p. 633). So far, the focus of the studies undertaken in Tanzania has been on the elasticity and buoyancy of the tax system [see Osoro (1985; 1990; 1992); Mtatifikolo (1990)]. No study has been undertaken to investigate the impact of macroeconomic policies on the level of taxation. The motivation for undertaking this study, thus, is to fill this gap.

1.3. Objectives and Significance of the Study

1.3.1. Objectives

This study explores the relationship between various macroeconomic policies and the level of taxation with the view to accounting for less dynamism in tax revenue (compared to government expenditure) in Tanzania. In the pursuit of this objective, the study reviews the country's structure and level of taxation and it investigates factors that have been determining its level of taxation. Factors that are put to test are basically those that can be grouped under macroeconomic policy variables, and the period covered is 1967-91.

1.3.2. Significance

This study is significant and timely because it provides insights on what has befell the Tanzanian tax system. Poor tax revenue collection is currently an issue of great concern in Tanzania among academics, politicians, policymakers and the general public. Thus, the Government's current efforts to restructure the tax system so as to improve tax revenue collection, bears witness to that.

Empirical evidence and policy implications arising out of this study, do provide a reference upon which different parties that are involved in tax restructuring, macroeconomic and tax policy formulation and implementation can benefit in the course of fulfilling their endeavours.

Moreover, the findings of this study do add to the existing literature on the determinants of the level of taxation, especially in developing countries.

1.4. Hypotheses and Methodology

1.4.1. Hypotheses to be tested

The main hypothesis that this study tests is that the performance of macroeconomic policies has had an adverse impact on the level of taxation in Tanzania during the period under study. Reference in this regard is made to the following macroeconomic policies: the exchange rate policy, monetary and fiscal

policies (through inflation), financial policy (through interest rate), import substitution policy, wage policy, public enterprises sector policies, and trade and balance of payments management policies (through external debt). Specifically, the following hypotheses are tested:

(i) The level of official real exchange rate has had a tax revenue reduction effect on in particular, trade taxes and hence total tax revenue. Appreciation (fall in official real exchange rate) reduced tax revenue, while depreciation increased it.

(ii) Inflation has had a negative impact on all tax categories, its effect being more adverse on taxes that are collected with lag, such as income taxes, custom duties, and taxes that have frequently been exempted and paid in instalments.

(iii) The level of real interest rate has had adverse impact on the level of savings (by discouraging taxable savings mobilisation, encouraging capital flight, currency substitution, government over-borrowing and crowding out of private loans), investment, overall economic activity and, therefore, tax revenue collection especially from income taxes, and possibly sales/output taxes.

(iv) By taking out of the country part of taxable base (through debt service payments, capital flight or reduction in imports), accumulating real foreign debt and hence debt service payments, affected negatively tax revenue collection especially from income taxes and trade related taxes.

(v) Restrained imports under import substitution policy hampered domestic production, and hence reduced the potential tax base and tax revenue collection from such taxes as import duty, sales taxes and excise duties, and possibly income taxes. Trade liberalisation had the opposite impact.

(vi) Deteriorating performance of public enterprises affected adversely profits and hence tax (company tax, and also PAYE) revenue collection from them. Owing to high inflation, the real level of taxes collected from these profits was even further reduced, affecting also overall tax revenue collection.

(vii) Restrained government wage policy affected adversely the amount of wage related taxes (PAYE and Payroll tax), income taxes and overall tax revenue.

1.4.2. Methodology

Quantitative as well as qualitative techniques are used to accomplish the objectives of the study. Qualitatively the study employs tables, graphs, statistical (percentages, ratios, etc.) and other documentary evidences, while quantitatively, an analysis employing econometric techniques of estimation is undertaken. An Error Correction Model (ECM) at aggregate and disaggregate level is estimated using OLS technique applied to time series data on Tanzania. Data sources include various departments of the Ministry of Finance, Planning Commission, Bureau of Statistics, the Central Bank, Commercial banks, some parastatals, and different local and international bulletins and journals. The period covered by the study is from 1967 i.e., after the Arusha Declaration to 1991. The choice of 1967 as a base year of the analysis has been influenced by the fact that it is the time when fiscal strains began to appear, i.e., when recurrent expenditures started growing more rapidly than domestic revenues, and likewise, when large scale infrastructure investments greatly expanded the Development Budget and social programmes (World Bank 1990).

1.5. Scope

The analysis of this study is partial in nature. It assesses the probable impact of various macroeconomic policy variables on tax revenue, separately rather than jointly. In reality, though, these policy variables may influence each other. This partial nature of the analysis might, as a result, be seen as a limitation to this study. However, this ought not be the case since by using the error correction technique and disaggregating the model as is done in this study, all transmission channels are conceptually and empirically identified to allow for an equally good conclusion to be arrived at. After all, in a heavily government regulated economy like that of Tanzania

at the period, joint effect of the variables may not be as strong as the theory postulates.

In a strict sense, the study concentrates only on the macroeconomic policy variables as determinants of the level of taxation. This is not to say that other `traditional' variables are unimportant, rather, the study takes a new direction away from what has been the tradition. Owing to a large number of explanatory variables and a limited sample period, other important variables such as tax rate and foreign aid are not considered. Instead, they are suggested for inclusion in a further research.

Lastly, as is usual in econometric analysis, econometric problems are always expected. Using alternative solutions to them, this study has limited their limitations.

1.6. Format

This study has seven chapters. Apart from chapter 1, chapter 2 reviews the literature on "traditional" determinants of the level of taxation. Empirical literature relevant to developing countries and Tanzania in particular, are reviewed here. As may be noticed, these determinants fall into either of the three broad categories namely, statistical, institutional and tax policy determinants. Chapter 3 discusses theoretical framework. It dwells on theoretical literature relevant to developing countries like Tanzania, explaining how various macroeconomic policies impact on the level of taxation. It is thus the core chapter on which the hypotheses are formulated and model built. Chapter 4 explores Tanzania's macroeconomic policy experiences during the period 1967-91; while chapter 5 revisits the country's tax system changes and level of taxation experiences during the same period. Using Tanzanian data, empirical estimations of the theorised relationship between various macroeconomic variables and level of taxation in developing countries are carried out in chapter 6, while in chapter 7 the study is concluded by remarks on the findings, their policy implications, limitations of the study and possible future research areas.

NOTES TO CHAPTER 1

1. Inflation as measured by the Dar Es Salaam based Wage Earners' Index - the only consistent price change data available at the time, for example, registered only a 2 percent cumulative increase over 1961-65 (Green *et al*, 1980).

2. Money supply and exchange of currency (in East Africa) was managed by the East African Currency Board. The Board gave the governments no option for money creation, thus curtailing oversupply of money (BOT, undated; Green *et al*, 1980).

3. Openness was, however, restricted in 1965 following the introduction of foreign exchange controls between East Africa on one hand, and the rest of the world on the other (Green *et al*, 1980).

4. Mainly primary product exports, dominated by sisal, cotton, and coffee, which together contributed over 57 percent of total exports. The rapid growth of exports (even when terms of trade were deteriorating) resulted from the growth in the volume of agricultural exports as agricultural sector grew rapidly due to expansion of small holder production, availability of consumer goods as incentives, a functioning private market system that collected agricultural produce from the farmers, and producer prices that were enough to provide higher return to labour relative to other activities in rural areas (Lipumba, 1983).

5. See also Ndulu (1993) who computed the effectiveness of devaluation (a ratio of real rate of depreciation to nominal effective rate of depreciation) in some selected African countries, Tanzania inclusive. In the Tanzanian context, the effectiveness of devaluation was found to be 85% for the period 1985-88 (p.3).

6. Some of these studies are by Lotz & Morss (1967); Bahl (1971), Chelliah *et al* (1975); Tait *et al* (1979). An exposition of the determinants of the level of taxation is done in chapter 2 of this study. The chapter reviews all these studies plus others.

CHAPTER 2

REVIEW OF LITERATURE

2.1. Introduction

"Taxes are compulsory contributions for which no explicit, reciprocal benefit is provided to the tax payer. They are intended to force the household or enterprise to surrender purchasing power (command over resources) to the government for its direct utilisation or transfer to others" (Goode, 1984; p.4).

Apart from restraining total spending by households and enterprises, taxes influence the allocation of economic resources, recognise social costs that are not reflected in market prices, and affect the distribution of income and wealth since they reduce the disposable income and wealth of those who bear them. All governments in the world view the use of taxes or taxation as necessary, mainly because it would be neither feasible nor desirable to finance government activities solely by charges on services. Whereas in the case of public goods charges are infeasible, for mixed public-private goods they are in most cases undesirable because pricing could not perform all the allocative and distributive functions of taxation.

In designing the tax system, three major principles, namely; equity, efficiency and administrative feasibility are usually considered. These are important in ensuring fairness, the attainment of prime economic objectives of growth, stability, equitable distribution, independence, and revenue collection without imposing avoidable real costs on tax payers or the government itself. The intention of this study and hence this chapter is not to dwell on these principles. Rather, the chapter sets to review some important studies which have attempted at investigating the systematic relationship between measurable economic characteristics, including the level of development, on the one hand, and tax ratio on the other, in an attempt to determine

what influences the level of taxation differences within and among countries. It also reviews general studies on taxation in Tanzania.

Measurable economic characteristics being referred above include all factors that can be grouped under statistical, institutional or social, and tax policy determinants of the level of taxation, details of which are made clear in the chapter. The name "traditional" determinants is adopted just to distinguish them from macroeconomic determinants, that are reviewed in the next chapter. As it will be observed, tax level determinants are variables that affect the tax level directly or through convenient bases such as wages and profits to which tax rates can be applied. Although it might appear irrelevant, the review of literature on traditional determinants of level of taxation is thought to be important for two major reasons. First, it would give a feeling of what variables were until recently considered to be important in explaining the level of taxation within and among countries, and second, it would show the weaknesses of these variables in performing the above task, thus giving a justification for departure (in chapter 3) from what has been the tradition.

2.2. Literature on Level of Taxation in Developing Countries

Among the studies that have investigated the relationship between measurable economic characteristics and tax ratio in developing countries, many have utilised cross-section data while a few have used time-series data. Some had their samples consisting of developed and developing countries together, while others have had samples consisting of developing countries alone.

Williamson (1961) is perhaps the earliest study in this area undertaken with systematic statistical analysis. Williamson used per capita income as an indicator of stage of development and fitted an exponential function to data for a sample of 33 developed and developing countries. Results of his analysis indicate the presence of a significant positive relationship between the tax revenue ratio and per capita income.

Williamson also noted international differences in the tax ratio to be less pronounced than international differences in per capita income.

In a study of 20 less developed countries, Plasschaert (1962) examined the relationship between the per capita income (a proxy measure for stage of development) and the ratio of imports to GNP on one hand, and the ratio of government revenue to GNP, on the other. He found the import ratio to be significant both when used alone and when used in conjunction with per capita income, but, per capita income was not a significant determinant of the revenue ratio.

In a related study of 40 developing and 20 developed countries, Hinrichs (1966) found that for all 60 countries taken together the relationship between tax ratio and per capita income was significant, while for developing countries taken alone it was not a significant determinant. He also found that "for less developed countries with per capita income below $ 300, 'openness' (as measured by the import ratio), not per capita income, is the key determinant of the government revenue shares of gross national product" (p.19).

Lotz and Morss (1967) questioned whether there was a scope to increase the level of taxation in a country as part of a stabilisation program, for mobilisation of resources to finance the development program, or for other purposes. They viewed the extent to which the tax effort of the country compares with that of other countries in similar circumstances as a relevant consideration in answering this question. Based on two factors that affect a country's taxable capacity, Lotz & Morss used a regression analysis to examine how in practice these factors relate to tax ratios in a sample of 72 countries. The factors were per capita GNP as a measure of economic development, and the degree of openness or the size of the foreign sector measured as the sum of imports and exports as a percentage of GNP. The purpose of the statistical exercise was to establish an empirical basis for the weights to assign to these factors and thus to provide norms for the appraisal of tax efforts.

Results of the regression analysis showed the two variables, per capita GNP and the degree of openness to significantly and positively influence the size of the tax ratio in the overall sample. For high income countries alone, however, there was an insignificant relationship between per capita GNP and tax ratio, and between the degree of openness and tax ratio. To the contrary, for low-income countries both per capita GNP and the degree of openness were significantly related to the tax ratio, although the two factors did not account for a large part of the variance among ratios as they did in the overall sample. Lotz and Morss concluded by observing that limited capacity often has limited tax revenues in low-income countries.

Besides per capita income and openness, Weiss (1969) used a number of dummy variables reflecting social, political, and cultural factors in his study of 66 developing countries. Weiss found four different social economic variables, namely, urbanisation, literacy rate, percentage of employment in agriculture, and an index of mass communication to be able to substitute per capita income without substantially lowering the explained variance. Also, the qualitative characteristics of general cultural homogeneity and a relatively representative political system had a significant positive contribution on the revenue share. So too was a geographical difference.

Shin (1969) attempted to broaden the study of tax effort by adding variables, but as Bahl (1971) puts it, "his analysis suffers in some places from the absence of clearly stated a priori reasoning" (p.578). Using Lotz and Morss tax data on only 47 countries, 16 high-income and 31 low-income, Shin added three independent variables to income and openness. These variables are the ratio of agricultural income to total income, the rate of growth of population, and the rate of growth of prices.

Shin perceived per capita income as a variable that would help to distinguish between tax ratios in high-income versus low-income countries but would not do so within either group. For less developed countries he found only the rate of price increase and the rate of population growth to be significant. However, again as Bahl

(1971) puts it, "the significance of the rate of population growth as well as the rate of price increase is difficult to conceptualise but may be due to multicollinearity in the variables. In fact, when Shin eliminated openness from his equation, the patterns of significance changed sufficiently to raise such a suspicion. In any case, it is difficult to justify these on *a priori* basis as taxable capacity determinants" (p.579).

In another study related to that of 1967, Lotz and Morss (1970) introduced additional explanatory variables to the analysis. The variables are the degree of monetisation (per capita money supply with the public in the U.S. dollars), export composition and government centralisation. The degree of monetisation added significantly to the degree of variation of the dependent variable (up to 44%) but lowered considerably the significance of per capita income. The introduction of export composition and government centralisation variables didn't lead to any conclusive results, nor increase substantially the explained variance above that obtained by using income, openness, and monetisation.

In 1970 the secretariat of the United Nations Conference on Trade and Development (UNCTAD) also attempted at an extension of the Lotz-Morss (1967) analysis. The study found the share of agriculture in GDP and openness index (the ratio of sum of exports and imports to GNP) to be significant. However, they explained only 32 per cent of the variance in the tax ratio. It also observed that the expected tax ratios were highest for countries with open economies and in which the share of agricultural income is relatively low, than in countries with closed economies and relatively high share of the agricultural income.

The nature and objectives of Chelliah (1971) are somewhat similar to those of earlier empirical studies except that the countries provide a fair geographical representation and inter-regional comparisons. Also, the study provides not only what Chelliah calls "scientific" explanations of tax ratio differences, but also a qualitative appraisal of trends that may be useful for the formulation of policy by

integrating statistical analysis, interpretative review, and qualitative appraisal of major trends.

The study examined the trends of taxation in developing countries using data for a representative group of countries for the beginning (1953-55) and end (1966-68) of a 15-year period. The analysis of tax changes over the 15-year period covered 27-30 developing countries, whereas cross-section analysis of the data for 1966-68 covered 50 countries in most of the computations. It used an additional group of 16 developed countries to make a few comparisons. The study defined level of taxation as the ratio of all taxes to GNP at market prices, and it discussed taxation trends by focusing on tax ratios and tax revenue composition.

Chelliah observed the following: first, the share of direct taxes does not rise with per capita income until a country reaches a certain minimum level of income. After reaching this level of income, countries are able and likely to raise the share of direct taxes with increases in per capita income. Second, the variation of the overall tax ratios as between geographical groups arose more as a result of differences in the shares of income taxes, or of total direct taxes, than from those in indirect taxes. Third, conceptually the tax ratios are determined by major factors that exert their influence through their effect on "capacity" factors. These factors are the degree of "openness" of the economy (represented by the non-mineral export ratio) and economic structure or the composition of income (represented by the mining share). Level of development as represented by per capita non-export income was not statistically significant. The total degree of explained variation in the tax ratio, however, was only 39 per cent.

All these are major factors that Chelliah presumed do affect the tax ratio through the side of the ability to pay and collect taxes, rather than through the willingness to tax side whose factors he assumed largely to be independent of the capacity factors whose effect he estimated. Comparison of less developed countries

as a group with a sample of 16 developed countries confirmed the expectation that the overall tax ratio should increase with development. Finally, based on the results of tax effort analysis, Chelliah supported the conclusion that governments in developing countries can raise the ratio of taxes to total income when they determine to do so.

Bahl (1971) tried to overcome the conceptual and methodological problems that have stemmed from the basic underlying assumptions to the analysis and which have also limited the analysis of inter country tax effort comparisons. These problems are the shortcomings in the formulation of the *a priori* models, and the interpretation of the statistical results that occasionally has been clouded by specification errors, a least-squares bias, and substantial multicollinearity in the variables. In estimating fiscal capacity, Bahl used a linear model. His assumptions were that the government's share of total income at an internationally determined average level of effort averages some constant percentage regardless of the structure of the economy, and that the partial effects of the independent variables are additive.

His results showed the size of the foreign trade sector as measured by the export ratio, the stage of development as measured by the agricultural share of income and the sectoral composition of income as measured by the mining share of income to be the significant determinants of inter country differences in taxable capacity. These findings validated the conclusion that taxable capacity in developing countries responds positively to higher mining shares of income and hence implicitly to higher export ratios (since Bahl found the export ratios and mining shares to be highly collinear) and negatively to higher agricultural share. However, these variables explained only 41 per cent of the taxable capacity. All the same, Bahl's results did not differ markedly from the conventional wisdom of tax ratio and tax effort analysis that "tax ratio in developing countries is a function of the stage of development and openness of the economy". On tax effort rankings, Bahl observed

that while his results do not differ significantly from the results of the other tax effort studies, they do however reflect substantial adjustments as well as the existence of a significant regional bias in ranking.

Chelliah *et al* (1975) used more recent data (1969-71) based on a sample of 47 countries to update Chelliah(1971) major results of the cross-section analysis. They observed the following: first, the tax level changes indicated a continued increase in tax ratios for developing countries after 1968 although on average they were still considerably less than those in developed countries. Second, the estimated coefficients did not differ markedly from those obtained in the previous study nor were there any significant changes in the overall goodness of fit of the equations. Third, the mining share emerged again as an important determinant of the tax ratio in developing countries in their existing stage of development thus confirming the main plank in the earlier hypothesis. Fourth, the coefficients were relatively stable indicating that the results obtained earlier were not fortuitous. Fifth, based on tax effort indices it appeared that countries that achieved strong performance in the earlier period continued to do so, and that those which had low tax effort indices continued to score low. The relative position of only a few countries changed dramatically. Lastly, the composition of taxes during the 1969-1971 and 1966-68 periods was similar.

Despite noting that the international comparison of taxation is a controversial enterprise, Tait *et al.* (1979) carried out an analysis of tax comparisons based on the tax effort indices as summary measures. Unlike simple tax ratios, they believed that tax effort indices retain utilitarian value since they successfully encapsulate large amounts of information. Hence, using an identical sample of 47 developing economies but data for 1972-76 period, Tait *et al.* updated studies by Chelliah *et al* (1975) and Chelliah (1971). As in those studies, Tait *et al.* applied regression analysis (OLS technique) to cross-section data to obtain the "predicted" tax ratios

from the taxable capacity equations. They then used the predicted tax ratios to calculate indices of International Tax Comparison (ITC) or modified tax effort indices, based on conventional maximising behaviour rather than on an assumption that different tax ratios are a result of differences in effort.

Tait *et al.* also estimated the Lotz-Morss equations on the basis that per capita GNP and the ratio of foreign trade to national income represent taxable capacity. Results indicated the coefficient estimates to have not changed radically between sample periods. However, the adjusted coefficient of determination more than doubled in the period; $\overline{R}^2$ was 0.267 in 1972-76 compared to $\overline{R}^2$ of 0.110 during the period 1969-71. Also, Tait *et al* found Chelliah *et al's* equations that relate taxable capacity to per capita non-export income, the share of mining and the share of non-mineral exports in GDP, to have had the mining share and the non-mineral export share as significant explanatory variables. The equations attributed about 40 per cent of the variation in tax ratios to the above capacity proxies, while the more recent sample of 63 countries improved the results ($\overline{R}^2 = 0.581$).

As for equations that included non-export income per capita and export's share in income, and those which included shares in GNP of mining, agriculture, and exports, Tait *et al* observed the external sector to have mattered more in the 1972-76 period than in 1969-71 while sectoral composition of GDP equation had the coefficient on agriculture that was significantly different from zero. Other observations include; a continued increase in the tax ratios after 1971, low average level of taxation in developing countries compared to developed countries, and, except for very few countries, high ITC indices for many countries with tax ratios above average compared to those with below-average tax ratios.

Tait *et al also* ran separate regressions for sub-sample countries according to such features as population, national income, and per capita GNP. They observed a better performance from equations for countries with lower national income and per

capita incomes while for countries with per capita GNP in the lowest range, mining and foreign trade tended to matter more.

On how taxable capacity relates to its explanatory variables, Tait *et al* did not see any striking difference between countries with high and low population densities. With respect to regional variation influenced taxable capacity, however, they observed such a difference. In this regard they noted how agriculture consistently influenced taxable capacity in Africa while external trade did so in Asia and Latin America. In conclusion Tait *et al* stressed on the expressions - including non-export income, the share of mining in GDP, and the share of non mineral exports in GDP, that earlier studies used. According to Tait *et al* these variables were still acceptable, unlike variables such as the size of the country, per capita income, population and geographical area that could not add significantly to an understanding of the relationship.

Thac & Lim (1984) examined the actual tax performance in Papua New Guinea (PNG) during the period 1965-77. Although their study is not among tax ratio studies per se, it is important to review it since it tests the power of some traditional determinants in explaining taxable capacity and actual tax revenue collection. Their study examined the performance of actual tax using estimates of the country's taxable capacity and tax efforts on one hand, and the estimates of tax elasticity on the other.

According to Thac & Lim the taxable capacity of a country depends on two factors - the surplus of production over subsistence consumption and the ability of the government to extract the taxable surplus. As such, they chose the level of economic development (per capita income) as a proxy for the potential taxable surplus and a number of often alternative variables for the influence of "tax handles" in determining the actual tax collected. These are the relative importance of exports and/or imports in the GDP and the shares of the agricultural and the mining sectors in the GDP. Preliminary estimations ruled out the per capita income.

Using data for 52 LDCs for the period 1967-73, Thac & Lim estimated the PNG's tax capacity. One equation had the proportion of agriculture and imports in GDP as explanatory variables, respectively, whereas the other had the proportion of mining and imports in GDP, respectively, as explanatory variables. The two equations had an estimated $\overline{R}^2$s of 0.39 and 0.71, respectively, and all variables were significant.

In conclusion, Thac & Lim remarked thus: first, compared to the sample of 52 LDCs, PNG's tax ratio was considerably lower than the average (9.1% as against 15.5%). Second, PNG's tax effort was 88%, when estimated by using the relative importance of agriculture and imports as determinants of taxable capacity. Third, on using mining and imports as determinants, the tax effort drops to 67%. Fourth, the results suggest that the PNG's tax performance over the period 1965-73 compared unfavourably with the average performance of the 52 LDCs in the sample. Lastly, the mining sector was evidently under-taxed since the tax effort dropped from 88% to 67% on replacing agriculture as a taxable capacity explanatory variable with mining.

Tanzi (1987) discusses the existing tax systems of developing countries and uses data on total tax revenue for eighty-six nations. The discussion centres on the relationship between total tax revenue and GDP, the empirical importance of various tax sources at different levels of per capita income, and the factors that may lead a country to prefer one type of tax rather than another. Tanzi also explores qualitative aspects of the developing countries' tax systems by putting a major consideration on some aspects of the tax systems that are necessary if we are to consider taxes as instruments of economic policy. For the sake of this chapter, however, review of Tanzi's study will focus more on the empirical part.

Tanzi's sample of eighty-six countries included most developing countries with per capita income ranging form about $ 100 to about $ 6000 (in 1981 dollar prices), the median of income being $ 850. From results based on correlation of the

countries' tax ratios and per capita GNP, he observed that there was a relationship between per capita income and the tax ratio. Such a relationship conforms to an expectation, supported by various authors, that as countries develop tax bases grow more than proportionately to the growth of income. In other words, the capacity to tax grows with the growth in income (see, e.g. Musgrave, 1969). Besides this supply-side argument, Tanzi observes, there is also a consideration that as income grows, countries generally become more urbanised. Urbanisation per se causes a greater demand for public services while at the same time facilitating tax collection. Thus urbanisation increases the need for tax revenue and the capacity to tax.

Results of the correlation of the tax ratios against the log GDP per capita supported the above expectation both for 86 countries combined, for 43 countries with per capita incomes less than $ 850, and for 43 countries with per capita incomes of $ 850 or more, respectively. Despite $\bar{R}^2$s being low; 0.264, 0.191, and 0.07, respectively, the coefficients of the independent variables were statistically significant at 1%, 1%, and 5%, respectively.

From these results Tanzi concluded that it is true that some theoretical arguments lend support to casual relationship between per capita income and tax level. However, it would be naive to accept a purely deterministic or mechanical relationship, as many historical, political, or social factors also play a role. These factors include, for example, the monetisation and openness of the economy, the share of mining in GDP, an export ratio that excludes mineral exports, the literacy rate, the urbanisation rate, and the desired level of public expenditure [see, e.g., Chelliah *et al.*, 1975; Tait *et al.* 1979; Tanzi, 1981].

Extending the above analysis to investigating the correlation between per capita income and different tax components, Tanzi observed positive correlation between per capita income and individual income taxes, corporate income taxes, social security contributions, wealth taxes and property taxes. He also observed

negative correlation between per capita income and import duties and export taxes, while its correlation with domestic taxes on goods and services was insignificant. Tanzi also observed one striking feature, that is, the presence of a trade-off between import duties and domestic taxes on goods and services. In other words, import duties substituted for domestic taxes on goods and services and vice-versa. In extended formal test of this feature, Tanzi confirmed that import duties were negatively influenced by the level of per capita income and the country's reliance on domestic taxes on goods and services. He also observed them to be positively influenced by the openness of the economy.

In conclusion Tanzi emphasised the importance of his study in that it gives the reader a feel for the quantitative aspects of the developing countries' tax systems. While tax systems differ in more than the statistical aspects described by his study, the fact is that each tax system has its own characteristics and peculiarities that one may not capture by purely statistical summaries. To give a more comprehensive picture of the tax systems in developing countries, one would need the *statutory* description besides statistical and real or effective description. Moreover, in an analysis of the tax systems, one could take into account tax evasion, accounting standards, lags, and other factors if they were unchanging. However, to complicate the matters even more, they keep changing besides being influenced by factors such as the rate of inflation, the personality of tax administrators, the political mood, the means available to the tax administrators, the rigidity with which the courts are applying penalties to tax evaders, the degree of corruptibility of the tax inspectors, and the variability in the exchange rate. Thus, before one makes theoretical prescriptions of tax reforms, it is necessary to have an intimate knowledge of a tax system.

2.3. Literature on Taxation in Tanzania

Apart from the general studies undertaken in developing countries in which Tanzania also featured, various scholars have undertaken specific tax studies to explore different aspects of the country's tax system. Review of them follows hereunder.

Semboja (1984) examined the role of the Tanzanian tax structure in achieving the general objectives of imparting price stability. In doing so, he tried to judge the success of the tax policy not only in terms of revenue generation, but also by the extent to which it controlled inflationary trends in the economy. Semboja also looked into the relatively rapid growth in the role of public sector, which the government has largely financed by the taxes. He wanted to find whether the sector generated returns commensurate with the cost and displeasure involved in paying progressive taxes or requirements of productivity.

Compared to some other Third World economies such as Brazil, Peru and Chile, Semboja considered Tanzania's rate of inflation to be moderate although within Tanzania itself, price rises have been an issue of concern since 1972. Price rises have affected negatively incomes of various groups, the most affected being wage earners. The only exception is property owners whom evidence shows them to have gained at the expense of the non-property owners, particularly starting 1974.

To assess the probable effect of taxation on price inflation in Tanzania, Semboja examined the relevant features of the Tanzania's tax structure. He did so in order to indicate the effects of taxation and the success with which the government may have used taxes as anti-inflationary devices. He considered major taxes, both direct and indirect in his examination. These include income tax, export duties, import duties, and sales and excise taxes. Whereas an increase in direct taxes leads to cost effects which in turn cause inflation, indirect taxes do no only lead to cost effects but they also raise the after-tax consumer price, and *ceteris paribus,* affect his/her

purchasing power. The combined effects of direct and indirect taxes thus lead to among others the disincentive to work and an impairing of efficiency, unless the compensatory structure of expenditures generates enough benefits to outweigh the cost of tax collection.

On whether the government has successfully used taxes as anti-inflationary devices in Tanzania, Semboja observed that it was difficult to establish the relationship between income tax progressivity and rising inflation rates in the country. "More specifically the problem lies on the task of establishing the direction of causality of the inflation process" (p.76). Even then, one could state that "the government has not been able to use income tax as a tool to control inflation" (p.78). He generalised this result for all direct taxes.

On indirect taxes, Semboja noted that one can isolate their direct inflationary effects, since some of the inflationary effects of raising indirect taxes are more direct than those of direct taxes. This is because indirect taxes may be directly shifted forward to the consumers in the form of higher prices. Besides, as in the case of direct taxes, one cannot spare indirect taxes from the dilemma of establishing the correct direction of causality in the inflationary cycle. In the case of Tanzania, the government has not been able to successfully use indirect taxes to control inflation. This is not only due to similar reasons given earlier in the discussion case of income tax, but also because of the country's small income tax base which has forced the government to raise a greater proportion of the tax revenue from indirect taxes, particularly from sales tax. Semboja attributes the failure to control inflation to among other factors, lack of fairly diversified structure of goods so that there exists little degree of flexibility on the part of consumers. Consequently, the consumer absorbs virtually all the tax element and thus most of the incidence of tax.

On the relationship between government activity and price inflation, Semboja explored how government activity might have influenced price changes. He

attempted at evaluating the extent to which expansion in government activity, involving wide range of growing public expenditures, have fared in controlling inflation and stabilising prices through the matching of expenditures and production. He observed that production was taking place at high unit costs which ultimately raised product or service prices and the price level.

On the parastatal sector, he observed that the government in Tanzania has created too many parastatals most of which are inefficient. Regarding the extent to which the growth of the parastatal sector may have contributed to rising prices, he observed a very similar picture to that for the case of government expenditures. That is, production took place at high costs and the effects of doing so are similar to those of government activities.

In concluding Semboja remarked that since inflation has had redistributive effects in Tanzania where it redistributed in favour of the high income categories, its redistributive effects must have worked against those of the progressive taxation. The net effect is, however, not known exactly since it must have depended on relative strength of the two opposing forces. Regarding inflation, he advised that since taxes can generate inflation through a number of channels, a tax reformer wanting to use taxes as a tool for redistribution, must formulate a tax structure that attempts to minimise inflation. A good tax structure is the one which maximises revenue at low cost by minimising the emergence of disincentive elements and tax evasion. Lastly, he stressed on the need to correct the undesirable problem of production at high costs if its consequences are to be avoided.

Mtatifikolo (1990) is essentially a study on taxation in Tanzania. It focuses mainly on taxes on the wage and salary earning group, the pay-as-you-earn (PAYE), and "business" income accruing to the non-agricultural self-employed, the informal sector and the parastatals. It analyses their structure and trends with reference to the whole tax system in the country, other major taxes, and in their own right from

1973/74 to 1984/85. According to Mtatifikolo, the aim of the analysis was to yield some insight on questions relating to tax effort, tax progressivity and tax equity, among others.

Mtatifikolo made interesting observations from his study. For example, he observed that 'tax concentration' had risen and that there had been a structural and aggregate shift of the taxes during the period. This reflects deliberate government policy to improve incentives to exporters while at the same time maintaining reasonable tax revenue flows on international trade taxes, to enhance tax equity through progressive income tax rates and high revenues through sales and excise taxes. Also to check inflation resulting from cost-push factors in the predominant cost-plus pricing by restraining net wages through a few wage reviews, small increments, and high tax rates on personal and income earnings.

As for PAYE, personal and income taxes, Mtatifikolo observed PAYE revenues to have increased faster than both the total tax revenue and the total Personal and Income tax revenue. Parallel to this, tax rates and taxation intensity as measured by tax effort rose faster for PAYE than for other components of the personal and income taxes and for total taxes. Alternatively, the tax base for PAYE rose faster say, by way of expanded employment, substantially higher wages, etc., although buoyancy, elasticities and the factors explaining tax revenue changes showed the opposite, that is, it is the high taxation of the wage earning group over time that plausibly explains such features.

On income taxation in Tanzania, Mtatifikolo noted that *ceteris paribus,* over time the tax has been eroding the purchasing power of taxpayers mainly because the marginal and average rates have increased for the same levels of incomes. He considers this to suggest something akin to dynamic regressivity in the sense that the lower the income over time the higher the tax rate. Thus, according to Mtatifikolo, over time tax revenue and possibly other considerations in personal and income

taxation in Tanzania have overshadowed the notion of income tax equity whether horizontal or vertical. Indeed, argues Mtatifikolo, over time the system of personal and income taxes has shown higher intensity by government to extract more from the tax payers. Mtatifikolo and Semboja (1985) made the same observation and they did show such an intensity to be next only to sales tax collection.

On tax revenue changes, Mtatifikolo postulated two factors that influence them, namely; the change in the *national income* and the use of the discretionary options by the government. By using the same analysis as that used by Thac & Lim (1984) to estimate the buoyancy and the elasticity of the tax system, Mtatifikolo observed the overall response of Tanzania's tax system to changes in income or tax buoyancy to be not very high. This evidence compares unfavourably with evidence elsewhere in developing countries. The corresponding tax elasticity is not high either but it is less than buoyancy implying that discretionary changes were responsible in raising tax yields during the period.

The above results indicated the presence of differential effort directed at different taxable targets, with the biggest effort being directed at taxation of imported items (sales tax and import duty). The high effort on tax on imports reflected intensity on the sales tax component, implying that the biggest effort on these taxes was in sales and excises taxes. The next biggest effort was in the wage sector in PAYE tax, presumably because of the high and rising rates of the tax over time and the ease of its collection. Regarding business income tax, the effort was negative as a result of low buoyancy relative to elasticity, suggesting the presence of substantial tax evasion and or avoidance. On the implication of these findings, Mtatifikolo remarked that they may conceivably support the argument of raising revenues, but they seriously challenge arguments of enhancing equity because of the practical regressivity nature of the tax system. They also seriously challenge the argument of

checking inflation because of inflationary pressures resulting partly from the pricing policies in which the tax element on most consumable is rather high.

Because of their relative efficiencies regarding the cost per yield ratio, particularly absence of substantial administrative costs, the government pursued intensively certain taxes. As a result, these taxes have had higher tax efforts compared to those taxes where the degree of evasion is high. On the built-in response of the major taxes and total taxes in Tanzania, Mtatifikolo observed that with the exception of business tax, the major taxes and the total tax had elasticities which were less than unity implying that the government automatically received a decreasing share of the rising national income in tax revenues. It seems, argues Mtatifikolo, that Tanzania has had no well built mechanism for tax collection to deal with this automatic built-in response since there is no evidence that the government was deliberately lax to leave more purchasing power to tax payers. If anything, the rising rates over time suggest higher intensity to collect more.

Besides, an analysis by Mtatifikolo of the underlying factors behind the automatic changes in tax revenue collected indicate all three important tax categories, namely: sales and excise duties, tax on imports and income tax to have responded well to changes in their bases. So was also the total tax. Individually, however, he observed PAYE to be elastic with respect to its base while business income was not. The high response of the income tax to changes in the income tax base was a result mainly of PAYE's response to its base while the low response of the tax-to-base by business income tax in the period when its base was the most responsive to the national income suggests the existence of substantial tax avoidance or tax evasion. Mtatifikolo also observed the high response of consumption tax (sales and excise) and tax on imports with respect to their bases and saw them as a reflection of the high tax rates on most consumable, both local and imported whose revenue is easy to collect.

According to Mtatifikolo, the Tanzanian tax system has had low built-in response basically because of low growth of tax bases with respect to national income growth. He attributes this to the low taxable monetisation of the economy that has not been keeping pace with overall GDP growth and also to proliferation of the informal sector and subsistence production. The latter caused tax bases not to grow correspondingly, thus forcing the government to intensify its taxation of PAYE and sales tax, and sectors of high yield-cost ratio to compensate for the loss in built-in response.

Going by above findings, Mtatifikolo concluded by making a reminder on how the tax system of Tanzania has shown all the basic elements of practical regressivity with quite substantial tax evasion and avoidance. Whereas the wage earner has been highly taxed to finance increased government spending, the marginal rates as well as average rates have been too high especially for taxes of direct incidence to the wage earner and other low income groups. The burden of taxation has also been badly distributed.

Using Tanzania's data, Osoro (1990) evaluates the tax structure and performance of the country's tax system for the period 1977/78 to 1987/88, based on estimates of tax buoyancies and elasticities of the major taxes. In addition to discussing the tax structure changes, Osoro attempted an OLS estimation of tax buoyancies using a log-linear (double-log) model. He regressed tax revenue against national income (GDP). He also followed the same procedure in estimation of elasticities except that, in this case, the dependent variable was the tax revenue adjusted for discretionary changes.

The following observations from his results are of interest: first, the most buoyant tax was motor vehicle taxes and licences followed by import duty and then sales tax. Income tax was the least buoyant tax, suggesting that production and income did not respond to such policy changes as trade liberalisation, export

retention scheme, exchange rate adjustments, etc. Overall, the tax system in Tanzania was less buoyant with 1% increase in GDP matched with .983% increase in tax revenue. Second, motor vehicle taxes and licences were the only tax category that was elastic. Income taxes and sales taxes were inelastic while the overall tax system was inelastic, clearly due to low elasticities of sales and income taxes that together accounted for around 80% of total tax revenue. Lastly, in all cases, the elasticity was smaller than buoyancy. Sales tax showed the highest disparity between buoyancy and elasticity while discretionary changes raised the growth in total tax revenue as suggested by the difference of about 31%.

In conclusion, Osoro emphasised the importance of the above results for policy purposes. Thus, since an elastic tax structure is appropriate in a developing economy for it implies that tax collections will grow automatically with growing income without recourse to politically sensitive increase in tax rates, it is important that policy makers are able to identify those taxes that are elastic and those that are not. This is important because increasing the overall elasticity of the tax system calls for utilising heavily those taxes that are most elastic. On how to increase the elasticity of the individual taxes, Osoro suggests the adoption of such measures like the improvement of the administration, and the conversion of specific consumption taxes to *ad valorem taxes*.

Osoro (1992) study is an extension of Osoro (1990). In this study, Osoro measures the income elasticity of the Tanzanian tax system over the period 1978-89 by decomposing the elasticity of tax into base-to-income and tax-to-base elasticities. Such a decomposition of elasticity, "is important since while the latter is virtually within the control of the authorities, the former lies outside their control" (p. 395). The aim of his whole exercise was to measure the revenue productivity of the Tanzania tax system, using buoyancy and elasticity. In estimating buoyancies and

elasticities of different taxes, Osoro used OLS technique or rather the same procedure as the one he used in his 1990 study.

Results of his study indicated the total tax system to be inelastic (elasticity=0.80) over the 1979-89 period, while the elasticities of the individual taxes were divergent; sales tax 0.73, income tax 0.81, company tax 0.91, PAYE 0.71, and import duty 0.97. From these results Osoro pointed out that: first, the tax system's overall elasticity of 0.80 suggests that discretionary changes undertaken during 1979-89 period have failed to raise the ratio of tax to GDP. Second, the inelasticity of the sales tax, Tanzania's main source of revenue, was partly a result of generous exemptions and apparent tax evasion, and partly a result of weak tax administration. Lastly, compared to other income taxes (personal income tax and PAYE), company tax has exhibited higher elasticity.

Osoro also decomposed the above elasticities into tax-to-base and base-to-income so as to identify their source. He observed that sales tax had a low elasticity essentially because of the low tax-to-base elasticity that probably reflects the combined effect of granting exemptions and inefficient tax administration, in the face of rising sales tax base relative to GDP. Regarding import duty, its tax-to-base elasticity was also low. This could essentially be so because of exemptions, tax evasion and poor overall administration at a time when the tax base was growing fast following the 1984 trade liberalisation. Osoro also observed the elasticity of company tax to be low because of the relatively low tax-to-base elasticity. He attributed this to weak administration and the existence of evasion at a time when corporate profits were growing in proportion to income.

Unlike other taxes, PAYE had low elasticity as a result of the low base-to-income elasticity rather than tax-to-base elasticity which was very high (1.89). Osoro believes the low base-to-income elasticity to be a result of low pay, which has been far below the living wage since the beginning of the last decade. The higher tax-to-

base on the other hand could be a result of the imposition of very high marginal rates, and that PAYE was the tax with probably the highest compliance since employers withhold the tax from the pay of employees. The relatively low base-to-income elasticity was the factor behind low overall income tax elasticity. Its low level suggests that monetary GDP has grown less in proportion to GDP, while its inelastic tax-to-base reflects the narrowness of the base possibly as a result of it being eroded by exemptions and tax evasion.

According to Osoro, low tax-to-base relative to base-to-income elasticities explain why the tax system of Tanzania has had a fairly low elasticity. It thus implies that tax collections have grown considerably slower relative to their tax bases. This is not desirable, argues Osoro, since the tax-to-base constituent of the elasticity is partly within the control of the authorities that can improve it through better administration, unlike the base-to-income elasticity or the growth of the tax base, which lies outside the control of authorities (apart from the influence of tax policy itself). In addition, since the growth in the tax base is mainly determined by the manner in which the structure of the economy changes with economic growth, then in designing income elastic taxes both the predicted response of the given tax-to-income and the potential for an effective and/or improvement in the level of administration should be considered.

Based on comparison of tax elasticity and tax buoyancy for which he observed the tax system as a whole to have had a buoyancy of 1.03 as against elasticity of 0.80, Osoro linked the major growth of total tax revenue to discretionary changes or the increase in tax rates over the period. In his conclusion, therefore, he decried the use of discretionary changes to raise tax revenue and he echoed the call for the need to have an elastic tax structure in a developing economy. Elastic tax structures, he argues, lead to automatic growth in tax collections as income grows with no need of resort to politically sensitive increases in tax rates. As such,

authorities should be able to identify those taxes that are elastic and those which are not since raising the overall elasticity requires heavily utilising those taxes that are most elastic. Moreover, in undertaking tax reforms, the authorities should direct such reforms toward improving tax administration to minimise evasion and improve compliance, and to substantially reduce or totally eliminate exemptions that often erode the tax base. Also, authorities should be able to seriously consider the predicted response of tax base-to-income, should they wish to design income elastic taxes.

2.4. Some Criticisms of the 'Traditional' Analysis of Level of Taxation

Although the Tanzania's studies have dealt with various aspects of the country's tax system, they have, nevertheless, not addressed in detail the main policy weaknesses that have led to the country's existing tax system characteristics (failure by taxes to control inflation, low tax base, low bouyancy and elasticity, evasion, etc.). Their approach differs from that of most other studies reviewed above, that have followed the 'traditional' style of investigating the determinants of the level of taxation in developing countries. The "traditional" studies have mainly concentrated on factors that one can group under statistical determinants, institutional or social determinants, and tax policy determinants.

The statistical determinants of the level of taxation include the level of per capita income (proxy for the level of development), degree of monetisation of the economy, degree of openness, share of mining or agriculture in GDP, degree of urbanisation, literacy rate, the size of the country, and the level of public expenditure. Clearly, many authors of traditional studies perceived the statistical factors to play an important role in determining the tax bases or the "tax handles" that the government can use to raise the desired level of tax revenue. The fact that each study used one or more of these factors is an evidence.

Institutional or social determinants include the quality of tax administration, honesty of tax payers, degree of corruption among tax collectors (influenced by their

wages), resources that a country allocates to tax administration, the severity of the penalties for non-compliance by tax payers and for corruption by tax administrators, income distribution of the country, importance of the subsistence sector and the parallel economy, attitudes of the citizens towards the government (quality of its services and the efficiency with which it spends revenues), and form of government.

Many of the social determinants are difficult to quantify but are considered to be important in determining whether a country ends up with a high or low tax level. For example, the extent to which evasion of taxes takes place, or a large parallel economy develops, depends largely on some of these factors. However, quantification problems have permitted incorporating of only a few of them in to the traditional analysis.

Tax policy determinants include the use of particular tax sources such as value added tax (VAT), number of taxes in the tax system of the country, level of tax rates, and the use of tax incentives and tax expenditures in general. Though they have not surfaced much in the traditional studies, these factors are quantifiable. Excessive use of tax expenditure, for example, leads to a lower level of taxation.

Until recently, most of the studies that have examined the determinants of the level of taxation in developing countries have focused mainly on the above factors. These factors, however, have had less influence on level of taxation across studies, making the results of the traditional studies questionable. These same results have also been questionable along methodological and hypothetical lines, especially their shortcomings in the formulation of the a priori models and interpretation of the results. Thus, while the specification of models has occasionally overlooked the theoretical justification of using certain variables, interpretations of the results have in certain cases ignored problems such as spurious correlation, least squares bias, specification bias, and multicollinearity in the variables, which have clouded the results (refer to inter-study criticisms above).

Besides, as some studies have acknowledged, the cross-section analysis that most of the studies have extensively used in most of the traditional studies may or may not be useful for inferring the responsiveness of a given country's tax ratio to changes in economic structure (see, e.g. Bahl, 1971). After all international comparison of taxation is a controversial exercise (Tait *et al*, 1979) and the economic, political, and institutional characteristics of individual countries are so unique that neither general theorising nor comparative studies reveal more than they obscure (Bird, 1976). Tax systems differ, and each has its own characteristics and peculiarities that purely statistical summaries cannot capture (Tanzi, 1987).

With the above methodological and hypothetical criticisms in mind, going through the traditional literature one can note the inherent weakness(es) in the traditional determinants in explaining the level of taxation. It is not a surprise, for example, to remark that almost all studies have a coefficient of determination less than 0.5, which is low even for a cross-section study. Actually some of these studies utilised time series data. Moreover, one cannot pinpoint any factor as being important in explaining the variation in the tax level in all the studies. A factor would appear significant in one study whereas in another or others it would be insignificant. As such, at the end of the review of the traditional determinants, one wonders what probably are the determinants of over 50 per cent of the tax level variation in developing countries.

As mentioned above and in the introduction to this study, most of the studies that have examined the determinants of the level of taxation in developing countries have concentrated mainly on traditional determinants. However, these factors have been found to have some weaknesses one of which is their inability to explain relatively short period dramatic changes in the tax level in many developing countries (Tanzi, 1989). At best, what these factors can explain is the long–run or potential level of taxation. Empirically they have proved not to be able to explain more than a small fraction of the variation of tax revenue level in cross-section studies. The short

period dramatic changes in the tax level are "too large and too sudden to be attributed fully to a deterioration in tax administration or to changes in the traditional determinants of tax levels. They can be attributed, to a considerable extent, to the connection between tax levels and macroeconomic policies, in particular, exchange rate, import substitution, trade liberalisation, inflation, public debt and financial policies. Thus, more attention should be paid to these relationships, and tax reforms should aim to neutralise some of their effects" (p.633).

Moreover, whereas the traditional literature in general has focused on many issues some of which are common in analytical and comparison purposes in both developed and developing countries, recent literature has emphasised the need for tax analysis to take into consideration certain other features which arise in developing countries but are not common in developed countries. These features include: the importance of the primary sector; dualism - economic and social organisation in traditional activities may be different from those in modern capitalist enterprises; segmentation in the labour market; the fragmentation of capital markets; large number of people living in very poor conditions plus small sections of the population who are extremely rich; many small-scale enterprises; poor education levels; the prevalence of trade distortions, particularly quotas; a major role for planning, including extensive use of permits, licences, and rations; a large public sector; weak administrative capabilities; pervasive corruption; and substantial evasion (see, e.g. Shah and Whalley, 1991; Burgess and Stern, 1993).

In the next chapter this study considers some of the above features and shows theoretically how various macroeconomic variables influence the level of taxation in a developing country such as Tanzania. The discussion focuses on the above mentioned macroeconomic policies and follows Tanzi (1989) line of argument.

CHAPTER 3

MACROECONOMIC POLICIES AND THE LEVEL OF TAXATION: A THEORETICAL FRAMEWORK

3.1. Introduction

This chapter explores the relationship between different macroeconomic policy actions and the level of taxation in developing economies like that of Tanzania. In this pursuit, different macroeconomic policy instruments are employed to represent policy actions related to them.

The way a country pursues its macroeconomic policies has a bearing on its level of taxation. This is because macroeconomic policy actions do affect the base on which the tax is levied and the amount of tax revenue collected. This effect can be either positive or negative depending on the direction of the policy impact. It can also be *direct* or *indirect* depending on whether the value of the tax base is raised (lowered) instantaneously or after some economic activities have been performed that raise (lower) it.

Macroeconomic policy variables of particular interest to this study include; the exchange rate, import substitution, trade liberalisation, inflation, external debt, the interest rate, profits and wage level. Monetary and fiscal policies are deemed to exert their influence on the tax base and therefore tax revenue through some of these variables especially the price level, interest rate, and external debt. Accordingly, their effect on the level of taxation would be understood via these policy instruments, as would the exchange rate policy impact through the exchange rate. The influence of trade policy on the tax revenue could also be captured through some measures of import substitution and trade liberalisation, while other secondary policy actions such as public sector and wage policies exert their influence on tax revenue through such policy variables as public enterprise profits and wage levels, respectively.

3.2. The Level of Exchange Rate and Tax Revenue

A common observation in many developing countries has been that of the existence of a negative relationship between a country's tax revenue and the level of its official real exchange rate (Tanzi, 1989). This statement is true if the real exchange rate is either defined as the relative price of tradables with respect to nontradables (equation 3.1 below), or as the price of a real foreign currency, for example a dollar, measured in real domestic currency units (equation 3.2 below) [see, e.g., Edwards, 1989; Helmers, 1988]. Thus,

$$RER = \frac{\text{Price-of-tradable-goods}}{\text{Price-of-nontradable-goods}} \tag{3.1}$$

Alternatively,

$$RER = \frac{E_n / P_d}{USD1 / P_w} = \frac{E_n . P_w}{P_d} \tag{3.2}$$

where RER is the real exchange rate, *En* is the nominal exchange rate (the domestic currency price of one unit of the numeraire, e.g., the U.S. dollar), Pd is the domestic price deflator (e.g., the domestic consumer price index or the GDP deflator[1]), and Pw is the deflator for the U.S. dollar (e.g., the U.S. wholesale price index[2]).

Using the above formula, one would obtain the official real exchange rate (ORER) from official data of the definition variables. In either case, an appreciation of the real exchange rate would mean a fall in the real domestic currency units per unit of foreign currency, while its depreciation would mean the opposite. What this implies is that by causing the real exchange rate to appreciate, overvaluation leads to a decrease in the tax-to-GDP ratio through channels discussed below. In other words, overvalued exchange rate implies a much lower tax ratio than would have been the case otherwise (Tanzi, 1989). Among others, reasons for overvaluation include: an expansion in domestic demand possibly due to increased government spending; loss of export revenue due to a drop in the price of commodity exports; and deficits in external balance resulting from an increase in import costs (Dornbusch, 1988).

3.2.1. Negative Tax Revenue Effects of Overvalution

Overvaluation affects negatively the level of tax revenue in an economy in two ways: directly and indirectly.

3.2.1.1. Direct effects: Real exchange rate appreciation affects negatively and in a direct way import duties, export taxes, and sales and excise taxes on imports, which together account for over 60% of total tax revenue in Tanzania (Appendix Table A3) and in other developing countries (Goode, 1984).

Import duties: Import duties are often levied at *ad valorem* rates. Since their tax base is determined by the domestic value of the imported products measured at the official exchange rate, an appreciation of the real official exchange rate will lead to the fall in real value of imports - measured in terms of domestic prices and coming through the official channels. In this way, revenue collection from import duties is negatively affected, unless the volume of taxed imports which become cheaper with overvaluation, more than compensates for the lost revenue. This scenario may, however, be possible only under a trade liberalised economy with overvalued exchange rate.

Export Taxes: Since export taxes are imposed on export values expressed also in domestic currency, then an appreciation of the exchange rate will lead to a fall in the export's tax base and hence tax revenue. Unlike under import duties where revenue might rise if imports are increased in volume terms as the domestic currency is overvalued, overvaluation discourages production for export and official supply of exports. This is because a real exchange rate appreciation leads to or reflects an increase in the domestic cost of producing tradable goods and hence low profitability [Edwards, 1989; Dornbusch, 1988].

Sales and Excise Taxes on Imports: For various reasons, much of the domestic production (especially production of nontradables) in developing countries escape taxation or is taxed at lower rates[3]. As a result of this, a large share of sales

tax and excise duty revenue may accrue from imports. With appreciating real level of exchange rate, tax revenue from general sales taxes and from excise duties is likely to fall in real terms as the real value of the given volume of imports coming through official channels and measured in domestic prices falls.

3.2.1.2. Indirect effects: An overvalued exchange rate affects negatively tax revenue through the following indirect channels:

First, it reduces, over time, the incentives to produce export goods and to export. The result is a fall in exports and therefore export tax revenue and foreign exchange earnings. Less foreign exchange implies less imports and consequently less revenue from import related duties and taxes, domestic sales and excise taxes and export and income taxes as economic activities that depend on imports are hampered. In cases where taxable incomes are partly tied to exports (e.g., corporation income taxes from mineral exporting corporations), revenue from income taxes also falls (Tanzi, 1987).

Second, it leads to capital flight as the probability of large future devaluations increases, or otherwise, storing of financial assets in dollar bills within the country (currency substitution) [see, Ize and Ortiz, 1989; Dornbusch, 1988; Cuddington, 1986; and Pinto, 1989]. Capital flight and currency substitution (out of the reduced export earnings) will reduce even more the foreign exchange available for official imports of goods and services. The consequence of this is further reduction in the tax base and hence tax revenue.

Third, it often brings about restrictions on the movement of goods and capital if none existed, or it leads to further restrictions, if they were already there as the balance of payments crisis sets in. The consequence of this is black market for both foreign exchange and goods (see Deardoff and Stolper, 1990; Kaufmann and O'Connell, 1991; Agénor, 1992). This reduces the level of official transactions and, hence, the tax base and tax revenue.

Fourth, it induces the government to eventually restrict imports of manufactured consumer goods and favour the importation of raw materials and capital equipment whenever it is accompanied by balance of payments difficulties. This is because consumer goods are often considered less essential than raw materials and capital equipment. The latter are therefore not taxed or if taxed are taxed at a lower rate. The effect of this is that there is a change in the structure of imports in favour of goods with low or zero import duties and sales taxes in contrast to those with high import duties and sales taxes [Tanzi, 1989; Ndulu *et al.* (1987) and Semboja *et al.* (1991) on Tanzania's import duties exemption structure[4]]. This often leads to a decrease in revenue collection as losses in import duties and in domestic sales taxes are induced by smuggling of goods which are subject to high duties. Consequently, the ratio of official imports over total imports shrinks.

Among official imports, imports by the private sector would be squeezed out to accommodate lower-taxed or zero-taxed imports by the public sector. Exports would also be discouraged by both the overvalued exchange rate and the lack of needed inputs, thereby affecting revenue. Production would shift to untaxed domestic or subsistence products, or producers may switch their production toward goods that can be smuggled out of the country more easily [Deardoff and Stolper (1990); Baghwati, 1982; Maliyamkono and Bagachwa, 1990]. Finally, domestic economic activities and employment in the official sector are likely to fall, thus reducing the tax base and tax revenue.

Thus, maintaining the real exchange rate at the "wrong" level results in significant tax revenue loss and welfare costs. It generates incorrect signals to economic agents and results in greater economic instability as foreign trade balance, balance of payments, the structure and level of production and consumption, employment, *fiscal revenues* and the allocation of resources are negatively affected [Willet, 1986; Khan and Montiel, 1987; Dornbusch, 1988]. It is important therefore, to keep the real exchange rate at its equilibrium level, that is, at the rate at which

there is a simultaneous attainment of equilibrium in the external sector and in the domestic sector of the economy if the above problems are to be avoided. And, once an equilibrium in the exchange rate is disturbed, it should be restored through changes in its fundamentals or at best through devaluation of the nominal exchange rate that is accompanied by *consistent* monetary and fiscal policies (Dornbusch, 1988; Fischer, 1988; Edwards, 1989).

3.2.2. Positive 'Tax' Revenue Effects of Overvaluation

The above negative tax revenue effects of overvaluation notwithstanding, exchange rate controls and overvalued exchange rates have been defended in many developing countries. Various rationales emphasising short-term to long-term goals have been put forward by policy makers to defend overvaluation and support of exchange rate.

These rationales, as summarised by Agénor (1992), centre on the perception of an overvalued exchange rate as: first, a symbol of economic independence especially to newly independent countries; second, an inexpensive way to providing cheap imports to domestic producers and consumers, notably imports of capital goods, durable goods, and intermediate inputs not produced domestically, access to which has been viewed as essential in promoting economic growth in the medium and long-term; third, a short-term anti-inflation devise with an ability to keep down the domestic price of imported goods thus limiting pass-through effects of changes in world market prices on domestic inflation; fourth, a capable rate for fostering the redistribution of income and economic activity from the tradable goods sector to the non tradable goods sector; fifth, a tool against adverse movements in the real exchange rate and hence current account balance caused by perceived erratic short-term capital flows, especially in Latin American countries; and finally and more important, a tool for raising revenue for the government, through implicit taxation of exporters (see, Pinto, 1989).

Pinto (1989) thus exposes the rarely mentioned argument (source of government revenue) in defence of overvaluation. He shows that in a regime with multiple exchange rates (official and black market) in which the government is a net buyer of foreign exchange, overvaluation facilitates implicit taxation of exporters by the government whose foreign exchange denominated expenditures such as imports and interest payments on foreign debt are in the process subsidised. As such, there is an offsetting impact to the reduction in tax revenue that might be traced into the decreasing level of fiscal deficit[5]. Pinto shows this to have been the case in some Sub-Saharan African countries such as Sierra Leone and Zambia before they unified their exchange rates. In these countries overvaluation created import licence rents, a heavy tax on exports, and bustling parallel market in foreign exchange with black market exchange rates in some cases at levels several hundred percent over the official rates. Tanzania is not an exception to this, and its case actually requires a separate study.

Positive aspects of overvaluation and exchange control notwithstanding, one thing is worth noting. This is whatever the rationale for the imposition of exchange controls, there are welfare costs that are associated with these restrictions. Apart from placing a quota on imports thus raising their domestic relative prices just as tariff would, exchange restrictions lead to the emergency of a parallel currency market and hence the distortion of private agent's economic decisions, notably the decision to evade restrictions by purchasing foreign currency illegally in the parallel market (Bhagwati, 1978; Kaufmann and O'Connell, 1991; Agénor, 1992).

3.3. Import Substitution Policies and Tax Revenue

In pursuing import substitution industrialisation, governments in many developing countries have often imposed trade restrictions such as high tariffs and other administrative controls, apart from the restrictions associated with an exchange rate that is overvalued or progressively becoming overvalued.

Unlike tariff which is a form of tax, and which when placed too high discourages imports, import quota places direct restrictions on the quantities of particular goods that can be imported. Likewise, a system of exchange controls achieves much the same by requiring that foreign exchange be turned in to the central bank where restriction on its availability for particular imports is then imposed. By imposing such forms of restriction, the governments have in effect been enforcing a reduction in imports by direct government mandate (Krugman, 1988).

More often than not the imposition of such exchange and trade restrictions has been undertaken in an attempt to defend an otherwise overvalued domestic currency, to impose balance of payments adjustment in economies faced with limited foreign reserves and an external borrowing constraint, and to insulate commercial transactions from the "disruptive" effects of financial shocks (Dornbusch, 1988; Agénor, 1992). In addition, 'infant-industry protection' argument has often been mentioned also.

The imposition of other foreign trade restrictions apart from the restrictions associated with exchange rate that is becoming progressively more overvalued have some implications for tax revenues. One of this is that they lead to a shift in power to tax from the government to those who get import permits and the foreign exchange needed to pay for these imports. As such, there is a kind of income redistribution away from the government, which loses tax revenue, to the importers, who receive rents (Bhagwati, 1982; Tanzi, 1989; Pinto, 1989).

To domestic producers of import substitutes, such restrictions generate income gain through allowing the sale of products at higher prices than the already high costs of production. Thus, apart from generating redistributional effects as seen above, trade restrictions are associated with income reducing effects because of the inevitable inefficiencies that they create. Income tax base reduction through income reducing effects and incentive legislation (where applicable) which protects the gains

to the domestic producers from income taxation, have their ultimate result in a fall in tax revenue (Tanzi, 1989).

Apart from the above tax revenue reduction avenues, there is another, probably a more significant way, in which trade restrictions cause the loss of tax revenue to the government. This is the diversion of the taxable base away from the taxing authority as parallel markets develop to circumvent government controls or restrictions in different sectors of the economy. Since parallel markets reduce the volume of official transactions and encourage tax avoidance and evasion, obviously there is bound to be a reduction in tax revenue collection. Different methods are used in evading government controls and taxes. These include: smuggling of goods and currencies in and out of the borders; over-invoicing of imports and under-invoicing of exports; shift of production to untaxed domestic products or to products that can be smuggled out of the country more easily; lobbying to obtain import licences, to get import rules relaxed, or to get exemption from paying taxes; bribing of tax assessment authorities, etc. (Krueger, 1974; Bhagwati, 1982; Deardorff and Stolper, 1990; Maliyamkono and Bagachwa, 1990; Agénor, 1992; DeRosa, 1993).

Clearly, from the point of view of the authorities parallel markets have obvious adverse effects including: first, substantial cost of enforcement to counteract these illegal activities; second, loss of tariff revenue due to smuggling, over invoicing and under invoicing, loss of income taxes and indirect taxes, and a reduced flow of foreign exchange to the central bank the effect of which is reduced capacity to import and hence less tariff revenue collection; third, encouragement of rent-seeking activities (for example, corruption of government officials) which lead to a sub-optimal allocation of scarce resources; and fourth, facilitation of the switch from domestic currency assets to foreign currency assets and may be a reduction of the seigniorage revenue accruing to the government (Agénor, 1992).

3.4. Trade Liberalisation and Tax Revenue

Trade liberalisation aims at reforming a country's international commercial policies in order to improve economic welfare by achieving a better allocation of resources in the long-term. In contrast to import-substitution, trade liberalisation entails progressive removal of quantitative restrictions and their replacement by import duties. And when associated with tariff reform, it also entails the replacement of high import duties by lower duties, and zero duties by low duties for the case of goods that had been imported duty free such as raw materials and capital goods (Mussa,1987; Tanzi, 1989).

Often, these reforms have proved to be successful if they are accompanied by good conduct of macroeconomic policies such as fiscal and monetary policies, wage policy and exchange rate adjustment. Trade liberalisation, for example, needs to be accompanied by devaluation in order to neutralise some of the liberalisation's impact on the general level of domestic prices and balance of payments. Devaluation also brings the exchange rate more in line with a level consistent with a sustainable medium-term external position, given the lower import barriers. In this way, changes in exchange rate more than trade restrictions become the main equilibrating instrument for bringing the trade account into the desired balance (Mussa, 1987; Tanzi, 1989).

Thus, if well undertaken and co-ordinated in an environment with desirable macroeconomic policies, trade liberalisation may lead to potential gains. A highlight of potential gains from trade liberalisation is found in Dornbusch (1992) who observes that "measuring the benefits of trade reform has been a frustrating endeavour. Although the discussion of trade policy at times gives the impression that a liberal trade regime can do wonders for a country's economy, and most observers believe firmly that trade reform is beneficial, yet systematic attempts at quantification fail to single out trade policy as a major factor in economic growth. ..... The channel through which trade liberalisation could bring benefits are broadly these: improved

resource allocation in line with social marginal costs and benefits; access to better technologies, inputs and intermediate goods; an economy better able to take advantages of economies of scale and scope; greater domestic competition; availability of favourable growth externalities, like the transfer of know-how; and shake-up of industry that may create a Schumpetarian environment especially conducive for growth" (pp.73-74).

On the revenue side, trade liberalisation is likely to be accompanied by either positive or negative effects depending on the tax structure of the country, size of the real devaluation, how restrictive the trade regime has been, nature of trade liberalisation policies followed, and the structure of the economy (Tanzi, 1989). Calvo (1987; 1988), for example, has shown that a policy with "incomplete credibility" (i.e., in which the public believes that there is a positive probability that policy announcements will not be carried out) such as the temporary trade liberalisation could be associated with social costs. Calvo (1988), for instance, shows that the central source of such social costs are the durable and storable imported consumption goods. Based on expectations that policy announcements of trade liberalisation are merely temporary, inventory accumulation in anticipation of future tariffs is induced. Such accumulation is, however, associated with significant costs, measured as the proportional loss of consumption in relation to free trade.

Apart from social welfare costs there are other cases through which trade liberalisation could negatively affect tax revenue. Tanzi (1989) points out these cases to include: first, a possibility that, for some imported products, a combination of price increase due to devaluation and price reduction due to a fall in import duties may result in reduced tax revenue. Second, a possibility, over the short run, of trade liberalisation with devaluation to reduce employment and output due to high costs of production in some sectors, especially import substituting sectors, enough to have some negative revenue effects, unless such sectors were not contributing much to tax revenue.

Although the above possibilities may occur in an economy, it has been stressed that for the majority of cases, trade liberalisation of the type outlined above will lead to an increase in the tax revenue, and possibly, an improvement in the fiscal balance, especially in the medium run (Mussa, 1987; Tanzi, 1989). Among others, avenues through which trade liberalisation can lead to an increase in tax revenues include: first, replacement of quotas and other quantitative restrictions by tariffs thus reducing smuggling and revenue loss to the government. Second, reduction of duties from prohibitive to a more normal range thereby reducing smuggling and inducing compliance. Third, imposition of low tariffs on previously exempted goods and the change in composition of imports in view of the decreased incentive to bias imports toward raw materials and intermediate products hence increasing the tax base. Fourth, increase in the value of imports and in the domestic prices of the imported products as a result of devaluation, thus increasing the tax base; and lastly, the medium-run increase in the economy's efficiency and tradable output associated with the devaluation and liberalisation, both of which lead to an increase in the tax base.

The impact of trade liberalisation on tax revenue is tested empirically in this study to ascertain the above arguments. An Import Substitution Index (ISI) below is used towards this goal. The index, suggested to the author by Professor Ndulu of African Economic Research Consortium (AERC), is as follows in absolute terms:

$$ISI = \frac{Qm - Xm}{Qm + Mm} \qquad (3.3)$$

where Qm are domestically produced manufactured goods, Xm are exports of manufactured goods, Mm are imports of manufactured goods, (Qm - Xm) are manufactured goods produced for domestic consumption, and (Qm + Mm) represents total supply of manufactured goods. Note that to the extent that ISI measures the extent to which imported manufactured goods (the main base of import duties and taxes) are substituted for by domestically produced manufactured goods (the main source of local sales and excise taxes), the index *rises* with the intensification of

import substitution policies and *falls* with trade liberalisation measures. Manufactured goods, whether imported or produced locally, are the major sources of tax revenue from indirect taxes.

3.5. External debt and Tax Revenue

This section explores the channels through which the external debt affects the level of the tax revenue, for as argued by Eaton (1993), depending on how the debt service obligations are financed, even a relatively small amount of debt can have a devastating effect on investment and government revenue.

One of these channels is trade and current account balance. Thus, unless there is enough inflow of foreign resources, a country with a large foreign debt and hence large payments for servicing the debt, will often be forced to reduce its imports (M) in order to generate the needed surplus in its trade or current account to service the debt. The country also needs a surplus in the fiscal accounts. To see this, let us follow Intal (1991) and consider a current account (CA) balance equation:

$$CA \equiv Y - E \equiv Y - (C + I + G) \qquad (3.4)$$

which states that the current account balance is equivalent to the national income (Y) (generated by a country's residents - home and abroad) minus the national expenditure (E) which consists of the expenditure by the same residents for consumption (C), investment by firms (I), and government expenditure (G).

In addition, the national income can be privately saved (S), taxed (T), or used for private consumption (C), so that:

$$CA \equiv (S - I) + (T - G) \qquad (3.5)$$

That is, the current account balance can also be construed as the sum of net private saving and the government budget. In summary, assuming zero net transfers:

$$(S - I) + (T - G) \equiv Y - E \equiv CA \equiv X - M \qquad (3.6)$$

Thus, the current account deficit, which means an excess of import payments including interest payments (M) over export receipts, including remittances (X),

reflects an excess of national expenditures over national income as well as an excess of private investment over domestic private saving together with a budget deficit. Equation (3.6) hence indicates that other things being equal, the current account position will improve when there is a decrease in M (through cuts in imports) and also when there is an equal decrease in the budget deficit (T - G).

In a case where imports are an important determinant of tax revenue, reduction in imports will depress tax revenue. The fall in tax revenue will be even greater, the higher is the interest payment on foreign debt and therefore the needed reduction in imports. The reduction in imports will reduce tax revenue partly because a tax base (imports) is reduced, and also because reduction in imports depresses output growth and hence various tax bases.

The link between imports and growth rate of GDP has been acknowledged in the development literature. A two–gap model of development, for example, has shown clearly that GDP can be limited by either the volume of imports or the size of domestic capital stock in developing countries (Chenery and Strout, 1966). And, even when it is not a binding constraint, a higher level of imports can contribute to the rate of economic growth, and vice versa (Bergsten *et al.*, 1985; Feldstein, 1986). What this implies is that imports or imports–GDP ratio cannot be reduced without reducing output or GDP growth. This is so because a lower level of imports limits the availability of needed equipment, parts and raw materials that are not available in the country but are important in increasing the economy's ability to produce from its domestically available inputs.

A fall in tax revenue accompanying import reduction may cause the fiscal deficit to widen unproportionately to the external balance, unless the government reduces public expenditure or secures alternative sources of revenue. Alternative sources would include raising domestic taxes, inflationary financing, or borrowing from the public. Each of these methods has its limitations and consequences, however. While borrowing from the public means high future inflation (as a result of

inflationary financing) or high taxes or both in the future to repay the debt, inflationary finance would , for example, lead to inflation which as will be seen below reduces real tax revenues and may also constitute a further incentive to capital flight (see, e.g., Aghevli and Khan, 1978; Cuddington, 1986; Reisen and van Trotsenburg, 1988; Polak, 1989; Alesina and Tabellini, 1989; Fischer and Easterly, 1990), which also has adverse effects on tax revenue.

Assuming that the deficit or the debt is financed by a tax increase, Eaton (1993) has shown how such a public finance problem of debt financing will have a devastating effect on investment and government revenue. To make the argument in its starkest form, Eaton considers an economy in which domestic output forms part of the tax base. Domestic output is an increasing concave function, g(K), of the domestic capital, K, and g′(K) is the marginal product of capital. Revenue from other sources is available in amount Ts (Eaton denoted it To which in our study represents something else). Denoting *t* as the tax rate on domestic output (assumed, for simplicity, to be constant), total tax revenue, T, is then T = Ts + tg(K).

The government owes an amount D that is greater than Ts, and D must be covered by tax revenue. Knowing that the government owes D, potential investors can invest their funds in other countries and earn a given return, r^W. The government cannot tax income earned abroad. Investing in the debtor country yields an after tax return of $r^H = (1 - t)g'(K)$.

To meet debt service obligations, the government sets a tax rate of t(K) = (D – Ts)/g(K). The after-tax return is:

$$r^H(K) = [1 - t(K)]g'(K) \qquad (3.7)$$

which can be increasing in K when K is near zero but decreases in K once K becomes large enough. Individual investors are small in relation to the total number so that they ignore the effect of their own investment in the total stock, K. Investment can occur at a level at which returns are equalised, i.e., $r^H(K) = r^W$ or, because

$$[1 - t(0)]g'(0) < r^W \qquad (3.8)$$

K = 0 is also an equilibrium outcome. Income from any investment by a single, small investor acting alone will be *taxed at a very high rate because the tax base will be very small.*

What this discussion implies is that: first, public debt might be associated with private capital flight because domestic investors invest elsewhere to avoid the taxes needed to repay the debt. This concurs well with the findings of capital flight studies which among such reasons as political and financial crises, capital controls, expected devaluation, and inflation, heavy taxes are also singled out as one of the causes of capital flight (see, for example, Cuddington, 1986). Second, governments with large debts might do better to rely on taxing internationally immobile factors such as land. Finally, if capital flight is an outcome, then most likely the tax burden will rest on labour in the form of lower wages or on consumers in the form of higher prices of goods and services. Either way, the real wage will be adversely affected and so is the tax revenue associated with it.

Capital flight, whether caused by heavy taxes or any other reason, is hence another channel through which tax revenue is reduced. Apart from reducing the efficacy of inflation tax on domestic money holdings, capital flight erodes the domestic tax base by taking out of the country income or wealth, of which the government has limited or no ability to tax (Cuddington, 1986).

Another channel worth mentioning through which external debt can reduce revenue is via revaluation/capital losses in the case of payments overhang and rising net liabilities as the exchange rate is devalued thus raising the value of the foreign currency denominated debt and hence overall debt service burden. In this case there is net resource outward transfer which has a negative impact on real growth and hence on the tax base and tax revenue, unless a country has a large public foreign exchange reserves whose gain in value as a result of devaluation compensate for the loss incurred domestically. Venezuela in 1984 is a good case in point (Reisen and van Trotsenburg, 1988).

3.6. Inflationary Financing and Tax Revenue

For some reasons such as inadequate tax bases, inefficient tax administration and political implications of high tax burden, many developing countries and especially those which are highly indebted have been unable to collect enough revenues to finance all of their expenditures (Aghevli and Khan, 1978; Reisen and van Trotseburg, 1988; Tanzi, 1988). As such, these countries have been using a wide range of financing methods to cover up their deficits. Financing methods available to them have included money creation or inflationary financing, borrowing from the public or sale of government securities, and external borrowing. Whereas borrowing from the public has not been used much as it is not a popular method given the non-existence or presence of very thin capital markets[6], the effects of external borrowing on tax revenue have just been discussed above. In this section the consequences of inflation (which in most cases is itself a consequence of inflationary financing of deficits[7]) on tax revenue are considered.

Whereas in developed countries inflation has generally been associated with increases in real value of tax revenues, in developing countries the problem has been that of an inflation-induced fall in real tax revenue[8]. And, in many cases, this fall has in itself become a contributing factor in the inflationary process in countries where the affected governments have been financing their fiscal deficits through the printing of new money (Tanzi, 1977, 1988; Roe, 1990; Reisen and van Trotsenburg, 1989; Pinto, 1989; Fischer and Easterly, 1990; Collier and Gunning, 1991).

In many developing countries, progressive income taxes collected on a pay-as-you-go system are not important. Instead it is specific taxes that play a significant role. Coupled with collection lags[9] that are generally sizeable and money-income elasticities of tax systems that do not exceed unity, the real value of these taxes has most likely been affected negatively by inflation. Actually, evidence has it that there is little scope for "fiscal drag" or inflation-induced revenue increases and so the effect of inflation on the tax revenue has been unambiguously negative (Tanzi, 1977; 1989).

Thus, as the inflation rate becomes high, the inevitable lags in collection of taxes become very pronounced and, unless compensated by high elasticities, they lead to a decrease in real tax revenue. This case has been proved in several countries, including Argentina where there was a drastic fall in revenue (Tanzi, 1977); Tanzania (Kilindo, 1992); Nigeria, Ghana, Sierra Leone and Uganda (Pinto, 1989).

In general, the government's tax revenue under inflationary conditions coupled with collection lags for all tax payments, is a direct function of the rate of inflation, the size of the lag, and the initial level of taxation (Tanzi, 1977; 1988). Thus, assuming elasticity of the tax system is one, the longer is the collection lag, and the higher is the rate of inflation, the greater will be the *percentage* reduction in the pre-inflation tax level. Similarly, the higher is the initial tax burden, the greater will be the *absolute* loss in tax revenue associated with a given increase in the rate of inflation. Tanzi shows that the impact of different lags and rates of inflation on the real value of one unit of tax revenue can be estimated by multiplying that unit by

$$1/(1+p)^n \qquad (3.10)$$

where p is monthly rate of inflation and n the size of the lag, expressed in months.

Assuming the elasticity of the tax system to be unitary, the effect of inflation on the tax burden can be estimated by solving the equation:

$$T^{\pi} = \frac{To}{(1+p)^n} = \frac{To}{(1+\pi)^{n/12}} \qquad (3.11)$$

where To is the ratio of tax revenue to national income when the rate of inflation is zero, T^{π} is the ratio when the rate of inflation is π, π is the rate of inflation on an annual basis, and other variables are as defined in equation (3.10). [For examples see Tanzi (1977; 1988)].

The discussion above brings to the fore one important observation, that is, there is a trade-off between inflation tax[10] and real conventional tax revenue. This is certainly true when there are lags in the collection of the latter and the tax system

has unitary or less than unitary elasticity. This is an important element that has been ignored when the case for or against inflationary finances was argued[11]. Taking this as his hypothesis, Tanzi (1988) showed that actually up to a point where inflationary tax is maximised, there is a trade-off between the two taxes. Whereas inflation tax increases with an increase in inflation, real conventional tax revenue decreases with it. However, after this point is passed, revenue from both taxes decreases.

More importantly, Tanzi observed that the *total* tax revenue (i.e., inflation tax *plus* conventional tax) is maximised at rates of inflation that are lower than the rates at which inflation tax is maximised, implying that "the scope for raising revenue through inflationary finance is far limited than has been assumed in literature" (p.222). Thus, raising inflationary tax revenue at inflation rates that exceed the *total* tax revenue maximisation rates of inflation would reduce rather than increase total tax revenue.

It is not clear whether the above arguments by Tanzi will hold even when the economy is growing, something that he ignored. However, some mention has been made by Reisen and van Trotsenburg (1988) and Fischer and Easterly (1990) of the importance of economic growth if inflation is to be contained. The fact that money creation results in higher nominal expenditure, it is inflationary unless matched by expanded domestic supply or larger imports (Reisen and van Trotsenburg, 1988). Otherwise the government should adhere to the limit at which it can use seignorage permanently to finance primary deficits without producing inflation (Fischer and Easterly, 1990). This limit is a primary deficit not exceeding one percent of GNP although in rapidly growing economy and financially deep economy, the government may be able to raise as much as 2.5 percent of GNP through non-inflationary seignorage. Though interesting, it is doubtful whether these seignorage limits can be attained without inflationary pressures, in economies that are growing but at the same time characterised by all other Tanzi assumptions.

Again, with public utility and custom's administrative prices, and some important duties and excise taxes levied on tobacco, alcohol, fuel, etc. at specific rates that are in most cases not adjusted in line with inflation, collection lags under inflationary conditions are likely to lead to substantial loss in government revenues along the lines shown above. Moreover, unless nominal incomes are adjusted proportionately, inflation erodes real incomes. Accordingly, income tax revenue may be negatively affected. The effect would be even greater the larger is the lag in collection of this tax.

Generally, because of the substantial decline or cut-off of foreign sources of finance and other reasons mentioned at the beginning of this sub-section, some countries have resorted to inflation to solve their budgetary problems. This has resulted in real tax revenue erosion and intensification of the tendency to capital flight and currency substitution (Cuddington, 1986; Pinto, 1989) both of which have been shown to have adverse effects on tax revenue.

3.7. Interest Rate Policies and Tax Revenue

Interest rate policies constitute another important factor that affects tax revenues. Interest rate is a determinant of return to savers. As such, it helps in savings mobilisation by financial institutions. When interest rates offered by financial institutions are attractive, savers channel their financial savings through these institutions, which also act as intermediaries between savers and investors and they pay interest income as a return to savers. Thus when interest income is taxed, for example, authorities can with relative ease check on these incomes, and the taxes on them can also be withheld at the source. However, if such savings find their way away from the financial institutions and toward the difficult-to-tax domestic and foreign channels, then there is a significant negative effect on tax revenue. In the former case, interest income represents an income tax base, and a country's level of taxation is affected positively by government policies that encourage savers to

channel their financial savings to financial institutions. In the latter case, the converse is true.

One of the reasons for non-existence of capital markets in many developing countries especially in Africa is the strong administrative control of interest rates at low nominal levels which have often meant highly negative real interest rates, given rising inflation. Indeed, the fact that artificially low interest rates limit or reduce the role of formal financial institutions in intermediation between savers and investors and effective allocation of savings to efficient investment has been well documented, and needs no further emphasis here (see, e.g., Shaw, 1973; Galbis, 1977; Polak, 1989).

A wide range of reasons have been given by governments in favour of financial repression and low interest rate policies. The reasons stretch from the religious to the protection of the poor (see, Adams, 1984; Benoit, 1985). Promotion of investment has also been singled out as a reason, though it makes no economic sense (see, Polak, 1989). Two reasons, one political and another economic seem to make sense. The political reason thus goes: "subsidised credit programs....keep....governments in power through political patronage and in maintaining, and even enhancing, the position of rural (and public enterprise) elites"[12].

The economic reason relates to the ability of the government, and the cost of borrowing to finance its deficit and debt. It thus points to the government's deliberate practice that is directly associated with budgetary policy. Because government deficits in some developing countries and especially most African countries are a major user of private savings, governments have strong vested interests in keeping interest rates *low* so as to capture access to private savings in the low cost ways such as high reserve requirement, required purchase of government bonds by banks at controlled interest rates, credit rationing and others (McKinnon and Mathieson, 1981; Roe, 1990; Reisen and van Trotsenburg, 1988; Polak, 1989).

Financial repression in general, and low interest rate policy in particular, are not without consequences. They affect not only optimal conduct of financial policy but also tax revenue collection and economic growth of the country. For example, as interest rates are maintained at levels that make them unattractive to savers, a progressive exodus of savings away from financial institutions is witnessed. In most cases these savings find their way to the difficult to tax domestic and foreign channels. In this way the tax base shrinks and tax revenue is affected negatively. Such a move by savers may also affect the revenue raising efforts of the government as it faces a limit on how much it can borrow. The experiences of countries like Argentina, Mexico, and Venezuela with interest rate controls and capital flight confirm this limitation (Cuddington, 1986; Tanzi, 1989; Fischer and Easterly, 1990).

With capital flight, the tax base is essentially transferred to another country. Since government's domestic borrowing will be limited, the government will definitely rely more on foreign borrowing thus accumulating foreign debt. In this case capital flight and a growing foreign debt may be two aspects of the same problem since higher level of debt is likely to signal a higher future level of taxation which may cause even more capital flight and smaller domestic tax base (Tanzi, 1989; Ize and Ortiz, 1987; Alesina and Tabellini, 1989). Moreover, since interest payments on external-held debt are contractually tax free in debtor countries, there is a further transfer of the tax base, in direct proportion to the debt size.

Moreover, while interest incomes progressively vanish from the tax base, interest deductions by borrowers continue to be an important drain on tax revenue. This is because those who make payments will continue to deduct fully these payments from their gross earnings in order to determine their taxable incomes. They will do so even when they borrow from curb markets or from abroad (Tanzi, 1989).

The purchase of real assets, including durables and inventories for which nominal rate of return is not taxable is another outlet for savings from run-away savers. This is more common when inflation rates are rising thus making controlled

real interest rates in the bank or government paper uneconomically low to savers. Thus, faced with this situation, "and in the absence of other attractive forms of investment, savers may opt to put their money into any available inflation hedge. The social and private yield of such investments may be zero or negative, but the saver might still select them as long as the yields were less negative than those available on monetary assets" (Polak, 1989; p.61).

Another difficult to tax channel is the "dollarization" process or currency substitution whereby savers channel more and more of their financial savings toward dollar bills physically held in the country. This practice is common especially during periods of high inflation in which the real rate of return on domestic assets is eroded, and it reduces the seignorage that the country's monetary authorities can collect from currency creation (Pinto, 1989; Tanzi, 1989). Illicit substitution of foreign currency and foreign assets for domestic currency and financial assets, it has been suggested, takes place even in countries with severe restrictions on capital movements and other exchange controls (see, Tanzi & Blejer, 1982).

Among the serious consequences of uneconomically low real interest rates is retarded or low economic growth (Lanyi and Saracoglu, 1985). With a distorted capital market as a result of the greater distance between an equilibrium market-clearing rate and the actual level at which controlled interest rates are set, the net inflow of saving is discouraged. As such, less is saved and available savings are poorly matched with investment opportunities either through selective credit allocation or credit rationing. As the allocation of credit under this conditions is not determined by the expected return on capital for planned investments, and it also crowds-out private investments, there is a considerable loss of efficiency leading to low output and low growth (Reisen and van Trotsenburg, 1988; Polak, 1989).

Thus, the cost to a developing country of distorted capital markets can be very high. This cost, measured in terms of that part of investment ratio necessary to compensate for it, might well be of the same magnitude as the amount of foreign

capital that the country receives from abroad in the form of loans, grants and direct investment (Polak, 1989). In terms of tax revenue, these results imply that uneconomically low real interest rates would lower output and economic growth, thus reducing an important tax base and therefore tax revenue.

3.8. Other Policies and Tax Revenue

Public or parastatal sector policies and wage policies are other policies that affect tax revenue, and are hence of interest and relevance to Tanzania.

3.8.1. Parastatal Sector Policies and Tax Revenue

The public sector or parastatal sector as is well known in Africa includes majority owned state enterprises and institutions, popularly known as parastatals, both commercial and non-commercial.. This study focuses on parastatal enterprises (PEs) as known in Africa or public sector enterprises (PSEs) as popularly known in Asian countries[13] for the simple reason that these are supposed to generate profits and therefore contribute to the government tax revenue.

There is no formula as to what percentage of the economy should be under parastatal enterprise sector. Rather, the size and structure of the public or parastatal enterprise sector has varied significantly within groups of otherwise comparable industrial and developing countries (Hemming and Mansoor, 1987). This heterogeneity reflects the range of economic, social and political considerations that have brought to bear upon the decision whether to undertake a particular activity in the private or public sector of the economy. For detailed discussion of these considerations see, for example, Hemming and Mansoor (1987), Ndulu (1984), World Bank (1988) and Kohli (1989).

One of the objectives of establishment of parastatal enterprises has been that of generating surplus that would also contribute to government revenue in the form of dividends and tax revenue. Higher level of dividends and tax revenue would, on

the other hand, mean higher budgetary surpluses, domestic savings and hence higher investment levels. Theoretically what this means is that higher levels of parastatal enterprise profits would be associated with higher levels of government revenue in general and tax revenue in particular, and vice versa. Obviously, higher levels of parastatal enterprise profits cannot be realised without good performance by the enterprises. To this extent, assessment of parastatal enterprise performance has frequently been based on profits generated by them.

Opinions vary as to whether parastatal enterprises have performed better than private enterprises or not. However, a growing body of evidence claims to show that when the public and private sectors are compared in terms of productive efficiency, the private sector outperforms the public sector (Hemming and Mansoor, 1987). In developing countries in particular the performance of enterprises in general and public enterprises in particular, has been poor and of late the public sector has been the focus of criticisms. As a result of accumulating losses and huge debts, many parastatal enterprises have contributed negatively to the nations' savings and capital formation. In Tanzania, for example, politicians and academicians alike have echoed their concern over the same. The extent of poor performance of parastatal enterprises is clearly evidenced in studies by Ndulu (1984), World Bank (1988), Eriksson (1993), and Makoba (1993), among others. In Zambia the story is the same for enterprises managed by non-expatriate managers (Makoba, 1993), while in sub-Saharan Africa as a whole the performance of public enterprises has been argued to be poor irrespective of the ideological commitment of the state (Nellis, 1986).

A survey of Asian countries by Kohli (1991) reveals almost the same situation. Whereas performance of individual public sector enterprises varied in all countries with some of them having excellent performance, overall performance in virtually all countries was unsatisfactory and below that of private sector. As a result, most public enterprises have continued to depend heavily on the government for their investment and loans. However, in terms of rate of economic growth, inflation and

export performance, the record of these enterprises has been "very impressive and is the envy of policy makers in other developing regions of the world" (p.41).

A common thing in both Africa and developing countries of Asia is that in countries where the private sector has been given a prominent role, those countries have shown a healthy economic performance. In contrast, countries which adopted strategies based on large scale public participation have faced economic difficulties basically as a result of failure of the public sector to generate savings (Kohli, 1989; Nellis, 1986; Eriksson, 1993). Government expenditures have outpaced revenues while many public enterprises have become a drain on the budget forcing governments to become increasingly dependent on external and domestic borrowing, largely by resorting to the printing press (credit creation), to finance rising levels of expenditure.

The performance of public enterprises in developing countries has been affected by a combination of factors. It is not the intention of this study to dwell on them in detail. Suffice to mention here some of these factors to include: lack of professionalism among key personnel, inadequate or lack of managerial autonomy, inappropriate pricing policies of the parastatal enterprises as a result of interference of the state in decisions involving price setting, lack of a regulatory system that rewards and punishes on the basis of performance so as to enforce efficiency, and weak competitive pressures and discriminatory treatment of parastatal enterprises. Detailed account of how each of these factors affected the performance of the parastatal enterprises can be found in World Bank (1988), Kohli(1991), Eriksson (1991; 1993), Nellis (1986), and Makoba (1993), among many others.

To the extent that poor performance of public enterprises has contributed to growing debt burden and inflationary pressures in their economies, government revenue must have also been affected, in a manner discussed earlier. Accumulation of losses instead of profits as many parastatal enterprises performed poorly certainly has had an effect of reducing the base for corporate tax, while reduced output might have

affected adversely taxes based on it, that is, domestic sales tax, excise tax and export tax. As a source of government revenue, dividends might also have been reduced as profits declined. Overall, these effects should have meant reduced level of domestic saving, investment, economic growth, taxable base and consequently tax revenue.

3.8.2. Wage Policies and Tax Revenue

Wage policy, defined as the "National government's intervention in the labour market process with a view to bringing about a level and structure of wages different from what the labour market alone would generate " (Valentine, 1981; p.2), could be used to achieve certain economic objectives such as influencing productivity, income distribution, labour or manpower allocation and reallocation between sectors, development of appropriate skills, and tax revenue generation. In most cases, the level at which the wage is set or attained has a bearing on the attainment of these objectives. Wage policy hence can be an incentive as well as a disincentive to attaining certain objectives. In developing countries where wages have been controlled or determined by the state, wage policies have had an implication on the attainment of various government objectives. In this subsection only the relationship between wage policy and the level of tax revenue in developing countries is explored.

Taking the number of employees and tax rates as given, wage policy change that increases wages will naturally increase the amount of tax revenue collected from them and vice versa. The impact on overall tax revenue, however, may not be of the same magnitude and direction because depending on a number of factors such as the extent of wage increase, tax rates and the size of employment by commercial enterprises relative to the whole economy, the increase in wages may affect negatively profits and therefore tax revenue from them. Moreover, higher wages may lead to unemployment and therefore a smaller wage bill and possibly a shrinked income tax base (Tanzi, 1989). Again, this is not automatic since taking wage as an incentive, wage increase may lead to an increase in productivity, output, profits and hence tax revenue from them.

One of the reasons for the fall in productivity that affected the profits of the parastatals in developing countries is wage policy which emphasises and is used as an instrument of achieving equal income distribution among workers irrespective of the level of skills and the contribution made to output. In this case wage policy acts as a demoralising factor (Chandrasekhar & Bagachwa, 1984; Eriksson, 1991; Kohli, 1991). It may not be wrong to generalise therefore that trends in wages in developing countries have been in the declining direction among other reasons because of wage policies that emphasised the need to reduce income gaps and equalise standards of living between different groups and different skills in the society.

The fall in productivity and subsequent erosion of real wages in Tanzania, for example, have been attributed to such a policy plus other factors such as rising inflation and progressive wage tax rates (Valentine, 1981; Mbelle, 1981; Mtatifikolo & Katabaruki, 1992). Also, pursuance of structural adjustment programmes with growth as their major objective have led to the abandonment of explicit use of employment and earnings variables as incomes and wage policy instruments in many developing countries. As such, wage matters have been given little attention to the extent that real wages have fallen sharply necessitating second and third incomes for household survival in some countries in Africa and Latin America (Mtatifikolo and Naho, 1988). Booming informal sectors in those countries are partly explained by this.

Clearly, what the above discussion implies is that wage policies, adjustment policies and inflation levels might have been responsible for reduction in the level of employment and real wages and hence directly the level of tax revenues collected from them. Indirectly, the lower level of wages whether attributable to wage setting policies or high progressive taxes might have had a reducing effect on the morale to produce output. In this way they may have affected adversely the level of taxes that depend on output and profits as their bases. Just like in the other preceding discussions, this one is also an empirical matter that this study intends to investigate.

In the next chapter Tanzania's macroeconomic policy experiences are discussed.

NOTES TO CHAPTER 3

1. Dornbusch (1988) suggests the use of GDP deflator as a proxy for home goods price even-though the measure includes some traded goods together with home goods. "If the prices of traded goods rise more than the prices of home goods, this imperfect measure will still indicate the direction in which the real exchange rate moves" (p.83).

2. Depending on the purpose for which the RER is calculated, some studies (see, e.g., Himarios, 1989) suggest the use of an appropriately weighted average of the trading partner's price levels in terms of the *numeraire* currency, if the purpose is to measure the country's international competitiveness.

3. This is because a substantial amount of nontradables fall under the subsistence and informal sectors. Most of the output of the subsistence sector is produced by peasants and is largely made up of agricultural produce. This is either deliberately exempted from taxation to encourage more production and sale through official channels or is consumed locally or exchanged in non-official markets, where it is difficult to tax. On the other hand, output of the informal sector, as the name suggests, is informal. It does not go through formal channels where it can be taxed easily. Where the sector is large, for example in Tanzania where it was estimated to be 31.4 percent of GDP in 1986 (see, Maliyamkono & Bagachwa, 1990), the informal sector can deny the government large amounts of tax revenue.

4. In 1986, for example, duty exemptions in Tanzania totalled Tshs. 3875.5 million (being the difference between what was actually collected and what could have been collected). Thus, duty exemptions exceeded actual collection by 88 percent. And, exemption rates for categories of goods were 57.5 percent for consumer goods, 54.2 percent for intermediate goods, and 76.9 percent for capital goods (Ndulu *et al*, 1987). In 1989/90 the exemption rates were 58.9 percent, 62.4 percent and 77.9 percent, respectively (Semboja *et al*, 1991).

5. In a regime which is a net seller of foreign exchange to the private sector (e.g., Nigeria), overvaluation subsidises private purchases of foreign exchange and therefore it may worsen the budget deficit. With unification of the rates, this subsidy is eliminated, thus improving the deficit (Pinto, 1989).

6. Capital markets are not well developed in many developing countries especially those in Africa basically because of financial repression. In many countries governments have maintained an extremely strong administrative controls on interest rates, often to make financing of their deficits cheaper, and certainly do not allow the free movement of the rates that would be the necessary incentive to voluntarily sell the large volumes of debt issues required (Hanson & Neal, 1986). A bigger share of whatever amount of revenue that is raised from domestic savings emanates mostly from a variety of compulsory mechanisms whereby governments, especially those in Africa, place their debt (see, Roe, 1990).

7. With the decline in foreign sources of finance following overhang of debt service payments, non-existence or presence of thin capital markets, and inability to raise their tax burdens, many developing countries turned to this 'easy' form of raising government revenue. It is not wrong therefore to attribute inflation to this source of financing, at least in Tanzania (see, e.g., Ndulu and Hyuha, 1989; Kilindo, 1992).

8. This is mainly because tax systems of developed countries are characterised by elastic tax systems with short lags in collection of taxes, whereas the tax systems of developing countries have long lags in tax collection and low (≤ 1) income elasticities. In the former case an increase in real tax revenue is likely to occur while in the latter case, it is not likely (see, Tanzi, 1977; 1988).

9. Tax collection lag is defined as the lapse of time between the taxable event and the tax collection connected with that event. This is made up of two parts - the *legal lag* which is government sanctioned delay in payment, and which carries no penalty; and the *delinquency lag*, which exists when the payment is made after the time it falls due (see, Tanzi, 1977).

10. This is an implicit tax based on inflation as a tax rate and real money balances as a tax base. Given real balances, up to a certain limit the higher is the inflation rate generated by money created to finance the deficit, the higher is the inflation tax revenue collection (see, e.g., Cagan, 1956; Friedman, 1971).

11. The case for or against inflationary finance has been traditionally argued on the basis of the welfare costs of this method of financing public expenditure as compared to alternative means. It has been argued, for example, that the welfare cost to the society of government revenue (generated through this method) becomes quite high at relatively low rates of inflation (see, Bailey ,1956).

12. Adopted from Polak (1989, p.60), otherwise see Blair (1984, p.187).

13. Commercial parastatals or Parastatal enterprises (PEs) as are sometimes known comprise of majority owned state enterprises with 50 percent or more government participation in the share of capital, and other public organisations with independent accounting systems and budgets which are financed by engaging in economic and commercial activities such as production, processing, marketing or trading of goods or services for which they obtain revenue (see Ndulu, 1984). Public sector enterprises (PSEs) on the other hand are defined to comprise departmental enterprises, statutory co-operatives and companies and joint venture with government having a controlling share (see Kohli, 1991).

CHAPTER 4

TANZANIA'S MACROECONOMIC POLICY EXPERIENCE, 1967-91

4.1. Introduction

The Arusha Declaration of February 1967 marked a major change in the Tanzania's economic direction. It committed the country to the principles of socialism and self-reliance, with objectives of attaining greater economic equality, popular participation in decision making, mutual help and co-operation rather than competition and individualism, and development of the country on the basis of the country's domestic rather than foreign resources. The country's new policy put a particular emphasis on the development of agriculture and rural sector where the country's resources and population were concentrated. To ensure that all these socio-political and other economic objectives such as surplus generation were attained, the "commanding heights" of the economy were put under the state's control[1]. It is against this background that the discussion of Tanzania's general economic and macroeconomic performances are undertaken in this chapter, and related to the country's level of taxation experiences in the next chapter.

4.2. The Post-Arusha Declaration Period: 1967-1985

4.2.1. Macroeconomic Performance

The period after the Arusha Declaration was marked by efforts to develop an institutional framework appropriate for planned economic growth and a radical evolution in policy associated particularly with the major change in direction following the Declaration. The 1967-85 period, and in particular the period before the onset of economic crisis in 1978 was thus associated with the structural change of the economy and rapid investment growth due to a substantial increase in overall gross investment as the government took the role of enterpreneurship. New industries were

established and in rural areas emphasis was put on encouragement of people to voluntarily move to "ujamaa" (communal) villages where they could live and work together for the benefit of all, and could get access to economic and social services.

As regards investment, available data show real gross fixed capital formation to have grown at an average rate of 9.5 percent per year during the 1967-77 period and 5.3 percent per year during the 1978-85 period. As percentage of GDP, it averaged 24.3 percent in the period 1967-77 period as compared to 25.1 percent during the 1978-85 period (Table 4.2). The large percentage of investment to GDP in the later period indicates that the high levels of investment ratio attained during the late 1970s were maintained during the crisis period despite the fact that real gross fixed capital formation grew at a relatively slow rate, mainly because of the slow growth in the denominator, the real GDP. In the 1978-85 period real GDP growth rate averaged only 1.4 percent. This was lower than the average growth rate of 3.7 percent recorded over the 1967-77 period (Table 4.2).

Except for few years, the major source of funding of most investments was domestic savings, with external sources and money creation increasingly becoming important in bridging the domestic saving-investment gap or simply the savings gap. The savings gap widened substantially over time except for years 1976 and 1977 in which surpluses accrued following favourable export performance as a result of coffee boom (Table 1.1). It increased over time because of deteriorating performance of domestic savings compared to investment. Unlike real investment which grew at an average rate of 9.5 percent per year, real domestic savings grew at an average rate of 3.9 percent per year during the 1967-77 period (Table 4.2). As a percentage of GDP, domestic savings averaged 18.9 percent during the 1967-77 period and a much lower average of 14.7 percent during the 1978-85 period (Table 4.1). The performance of domestic savings during the period 1978-85 was poorer because savings *decreased* at an annual average rate of 5.7 percent (Table 4.2).

Table 4.1: Summary of Major Macroeconomic Indicators (% of GDP Averages), 1967-91

ITEM	1967-77	1978-85	1986-91
GFCF (Investment)	24.3	25.1	31.6
Real Domestic Savings	18.9	14.7	23.3
Saving-Investment Gap	5.4	10.3	8.3
Overall Budget Deficit	7.3	13.1	10.3
Development Expenditure	8.5	10.2	5.4
External Debt	32.1	59.0	244.8
Merchandise Imports	28.3	21.2	35.7
Manufactured Imports	7.2	3.7	7.8
Total Imports	32.9	23.8	45.0
Import Substitution Index (ISI)	80.9	102.2	38.2
Merchandise Exports	21.6	9.2	12.5
Total Exports	27.7	10.4	16.5
Parastatal Value Added	6.6 [1966]	13.9	19.4
Bank Borrowing/Total Deficit (%)*	35.4	43.3	8.6
Public Debt Servicing/Total Exp. (%)*	7.4 [1968-77]	12.7	28.2
Utility Profit/Total Parastatal Profit (%)*	61.2	72.5	115.1

* Not percentages of GDP, but as defined in the table.
Source: Bureau of Statistics (1994) and Tables 1.1, 4.3, 4.4 and A2.

The biggest component of savings were generated by the private sector or households and business entities. Most of the public savings occurred in the form of parastatal savings, while central government and other organisations contributed a relatively very small share (Ndulu, 1984). The low level, fluctuation and the declining trend of savings in Tanzania was a result of many factors. One of these is the level of incomes in the country. Being among the 25 poorest countries in the world, Tanzania's income per capita has been one of the lowest (Table 4.3). Taking the per capita income as a proxy for income levels, it is evident that income levels in Tanzania have fluctuated and subsequently declined in real terms. During the 1967-77 and 1978-85 periods, for example, real per capita income grew at a mere 0.8 percent per year and -1.8 percent per year on average, respectively (Table 4.2),

mainly due to poor real GDP growth and fast growth in population averaging 2.9 percent per year.

Domestic savings mobilisation and performance was also hampered by institutional bottlenecks, including the monopolistic nature of banks that made them less aggressive in mobilising savings and efficiently channelling them into investment; government interference in the setting up of nominal interest rates and minimum reserve requirements levels of banks; other legal regulations such as the one requiring a customer to account for sources of his/her wealth; and general lack of faith in the banking system by savers because of banks' inefficiencies (Ndulu & Hyuha, 1984).

Table 4.2: Growth/Change in Important Macroeconomic Indicators (% Averages), 1967-91.

ITEM	1967-77	1978-85	1986-91
Real GDP	3.7	1.4	4.2
Real Per Capita Income	0.8	-1.8	1.2
GFCF (Investment)	9.5	5.3	41.3
Real Domestic Savings	3.9	-5.7	45.2
Price Level (Inflation)	9.0	25.8	26.9
Real Interest Rate (Saving)	-5.2	-19.1	-5.1
Money Supply	17.7	23.9	35.0

Source: Bureau of Statistics (1994) and Tables 1.1, 4.4 and A1.

The fact that nominal interest rates fixed by the government discourage savers to deposit their money in banks as saving deposits is particularly true during periods of high inflation. Depending on the level of nominal interest rates, inflation may render the real interest rate and therefore return on savings, negative. On average, the 1967-85 period was characterised by rising rates of inflation and falling real interest rates. Except for the years 1967-70 and 1967-71 other years had negative real interest rates for saving and lending, respectively (Tables 1.1 and 4.4). With an inflation rate

of about 10.5 percent, 1973 marked the beginning of double-digit inflation (Table 1.1). The year 1984 on the other hand recorded the highest level of inflation at 36.1 percent and the most negative real interest rates, at -28.6 percent for saving and -26.6 percent for lending. Whereas inflation was 9 percent and savings real interest rate -5.2 percent on average during the 1967-77 period, during 1978-85 period inflation was 25.8 percent and savings real interest rate -19.1 percent on average. The unfavourable effects of negative or extremely low interest rates in savings mobilisation, investment and overall economic growth were discussed earlier and need not be repeated here.

The rise in inflation occurred mainly as a result of the increase in money supply relative to its demand, as the government resorted to commercial bank borrowing and money creation to finance its widening deficits. As Table A1 shows, the overall budget deficit had an increasing trend over time. This was mainly due to: first, fast increase in overall expenditure caused in particular by fast increase in the development expenditure component; and second, fluctuation in government savings as recurrent expenditure surpassed recurrent revenue in growth beginning in 1978/79. Whereas overall deficit averaged 7.3 percent and 13.1 percent of GDP during the 1966/67-76/77 and 1977/78-84/85 periods, development expenditure averaged 8.5 percent and 10.2 percent during the two periods, respectively (Table 4.1).

Government's domestic bank borrowing to finance the overall budget deficit fluctuated from year to year but overall it financed a significant portion of deficits. Ignoring those years in which financing was zero and the fiscal year 1972/73 in which it was only 1 percent of total deficit, bank borrowing financed an average of 35.4 percent of total deficit per year during the 1967-77 period. The corresponding figure for the period 1978-85 is much higher, at 43.3 percent (Table A1). Government's increasing use of this mode of financing is also evidenced by an increasing share of its outstanding credit to total credit outstanding. As percentage of

total credit outstanding, for example, outstanding credit by government rose from *minus* 5.4 percent in 1966/67 to 63.4 percent in the fiscal year 1984/85, with a peak of 66 percent in the fiscal year 1982/83, the very year which recorded the highest ratio of government domestic bank borrowing to total deficit (Table A1).

If the government share in total credit outstanding is combined with that of official entities, mostly parastatals, marketing boards and crop authorities, then it becomes clear that the share of public sector in total credit outstanding rose from 3.5 percent in the fiscal year 1966/67 to 95.2 percent in the fiscal year 1984/85, with the difference accruing to the private sector. Certainly what these figures potray is a clear evidence of the crowding-out of loans and hence private investment by the public sector. No wonder nominal and hence real interest rates remained low so as to ensure that the public sector financed their activities at a lower cost (Table 4.4).

To the society at large, this cost was not so low since as money supply increased in nominal terms, inflation also followed suit. From 12.2 percent in 1978, inflation rose to 36.1 and 33.3 percent in 1984 and 1985, respectively, or 25.8 percent on average during 1978-85 (Tables 1.1 and 4.2). The welfare costs of inflation have been documented elsewhere (see e.g., Barro, 1972), while its effect on tax revenue was shown in the theoretical section. What is evident in Table A1, however, is that there was a correlation between an increase in domestic bank borrowing and increase in money supply. For example, when there was no government bank borrowing, money supply increase was small and sometimes even negative like in 1967/68. But as soon as bank borrowing increased, money supply also increased. Over time as money supply increased, inflation also increased. That there is a causal relationship between money supply and inflation in Tanzania has been proved to be true by among others, Ndulu and Hyuha (1989) and Kilindo (1992).

Table 4.3: Employment, Real Wage Bill (Tshs), Monthly Wage (Tshs), Real Per Capita Income (Tshs), Real Parastatal Profits (Tshs) and Share of Various Sectors to GDP (%).

Year	Total Number of Employees in the Economy	Total Real Wage Bill (Tshs.m)	Monthly Nominal Minimum Wage (Tshs)	Monthly Minimum Wage (1970 Tshs)	Real Per Capita Income (Tshs 1976 Prices)	Parastatal GDP as % of Total GDP	Share of Utilities and Services in Parastatal GDP (%)	Total Real Parastatal Profit* (Tshs. m)
1967	346741	2808.18	150	160	1229.30			755.34
1968	351711	2919.24	150	155	1253.66			583.05
1969	367926	3025.74	170	175	1244.35			672.58
1970	375635	3097.54	170	170	1255.19			575.70
1971	392770	3148.92	170	160	1255.69			810.06
1972	405713	3143.78	240	209	1312.52			932.64
1973	472503	3595.69	240	189	1315.51			1045.09
1974	484086	4452.53	340	204	1298.39			896.01
1975	470796	3876.95	380	157	1326.85			1207.15
1976	480724	3309.2	380	127	1363.48	9.55	45.13	1251.50
1977	483674	2951.91	380	108	1325.55	9.95	41.88	1390.90
1978	535945	3146.98	380	93	1306.00	13.00	60.33	1796.62
1979	599827	3553.73	380	89	1304.17	11.71	51.19	1342.64
1980	603193	3476.83	480	96	1293.87	13.54	60.98	1813.61
1981	621828	3181.82	600	92	1246.71	13.35	57.53	1462.19
1982	632937	3293.53	600	75	1214.46	13.91	58.06	1500.70
1983	633159	2831.12	600	61	1149.27	12.75	71.88	1477.05
1984	633380	2454.48	810	70	1152.26	12.17	67.39	1518.81
1985	662107	1977.16	810	70	1147.35	11.20	65.76	1560.64
1986	692787	1721.51	1045	43	1150.00	9.04	49.72	774.89
1987	700037	1386.36	1370	45	1173.50	14.79	79.78	1354.31
1988	703684	1101.63	1645	42	1188.23	17.33	92.04	1857.10
1989	n.a.	1599.25	2075	41	1200.42	22.72	89.02	2307.18
1990	n.a.	1735.42	2500	37	1222.76	28.02	72.17	3803.81
1991	n.a.	1802.87	3500	38	1234	24.37	78.03	2699.03

n.a. Not Available

Source: Bureau of Statistics, Tanzania: Selected Statistical Series, 1951-91; Economic Surveys, various; and Own Computations.

Other factors that have been linked to inflation during the period are excess aggregate demand caused by supply bottlenecks especially of food crops, and imported inflation. Apart from excess demand and its related pressure on prices, food shortages that occurred in various years also led to the diversion of foreign exchange earnings toward food purchases abroad. This led to reduction in foreign exchange reserves and non-food imports thus causing pressure on prices of these imports and

their domestic substitutes. Besides, foodstuffs that were imported were bought at higher prices that translated into higher domestic prices. In addition, the oil price shock waves of 1973 and 1979 contributed much towards an increase in the prices of domestic goods and services as their supply costs increased, as well as towards an increase in prices of other imported goods. All or most of these price increases were ultimately passed over to the consumers. For details see Ndulu and Hyuha (1989) who have observed that there was indication that various shocks and their subsequent effects and reaction to them not only sustained the inflation rate, but also contributed to its increase.

Not surprising, for fear of uncontrolled domestic price increases, the Government formed the National Price Commission (NPC) in 1974 the major function of which was to determine reasonable price structures on national basis and provide their orderly variation when necessary. This implied among other functions, to adjust prices for essential main products to cover cost increases (cost-plus pricing) and maintain surpluses. However, over time the number of products the prices of which were adjusted by the Price Commission increased and covered even minor products as their scarcity increased (Rice, 1979). It is only beginning in 1984 that the number of price-controlled products decreased as the government relaxed its controls on prices. On June 15, 1991, for example, the price controlled items were reduced from 113 to 2 only, fertiliser and petroleum (*Daily News*, Saturday, June 15, 1991).

The rising inflation contributed very much to the erosion of real incomes, especially salaries and wages the nominal values of which did not increase at an inflationary rate. One of the reasons why the levels of salaries and wages paid did not increase is over-employment, particularly in the public sector including the parastatal sub-sector. Available evidence shows that while employment was rising over time, real wage bill and wage bill as percentage of GDP were declining (Tables 1.1 and 4.3). Clearly, real wage per employee is not likely to increase in such a situation.

Another reason that is of particular interest is that nominal wages were not increased deliberately by the government so as to avoid a wage-spiral that would further fuel inflation, but more importantly, so as to reduce income inequalities among different groups of salary and wage earners, and that between urban and rural sectors (Valentine, 1983). The fall in productivity and subsequent erosion of real wages in Tanzania, are to a greater extent attributed to such a policy plus other factors such as rising inflation and progressive wage taxes. Table 4.3 depicts nominal minimum wage and also the real level of minimum wage over time from 1967. Considering that the minimum wage, which has been untaxed and has always been increased at a higher rate than other wage categories whenever there were wage increases, the picture that emerges shows the extent to which a Tanzanian employee has found it difficult to command the same basket of goods that he/she used to command in say 1967. As percentage of 1967 real minimum wage, for instance, the real minimum wage was 68 percent in 1977 and only 44 percent in 1985, or 32 percent and 56 percent lower in real terms, respectively. No wonder that labour productivity has declined over time, and corruption cases increased (see Maliyamkono & Bagachwa, 1990) as employees diversified their means of making ends meet by devoting less time to official work and some by soliciting for bribes before rendering service.

Foreign exchange earnings from exports could not fill the savings-investment gap because their gap also have had an upward trend. This is evident in Ndulu & Hyuha (1984) study of investment patterns and resource gaps in Tanzania, which shows foreign exchange earnings from exports to have been unable to finance all of the country's import requirements. Only in years up to 1973 and coffee boom years 1976 and 1977, was export earnings able to finance all consumer and intermediate imports and some of capital goods imports averaging a quarter of total requirements.

As from 1978, foreign exchange earnings could not finance all of recurrent imports, leave alone capital goods imports. Fuelled by import liberalisation of 1978 which drained a substantial part of foreign exchange reserves, 1978-80 war with Uganda, world oil price increases of 1979 and subsequent economic crisis, balance of payments crisis resulted that was characterised by among other things, large imbalances between imports and export earnings (Table A2). The imbalance occurred because of faster increase in imports as compared to exports, and their consequent effect has been the widening trade deficit and current account deficit in the absence of offsetting positive net transfers (Tables 1.1 and A2).

Balancing of the current account has meant a substantial inflow of resources in the form of loans and grants from the rest of the world, through the capital account. That there have been a substantial inflow of resources is evidenced also by the extent of the external indebtedness of the country. From an overall debt of US$ 140 million in 1967, for example, Tanzania's total external debt rose to US$ 6453 million in 1991 (Table 4.4). About 90 percent of total debt has been long-term debt of which an average of over 95 percent is publicly guaranteed and the remainder private non-guaranteed. Short-term debt begun to appear in 1977 and it increased beginning 1978 as a response to recurring domestic economic shocks that forced the government to go for commercial credits, mainly suppliers credits, in order to avoid serious disruption in the country's investment programme following the occurrence of foreign exchange crisis (BOT, 1983). Otherwise before this period the bulk of loans were secured from highly concessional bilateral and multilateral official sources.

Over time, total external debt and external debt service have risen faster than the country's GDP and export earnings, respectively. As percentage of GDP, for example, total external debt rose from about 15 percent in 1967 to about 80 percent in 1984, before declining to 57 percent in 1985 following heavy debt service

commitments (Table 1.1). External public debt service on the other hand rose substantially from about 5 percent of exports in 1970 to about 33 percent of exports in 1985, an increase of 560 percent. In general the overall public debt service has exerted a heavy burden on the economy and a lot of pressure on the budget where it has been claiming a rising share of recurrent budget expenditure. From an annual average of 7.4 percent of total public expenditure during the 1967/68-76/77 period, for instance, public debt service cost rose to 12.7 percent of total public expenditure during the 1977/78-84/85 period (Table A1). Increases in debt service obligations meant a displacement of other expenditures. Most affected were health and education sectors. Share of education in total expenditure in 1984/85 was, for example, half its 1967/68 share (Table A1).

The balance of payments and the debt crisis would not have been there if exports could match imports in terms of growth as the case was in years before 1970. After 1970 the gap between exports and imports widened even in years when the ratio of imports to GDP was falling (Table A2). Substantial capital outflow as indicated by negative figures in the errors and omissions account of the balance of payments is another factor that worsened the balance of payments (Table A2). Substantial capital outflow during the period is not at all surprising given the uncertainties associated with the Arusha Declaration policy announcements and subsequent nationalisations.

The deteriorating balance of payments situation of 1970-71 was arrested in 1972 following the introduction in 1971 of import controls and the strengthening of exchange controls that reduced the pace of growth of imports, in particular consumer goods imports. However, the situation occurred again in 1974 as imports rose to accommodate large food imports to cover domestic food shortages. Except for 1978 in which imports were deliberately and temporarily liberalised, balance of payments situation continued to deteriorate over time as exports financed less and less of

imports. This occurred despite substantial imports compression as evidenced by the decrease in merchandise imports as percentage of GDP from average of 28.3 percent during the 1967-77 period to 21.2 percent during the 1978-85 period, and a decline in total imports as a percentage of GDP from 32.9 percent during the 1967-77 period to 23.8 percent during the 1978-85 period. Corresponding figures for exports are a drop in merchandise exports from an average of 21.6 percent of GDP during the 1967-77 period to 9.2 percent during the 1978-85 period, and total exports from 27.7 percent of GDP to 10.4 percent during the same periods, respectively. Of the merchandise imports, the most affected were manufactured imports (Tables 4.1 and A2).

Import controls and domestic production of import substitutes as import substitution was increasingly pursued are responsible for the decline in manufactured imports, which consisted more of consumer goods. Increase in import substitution is clearly evidenced by a considerable rise in Import Substitution Index (ISI) between 1967 and 1985. From 69.4 in 1967, for example, ISI rose to 102.6 in 1985, or an average of 80.9 and 102.2 during the 1967-77 and 1978-85 periods, respectively (Tables 4.1 and 4.4). However, import restraint was not without consequences. According to Green *et al.* (1980), for example, by the end of 1976 import restraint was biting very deep, limiting replacement and repair of equipment and the maintenance of stock to a dangerous degree, which if continued would have had a destructive effect on the local capacity to produce. The import compression of non-food imports was estimated to be at the range of 1/5 to 1/3 by 1976. Except for 1978 when imports were liberalised, import compression continued and was actually intensified as indicated by the very high levels of ISI.

Exports could not cope with an increase in imports even when the latter were falling as percentage of GDP mainly because of the poor performance of the export sector (Ellis, 1984; Mwinyimvua, 1988; Lipumba and Ndulu, 1989, 1991; Lipumba, 1991; and Luvanga and Musonda, 1993). Neglect of the agricultural sector in terms

of investment, poor incentives in the form of low prices offered to farmers and non-availability of consumer goods[2] as consumer goods imports became compressed and domestic industries produced below capacity, are among the major factors that led to the decline in the supply of export crops, the major contributing factor to poor export performance, beginning 1972. Another was inefficient and costly marketing channels that caused losses and created a big wedge between world market and producer prices that, though demoralising, were offered to the farmers, while the difference covered losses and profits of marketing boards, crop authorities, or co-operative unions.

In the case of manufacturing exports, their supply was constrained by the low industrial production resulting mainly from capacity underutilization. Capacity underutilization was due to among other factors the non-availability of raw materials and spares that could not be imported because of lack of foreign exchange; power interruptions, and water shortages. Although they had good prospects considering what neighbouring countries benefit from them, exports of services such as tourism, transit cargo handling and transportation were not given due weight.

Even in years in which agricultural export volume increased, Tanzania did not earn much in terms of local currency that could be passed over to the producers in terms of increased producer prices, because of the overvalued shilling. Overvaluation of the shilling which also affected manufacturing exports by making them uncompetitive in foreign markets started in the late 1960s but became pronounced in late 1970s and early 1980s as inflation increased. The history of exchange rate policy in Tanzania is such that before 1986 the country did not have an active exchange rate policy. This is because exchange rate was not considered as a major instrument for economic policy management. Rather it was viewed as a secondary and as related to domestic economic management operations more than international balance considerations. As such devaluations were seldom undertaken and their magnitude small relative to the inflation differential between Tanzania and her trading partners,

implying that the shilling was becoming overvalued and its real value falling (Green *et al.,* 1980; Gulhati *et al.*, 1985; Lipumba, 1991).

Over time as the shilling became increasingly more overvalued and fell in value in real terms, parallel foreign exchange market developed and its premium rose substantially (Table 4.4; Kaufmann & O'Connell, 1991; Lipumba, 1991). Kaufmann & O'Connell have attributed the emergence and parallel premium level changes in Tanzania to both portfolio and trade factors. In real terms the exchange rate fell from its highest level in 1969 to its lowest level in 1985, the year in which the parallel exchange premium was also at its maximum (Table 4.4). The premium was 477 percent of the official exchange rate in 1985, having risen from 22 percent in 1967.

Obviously over time as the parallel exchange market developed and became popular because of the high premium that it offered, it encouraged international trade related illegal foreign exchange earning activities such as underinvoicing of exports, overinvoicing of imports, and smuggling of exports and imports[3]. It also facilitated and financed capital flight from the country. The substantial amount of own-funded imports that took place after the introduction of trade liberalisation in 1984/85 is an ample evidence of the existence of such activities (see Ndulu & Hyuha, 1989).

Poor foreign exchange earnings from exports created foreign exchange shortages. As a result, foreign exchange had to be rationed and only those with import licences benefited. This created further shortages as lobbying and rent-seeking activities increased. Being dependent on imported raw materials and spares, most industries were hit hard as they failed to secure enough foreign exchange to import them. As a result capacity underutilization set in, output decreased, and shortages of goods especially consumer goods became a critical phenomenon especially in the early 1980s.

Table 4.4: Tanzania's Exchange Rates (Shs per U.S. Dollar), Interest Rates (%), Total External Debt (US$ m.) and Import Substitution Index.

Year	Nominal Official Exchange Rate (Average)	Parallel Market Exchange Rate (Average)	Parallel Market Exchange Rate Premium (%)	Nominal Interest Rate, Savings (%)	Nominal Interest Rate, Lending (%)	Real Interest Rate, Lending (%)	Total External Debt (US$ m.)	Import Substitution Index (ISI) (1976=100)
1967	7.14	8.7	21.85	3.5	7	4.38	140.00	69.4
1968	7.14	8.5	19.05	3.5	6.5	3.69	170.00	75.4
1969	7.14	8.7	21.85	3.5	6.5	4.51	226.00	78.2
1970	7.14	10.1	41.46	3.5	6.5	3.09	265.00	77.9
1971	7.14	11.6	62.46	3.5	6.5	2.73	327.00	76.3
1972	7.14	15.2	112.89	3.5	6.5	-2.14	402.00	80.5
1973	7.02	14.5	106.55	4	5	-5.46	510.00	75.9
1974	7.14	13.5	89.08	4	5	-14.51	742.00	68.9
1975	7.37	20.3	175.44	4	5	-21.15	945.00	84.4
1976	8.38	21.9	161.34	4	5.75	-1.16	1354.00	100.0
1977	8.29	21.5	159.35	4	6	-5.63	1783.00	103.3
1978	7.71	13.1	69.91	5	7.5	-4.71	1979.00	98.2
1979	8.22	12	45.99	5	7.5	-5.45	2168.00	88.9
1980	8.2	21	156.10	5	12	-18.15	2572.00	96.0
1981	8.28	27.6	233.33	6	12.5	-13.15	2694.00	110.9
1982	9.28	32.6	251.29	7.5	12.5	-16.45	2985.00	105.3
1983	11.14	39.6	255.48	7.5	9.5	-17.56	3380.00	108.3
1984	15.29	55.9	265.60	7.5	9.5	-26.64	3432.00	107.4
1985	17.47	100.8	476.99	10	16	-17.29	3750.00	102.6
1986	32.7	165	404.59	10	16	-16.42	4295.00	85.0
1987	64.26	180	180.11	21.5	29	-0.95	5144.00	69.0
1988	99.29	210	111.50	21.5	29	-2.19	5413.00	33.1
1989	143.38	254.2	77.29	26	31	5.15	5352.00	12.2
1990	195.06	309	58.41	26	31	11.30	6119.00	16.4
1991	219.16	385	75.67	26	31	8.70	6453	13.2

Source: Tanzania Economic Trends (TET), various. BOT, Economic and Operations Report, various
Own Computations .

Parallel market of most basic items developed as the government rationed them at controlled official prices. Smuggling, hoarding and speculation by "entrepreneurs of adversity" or those who had access to rationed goods and earned windfall gains by selling them in parallel market increased even further, as parallel

Table 4.4: Tanzania's Exchange Rates (Shs per U.S. Dollar), Interest Rates (%), Total External Debt (US$ m.) and Import Substitution Index.

Year	Nominal Official Exchange Rate (Average)	Parallel Market Exchange Rate (Average)	Parallel Market Exchange Rate Premium (%)	Nominal Interest Rate, Savings (%)	Nominal Interest Rate, Lending (%)	Real Interest Rate, Lending (%)	Total External Debt (US$ m.)	Import Substitution Index (ISI) (1976=100)
1967	7.14	8.7	21.85	3.5	7	4.38	140.00	69.4
1968	7.14	8.5	19.05	3.5	6.5	3.69	170.00	75.4
1969	7.14	8.7	21.85	3.5	6.5	4.51	226.00	78.2
1970	7.14	10.1	41.46	3.5	6.5	3.09	265.00	77.9
1971	7.14	11.6	62.46	3.5	6.5	2.73	327.00	76.3
1972	7.14	15.2	112.89	3.5	6.5	-2.14	402.00	80.5
1973	7.02	14.5	106.55	4	5	-5.46	510.00	75.9
1974	7.14	13.5	89.08	4	5	-14.51	742.00	68.9
1975	7.37	20.3	175.44	4	5	-21.15	945.00	84.4
1976	8.38	21.9	161.34	4	5.75	-1.16	1354.00	100.0
1977	8.29	21.5	159.35	4	6	-5.63	1783.00	103.3
1978	7.71	13.1	69.91	5	7.5	-4.71	1979.00	98.2
1979	8.22	12	45.99	5	7.5	-5.45	2168.00	88.9
1980	8.2	21	156.10	5	12	-18.15	2572.00	96.0
1981	8.28	27.6	233.33	6	12.5	-13.15	2694.00	110.9
1982	9.28	32.6	251.29	7.5	12.5	-16.45	2985.00	105.3
1983	11.14	39.6	255.48	7.5	9.5	-17.56	3380.00	108.3
1984	15.29	55.9	265.60	7.5	9.5	-26.64	3432.00	107.4
1985	17.47	100.8	476.99	10	16	-17.29	3750.00	102.6
1986	32.7	165	404.59	10	16	-16.42	4295.00	85.0
1987	64.26	180	180.11	21.5	29	-0.95	5144.00	69.0
1988	99.29	210	111.50	21.5	29	-2.19	5413.00	33.1
1989	143.38	254.2	77.29	26	31	5.15	5352.00	12.2
1990	195.06	309	58.41	26	31	11.30	6119.00	16.4
1991	219.16	385	75.67	26	31	8.70	6453	13.2

Source: Tanzania Economic Trends (TET), various. BOT, Economic and Operations Report, various
Own Computations .

Parallel market of most basic items developed as the government rationed them at controlled official prices. Smuggling, hoarding and speculation by "entrepreneurs of adversity" or those who had access to rationed goods and earned windfall gains by selling them in parallel market increased even further, as parallel

market prices rose to "attractive" levels. The crackdown by the government on these "economic saboteurs" some of who went to jail in 1983, shows how intensive the problem had been, and how desperately the government was in trying to overcome the problem that it created through its own policies (see e.g. Maliyamkono & Bagachwa 1990; Collier & Gunning, 1991).

Thus, the emergence of parallel markets and the substantial growth of the informal sector in Tanzania is nothing but a consequence of various draconian controls that were imposed by the Government in various sectors of the economy. To beat or counter these controls, various activities went "underground" or became informal. From 9.8 percent of official GDP in 1978, for example, the second economy GDP in Tanzania is estimated to have increased to 31.4 percent by 1986 (see Maliyamkono & Bagachwa, 1990).

The liberalisation of trade introduced by the government during the financial year 1984/85 to allow own-funded imports was a more positive move toward curbing shortages of almost all industrial goods and arresting further economic collapse. Even then this measure was not an effective policy move for it was not accompanied by other important policies such as devaluation and fiscal and monetary restraint that would help to reduce macroeconomic imbalances and improve resource allocation in the economy. Moreover, policy announcements continued to be echoed which indicated that liberalisation policy was a temporary measure, it was against the ideals of bringing equality among the people since only the rich who could afford the "expensive" imported items benefited, it allowed the use of precious foreign exchange to import unnecessary and unproductive items like lipstick, etc. Obviously, temporary policy announcements are not without costs as Calvo (1987) indicates.

The performance of almost all sectors of the economy was adversely affected by economic policies of the period, especially beginning late 1970s when the economy began to nose-dive. As mentioned earlier, foreign exchange shortage hit

hard the manufacturing sector whose contribution to GDP fell to 8.8 percent in 1985 after rising from about 10 percent in 1967 to 12.7 percent in 1976 (Bureau of Statistics, 1994). After falling by 7.3 percent and 10.8 percent in 1980 and 1981 respectively, the contribution of manufacturing sector to GDP never recovered and it fell continuously up to 1985. All this happened despite the sector receiving a substantial portion of total investment.

Although the foreign exchange shortage contributed greatly to the poor performance of the manufacturing sector, there are other factors which are related and that affected mostly the manufacturing parastatals to the extent of contributing less to total manufacturing value added especially beginning in 1978 (Bureau of Statistics: Analysis of Accounts of Parastatal Enterprises, various). Most of the reasons put forward earlier in the theoretical section to account for poor performance of the public sector in developing countries fit very well in the Tanzanian situation. Most of these are discussed in detail in Ndulu (1984), World Bank (1988), Eriksson (1991; 1993), Makoba (1993), among others. Suffices it to mention here that despite being given exclusive rights or monopoly powers to operate in certain fields, getting preferential treatment over the private sector in allocation of credit, foreign exchange and foreign assistance, willingness to tolerate arrears in payment of bills and debt service, and of course, ultimate bail-out in financial crisis through what has come to be known as "soft budget constraint"[4], most parastatals performed poorly and generated huge losses mainly because of most of those reasons.

As a result of poor performance, parastatal enterprises failed to fulfil one of the objectives for which they were established, that is, the generation of surplus for reinvestment and contribution to government finances and savings. In real terms, overall parastatals' net profit before tax fluctuated but had an upward trend up to 1978 after which it showed a declining trend (Table 4.3). In particular, most of the parastatal enterprises in manufacturing, mining and other material production sectors

incurred losses beginning late 1970s (Bureau of Statistics: Analysis of Accounts of Parastatal Enterprises, various) as foreign exchange with which to import raw materials and spares became more scarce, capacity underutilization became the order of the day, inefficiencies set in production and closures increased due to failure to repair machineries. That there were losses or a decrease in profits of material production parastatals is also evidenced by the rising share of utility and service parastatals' profit to total profit which rose from an average of 61.2 percent during the 1967-77 period to 72.5 percent during the 1978-85 period (Table 4.1).

Overall, public sector's contribution to GDP rose from 18.7 percent in 1967 to 26 percent in 1974, with parastatal enterprises' contribution rising from 45 percent in 1966 to 59.5 percent in 1973. As percentage of total GDP, parastatal enterprises' contribution rose from 6.6 percent in 1966 to 14.9 percent in 1974, an increase of 285 percent, most of which occurred as a result of the expansion of the sector (Ndulu, 1984). Beginning 1974, however, the share of public sector contribution to GDP slowed down. This slowdown coincided with a slowdown in the growth of GDP of parastatal enterprises and manufacturing parastatal enterprises in particular, and it occurred because of the decline in the share of public sector in capital formation, coupled with reduced factor productivity especially in the manufacturing sector (Jedruszek, 1980). Reduced factor productivity was caused by the capacity underutilization due to foreign exchange constraints and infrastructural bottlenecks.

The decline in public sector share and in particular the parastatal enterprises' share to GDP continued up to 1977, recovered in 1978 owing to trade liberalisation that brought in productive imports, but begun to decline again in 1983 as economic crisis intensified (Table 4.3). Interestingly, even then this share remained higher than the highest level it attained in the period before 1978. Most probably, this is because of the change in the pattern of output that resulted in the dominance of utility and service sectors output, a substantial number of whose producers are in the public

sector and parastatal sector in particular. As a percentage of total parastatal sector value added, for example, the combined contribution of commerce, transport, real estates and other service sectors rose from 41.9 percent in 1977 to 71.9 percent in 1983, before declining slightly to 65.8 percent in 1985 (Table 4.3).

The change in the pattern of parastatal sector output reflects or is also a cause of the change in composition of overall GDP. Beginning late 1970s there was a decrease in the contribution to GDP of material production sectors such as agriculture, mining, manufacturing and construction compared to utility and service sectors. The combined GDP contribution of these sectors, for example, declined from 63.3 percent in 1967 to 60.6 percent in 1973, 58.3 percent in 1977, and 55 percent in 1985 (Bureau of Statistics, 1994). Although agricultural sector contribution to GDP recovered beginning 1983, its recovery was however not a reflection of only better performance in output production of this sector, rather it was partly a reflection of continued deterioration in other sectors such as manufacturing, mining, construction, trade and even public administration as provision of services became more strained by inadequate allocation of funds for maintenance and replacement.

4.2.2. Overall Economic Performance, 1967-85

Despite experiencing different shocks, by and large the economy continued to grow during the 1967-80 period, though with slowdowns in 1974 and 1977. On average real GDP growth rate was 3.7 percent during the 1967-77 period and 3.5 percent during the 1967-80 period (Tables 1.1 and 4.2). Owing to drought that affected agricultural production and consequently resulting in serious food shortages of 1974, real GDP grew by only 1.3 percent in 1974 with agricultural sector, the greatest single contributor to GDP contributing -14.4 percent of this growth rate. Real GDP growth rate was low again in 1977 when it grew by only 0.4 percent mainly as a result of poor performance of the manufacturing sector, trade sector,

transport and communication sector, and the agricultural sector once again. The real growth rates of these sectors in percentages were thus, -6.05, -2.01, -1.96 and 1.15, respectively, in that order (Bureau of Statistics, 1994).

Import compression arising from foreign exchange and import controls was the main reason behind poor performance of these sectors. Whereas all sectors, and particularly manufacturing, mining, and transport and communication sectors need imported raw materials and spares for full utilisation of capacity and repair of machineries, trade and agricultural sectors need consumer goods imports as "intermediate" and incentives, respectively. Trade liberalisation of 1978, which brought life again to the economy by relaxing controls on imports, clearly demonstrates how important various imports are, if the economy is to grow. Although the move was short-lived due to its adverse balance of payments effects, it led to the growth in real GDP from 0.40 percent in 1977 to an annual average of 2.5 percent during the 1978-80 period. In years that followed, real GDP growth rate staggered and it recorded a negative figure (-0.5 percent) for the first time in 1981 and the deepest decline of -2.4 in 1983. On average, during the 1978-85 period real GDP grew at annual rate of only 1.4 percent, the rate which is about 60 percent lower than the average rate of growth recorded in the period 1967-77 (Table 4.2).

4.3. The 1986-91 Economic Recovery Period

4.3.1. Overview

After several years of economic crisis, failure of earlier adjustment programmes[5], failure of the 'first phase' government to negotiate with IMF, decrease in inflow of capital and threats by donors to totally withdraw their support, Tanzania had no option but to re-enter negotiations with the IMF and the World Bank in 1986. The Economic Recovery Programme (ERP) was launched in June 1986 following agreement reached with the IMF in August 1986 (Wangwe, 1991). The objectives of

the ERP included the need to increase the output of food and export crops, to raise capacity utilisation in industry from 20-30 percent to 60-70 percent, to restore internal and external balance by pursuing prudent monetary, fiscal and trade policies, to reduce inflation, and to rehabilitate economic, infrastructural and basic social services. Initially, ERP was meant to last for three years (1986/87-1988/89) but was extended for another three years (1989/90-1991/92), and broadened to cover social aspects of adjustment [renamed Economic and Social Action Programme (ESAP)].

Basically, what ERP incorporated were macroeconomic policy actions that are necessary for managing excessive aggregate demand and stimulating supply. Excess aggregate demand was to be managed through such actions as the reduction in government expenditure so as to narrow the budget deficit and therefore reduce deficit financing, the imposition of credit ceilings to reduce money supply, and wage restraint, all of which are essential in reducing inflation. Another policy variable, devaluation, was to be used effectively as an expenditure reduction as well as an expenditure switching instrument. This was to go hand in hand with marketing and price reform to ensure that there was a substantial pass-through of world market prices to farmers and resources are efficiently allocated for increased output and economic efficiency. Resource allocation would also be enhanced through continued import liberalisation and removal of quantitative restrictions, and also through financial sector reform and liberalisation.

4.3.2. Macroeconomic Performance, 1986-91

The 1986-91 period marked a considerable recovery in investment growth. As percentage of GDP, gross fixed capital formation fluctuated but increased to record period average of 31.6 percent and an average increase of 41.3 percent per year (Tables 4.1 and 4.2). That period's average was higher than the 24.3 percent and 25.1 percent averages for the 1967-77 and 1978-85 periods, respectively. An increasing share of this investment was also financed by the private sector whose share rose

from 60.3 percent of total gross fixed capital formation in 1986 to 62 percent in 1991, with a peak of about 66 percent in 1989 (Bureau of Statistics, 1993).

Gross savings fluctuated during the 1986-91 period. Despite this fluctuation gross savings recorded an upward trend. They, for example, rose from 14.9 percent of GDP in 1986 to 29.1 percent in 1991 after passing a peak of 37.1 percent in 1990 (Bureau of Statistics, 1993). On average savings were 23.3 percent of GDP during 1986-91, an average which is higher than the 18.9 percent and 14.7 percent averages for 1967-77 and 1978-85 periods, respectively (Table 4.1). Savings rose and savings gap decreased on average during the period compared to the 1978-85 period.

Whereas foreign savings increased most probably because of relaxation of exchange controls including one restricting the operation of foreign currency bank accounts in Tanzania, domestic savings improved mainly because of nominal interest rates adjustment to levels that were higher than inflation. The adjustment of nominal interest rates caused a rise in savings real interest rate from -22.4 percent in 1986 to 6.3 percent in 1990 and 3.7 percent in 1991 as inflation fell from 32.4 percent in 1986 to 19.7 percent and 22.3 percent in 1990 and 1991, respectively (Table 1.1).

Although ERP aimed at reducing substantially the inflation rate to less than 10 percent, this objective was not achieved during the 1986-91 period. On average annual inflation was 27 percent, which is higher than 25.8 percent average for the 1978-85 period (Table 4.2). It appeared difficult to bring the inflation below 20 percent. The main reason for this failure is the continued increase in money supply. Money supply increase averaged 35 percent during the period (Table 4.2) and signs of it going down were not visible given that in 1990/91 it was as high as 42.7 percent (Table A1). The main source of this increase in money supply was government budget deficit financing although expansion of credit to official entities such as crop marketing boards parastatals, and co-operative unions was also a source.

Although recurrent government budget deficit remained high during the period as shown by the almost steady ratio of recurrent revenue to recurrent

expenditure, and the overall budget deficit decreased slightly to an average of 10.3 percent of GDP (Table 4.1), government bank borrowing decreased substantially from 39.8 percent of total deficit in 1985/86 to no borrowing in 1990/91 (Table A1). This being the case, major source of money supply increase was mostly credit supply to parastatals and other official entities, particularly marketing boards and co-operative unions whose crop buying expenditures, own expenditures and losses were big (Lipumba, 1991; Eriksson, 1993).

After slowing down during the period of economic crisis, borrowing by official entities began to rise again in 1984 following the re-formation of co-operative unions which were abolished in 1976, and in 1986 following devaluation of the shilling that increased requirements for working capital. From 31.7 percent of total outstanding credit in 1984, for example, the share of outstanding credits of official entities rose to 35.7 percent in 1986, and 58.6 percent in 1991 (Table A1). Combining the last share with 17.5 percent government's outstanding share in total credit in 1991, the share of public sector borrowing totals 76.1 percent showing that only 23.9 percent of total outstanding credits were left for the whole of private sector to share. Clearly this is a sign of continued crowding-out of private sector investment by the public sector, even during the economic reform period.

Again, apart from the increase in money supply other factors that contributed to inflationary pressures during the ERP period include excess demand due to supply constraints, imported inflation through imports, devaluation (see e.g. Ndulu & Hyuha, 1989) and price decontrols associated with gradual abolition of price controls on various items. Inflation thus continued to erode the purchasing power of the wage and also per capita real income, which showed some recovery (Table 4.3). Real minimum wage continued to decrease and was, for example, a mere 23.8 and 18.2 percent of real wages in 1967 and 1972, respectively. Despite the introduction of different allowances, take home pay of an employee was still very low. Removal of subsidy on formerly subsidised items such as the staple maize flour as from 1984

when most subsidies were abolished, increased further the cost of living of workers and most urban dwellers. Low work morale and devotion of some official working hours into survival tactics continued at the expense of the decrease in productivity.

As mentioned above, in order to promote export production and also ensure proper resource allocation in the economy, exchange rate adjustment was to be used as a tool. The government adhered to this objective and as such the economic recovery period saw a change in the exchange rate from a year average of Tshs 32.7 per US dollar in 1986 to Tshs 219.2 per US dollar in 1991 (Table 4.4), or a nominal depreciation of 570 percent. In real terms, however, the depreciation in the value of the shilling was only 134.2 percent, which is justified if we consider and correct for past devaluations. According to Lipumba (1991), the depreciation of the nominal exchange rate corrected for past overvaluation had by 1988 returned to the 1966 level, a year in which balance of payments and exchange rate were in equilibrium.

One of the objectives of devaluation was to help improve prices of export crops by increasing them by 5 percent annually. Such an increase would not only be beneficial to farmers but also to co-operative unions and marketing boards whose finances were expected to improve. This objective was, however, not attained partly because of the weak world market prices that could not be fully compensated by exchange rate adjustment all the time, and partly because of continued inefficiencies and thefts[6] in co-operatives and marketing boards (Lipumba, 1991). All the same, the sharp decrease in producer prices was checked. Even then, however, the performance of traditional export crops was mixed. One main reason for a mixed performance was the relative returns to labour which were still higher for food crops sold in the local open market, compared to export crops sold through the official channels that are renowned for delaying payments to farmers (Lipumba, 1991).

Despite the mixed performance of cash crops, overall export performance fairly improved during the ERP period 1986-91 owing to improved performance of non-traditional exports following the introduction of the retention scheme in 1986.

As percentage of GDP, for example, total exports increased from an average of 10.4 percent during the 1978-85 period to an average of 16.5 percent during the 1986-91 period (Tables 4.1 and A2). The performance of exports, however, did not match that of imports which averaged 45 percent of GDP during the same period. Imports increased faster owing to trade liberalisation associated with relaxation of import controls and import substitution policies as indicated by a substantial fall in ISI from an average of 102.2 during the 1978-85 period to only 38.2 percent during the 1986-91 period (Table 4.1). The mismatch between exports and imports widened the foreign exchange gap from 11 percent of GDP in 1985 to 51 percent of GDP in 1991. No wonder trade and current accounts balances of the balance of payments also continued to widen during the period, and had to be filled by foreign capital inflows mostly in the form of commodity import support, grants, and of course loans (Tables 1.1 and A2) despite the fact that the country had already accumulated a very huge external debt and debt service payment arrears.

In dollar terms, for example, the value of external debt increased from US dollars 3.75 billion in 1985 to US dollars 6.5 billion in 1991 (Table 4.4). As percentage of GDP, this external debt increase was from 57.3 percent in 1985 to 306.3 percent in 1989 and 260 percent 1991 (Table 1.1). This sudden and substantial rise in external debt in terms of domestic output was mainly a result of the devaluation of the shilling whose value depreciated rapidly over the period. Thus, since all of the external debt in Tanzania is denominated in foreign currency, devaluation of the local currency should unambiguously lead to an increase in the external debt value in terms of local currency. The composition of debt changed somewhat, with the share of long-term debt in total debt rising and that of short-term declining. The share of IMF credit to total debt also increased marginally during the 1986-91 period. Noticeable also is the fact that most of the debt became long-term and publicly guaranteed in nature during the period. This reflects the guaranteeing of all external debt by the government, rescheduling of debt repayments due, and also

conversion of short-term debt into long-term debt by the Paris Club Creditor members (World Bank, 1993).

Following debt rescheduling, some kind of relief in debt service followed as indicated by a slight decline in public debt service-export ratio from 33.24 percent in 1985 to 21.3 percent in 1991, despite the fact that total external debt was rising (Table 1.1). Even then, this ratio was still higher than those of the period prior to 1985. Besides, the combined external and local debt service payments have continued to claim a substantial share of domestic resources. As percent of total public expenditure, for example, public debt service payments rose from an average of 12.7 percent during the 1978-85 period to an average of 28.2 percent during the 1986-91 period. Not only did debt service payments crowd-out other government expenditures especially those on social services, but they also continued to deny the country a substantial amount of tax base, in a manner discussed earlier.

As for parastatal performance, parastatal enterprises showed an improvement during the period 1986-91 with contribution to total GDP of 19.4 percent on average (Table 4.1). The composition of GDP, however, did not change much from that of the economic crisis periods. Except in 1986 in which their combined share dropped tremendously, utility and services parastatals continued to dominate with an average contribution of 77 percent to total parastatal GDP during the period 1986-91 (Table 4.3). Their highest contribution that amounted to 92 percent of parastatal GDP occurred in 1988, the very year in which the 1.2 percent contribution of manufacturing parastatal sub-sector to total parastatal sector GDP was the lowest.

Apart from the factors discussed earlier that affected the performance of parastatals in Tanzania, poor performance of material production parastatals during recovery period was exacerbated by problems of lack of working capital associated with heavy devaluation of the nominal value of the shilling. Most of these entities found it difficult to raise the domestic equivalence of foreign currency that they needed for importation of raw materials, spares, etc. This partly explains why the

period 1986-91 marked the emergence of an even bigger number of non-performing enterprises that are currently being privatised (see PSRC, 1992). To the extent that the share of utilities and services parastatals to total parastatal profit was very high and exceeded 100 percent on average during years 1987-89 (Table 4.1), most material production parastatals recorded losses. Overall, the share of total parastatal profit in GDP was at its minimum in 1986 but it started to recover in subsequent years especially beginning 1989, as manufacturing sector parastatals recovered slightly and increased their contribution to total parastatal GDP (Table 1.1).

4.3.3. Overall Economic Performance, 1986-91

Compared to early 1980s, overall economic performance improved during the period 1986-91. Even then some macroeconomic indicators such as inflation and balance of payments still showed elements of unfavourable conduct of macroeconomic policies, especially monetary and fiscal policies, and trade policy. Overall GDP, for example, grew at an annual average rate of 4.2 percent as a result of good performance in most sectors of the economy (Table 4.2). The best performance was in the material production sectors that on average grew at the rate twice as much as that of the overall economy. Construction sector had the highest growth averaging 19 percent, followed by mining sector with 6.6 percent, agriculture with 5 percent and manufacturing with 4 percent. Within the service sector, highest growth was in the trade sector at 6.2 percent while the least growth was in the public administration sector at 0.27 percent (Bureau of Statistics, 1994). Thus, unlike the late 1970s and early 1980s, during the 1986-91 period national output was composed more of material products than services.

In the next chapter the impact of various macroeconomic policy changes and general economic performance on the level of taxation in Tanzania during the 1967-91 period, is examined.

NOTES TO CHAPTER 4

1. The state control and role in the economy was extended beginning with the nationalisation of all banks, insurance companies, large private trading companies and milling firms associated with food manufacturing. The government also compulsorily acquired total or majority shares in some industrial firms that became outrightly owned or controlled through the National Development Corporation (NDC), and sisal estates that were put under the Tanzania Sisal Corporation. Large foreign-owned estates in tea and coffee were also nationalised. So were also large transport companies, and large residential and commercial buildings in 1971.

2. Econometric tests of supply response in 17 regions during the period from 1978 to 1984, for example, have found the volume of crop sales to be positively and significantly related to the supply of consumer goods to rural areas and negatively (though insignificantly) related to real crop prices (see Bevan *et al* 1989, chp.10).

3. See, for example, *Daily News*, Tuesday, January 5, 1993: "Importation of Beer: War Against Tax Evaders Begins" in which it was reported that the Government had formally launched a war against tax evaders through illegal importation of beer from Kenya, and that 16 people suspected to have imported 26000 crates worth Tshs. 96 million, had been netted. Beer imported had no records on either border of Tanzania. See also, for example, Dar-Es-Salaam, *Inter-Press Services (IPS)*, Nov. 1, 1994 report: " Tanzania-Commodities: Government Liberalises Coffee Trade" which apart from reporting the announcement by Bank of Tanzania that effective Dec. 15, 1994, coffee exporters would retain all proceeds from the export of coffee, mentions of coffee smuggling that had been going on and that some 6000 60-kg bag were being smuggled out of the country every month from Kagera Region alone - according to its Regional Commissioner.

4. Crudely defined, the soft budget constraint refers to the perception by a firm that losses will ultimately be underwritten through subsidies and credit and that the firm will not be allowed to fail, it will be bailed-out by the paternalistic state and donor agencies. The soft budget constraint works through mechanisms such as negotiable government subsidies, tax exemptions and "tailor- made" tax rates, credits irrespective of unfulfillment of credit conditions, and cost-plus administrative price setting. A detailed analysis of how soft-budget works and its intensity in Tanzania is provided in Eriksson (1991; 1993).

5. Adjustment Programmes tried earlier in Tanzania are the National Economic Survival Plan (NESP) of 1981 and the Structural Adjustment Programme (SAP), which was envisaged to be implemented during 1982/83-1984/85 period. The two programmes failed mainly because of lack of foreign financial resources to support them as no agreement was yet to be reached with the IMF.

6. In 1982, for example, eleven agricultural parastatals lost over Tshs. 2.2 billion and accounted for 80 percent of the overdraft facilities of the National Bank of Commerce (NBC), according to the World Bank Report on 'Parastatals in Tanzania'. The magnitude and the high interest burden of these loans, observe Maliyamkono and Bagachwa (1990, p.15), certainly have put a considerable strain on the government budget (which has to subsidise their operations). This ought not sound strange since during the three year period (1987/88-1989/90), for example, government's subsidy to commercial parastatals increased from Tshs. 2282 million to Tshs. 3096 million, an increase of 36 percent (*Daily News*, Saturday, June 9, 1990, p.4)

CHAPTER 5

TANZANIA'S TAX STRUCTURE AND LEVEL OF TAXATION

5.1. Introduction

The foregoing chapter has shown how Tanzania's macroeconomic and general economic performance were during the 1967-91 period. In this chapter the impact of these performances on the tax system's structure and level of taxation (total tax revenue-GDP ratio or simply total tax ratio) during the same period is explored. Albeit briefly, weaknesses in tax administration are also explored.

5.2. Tax Structure Changes

Prior to the Arusha Declaration of 1967 the Tanzania's tax system was characterised by low total tax revenue ratio averaging only 10 percent of GDP (URT, Financial Statement and Revenue Estimates, various). This essentially reflected the presence of relatively large subsistence sector that was difficult to tax. The tax system consisted of few major taxes that included import duty which contributed 37 percent of total tax revenue on average over the period; income taxes which contributed 25 percent of total tax on average; and excise duty which contributed an average of 13 percent of total tax revenue. Export duties were less important and contributed an average of only 2 percent of total tax revenue, while other taxes contributed the remaining share of total tax revenue. As remarked in chapter 1, tax revenue stability of the period 1961-66 was ensured by such factors as openness of the economy, balance of payments and price stability, and overall growth of the economy, despite the existing taxes being few and their overall tax level low.

During the 1967-91 the tax system went through various changes which culminated into the tax structure that existed as of 1991. Among the major tax

structure changes the prominent ones were: first, the introduction of sales tax in 1969/70. Sales tax was introduced so as to offset a decline in import duty revenues caused by the growth of import substitution industries, and reduced rural taxation (Osoro, 1993; Budget Speech, 1969/70).

Second, the reorganisation of income tax in 1973/74 by combining the old personal income tax and surtaxes into a single individual income tax. The reorganisation of income tax followed the placing of responsibility of income tax in the hands of the Tanzanian government instead of the East African Income Tax Department, under the East African Community. The abolition of the single, married and child allowances, and the making of income tax more progressive with marginal rates ranging between 20-95 percent, were also implemented in 1973/74 (Osoro, 1993). The reorganisation also led to the introduction of Pay-As-You-Earn (PAYE) tax on employees, while in 1976 company tax rates were raised from 45 percent to 50 percent for resident companies, and from 50 percent to 55 percent for non-resident companies. Subsequent reductions in income tax marginal rates also took place in years 1985/86 (20 - 75 percent), 1988/1989 (15 - 55 percent), 1989/90 (10-50 percent) and 1990/91 (7.5 - 40 percent).

Third, the abolition of excise duty in 1979/80 following the merging of excise duty rates with sales tax rates on goods liable to the excise duty (Ministry of Finance, Financial Statement and Revenue Estimates, 1978/79 and 1979/80); and fourth, the complete abolition of export taxes in June 1985 so as to reduce the tax burden, give incentives to exporters, and also make the country's exports more competitive.

Fifth, the downward and upward adjustment of tax and duty rates during the 1985/86 - 1987/88 period and reduction of the complexity of customs tariffs through the customs tariff restructuring exercise that aimed at rationalisation of rates and simplification of the rate structure from several different *ad valorem* and specific rates to only seven rates during the financial year 1988/89 (Financial Statement and

Revenue Estimates, vol.I, 1985/86, 1986/87, 1987/88 and 1988/89). The new rates ranged from 0 percent for basic necessary goods such as medicines and tractors to 100 percent for luxury items.

Sixth, the re-introduction in 1989/90 of excise duties that were abolished during 1978/79 - 1979/80 financial years (Financial Statement and Revenue Estimates, vol.I, 1989/90); and seventh, further rationalisation of the customs duty tariffs and sales tax structure in the financial year 1990/91. Import duty rate categories were reduced from seven to only five categories ranging from 0 percent to 60 percent, while sales tax rates were reduced from six categories ranging from 0 percent to 75 percent to only four categories ranging from 0 percent to 40 percent. The excess of the sales tax rate above 40 percent were, after the restructure of the sales tax tariff, transferred to excise duty which also had its rates rationalised. The new excise duty rates numbering eight ranged between 10 percent and 85 percent (Financial Statement and Revenue Estimates, vol.I, 1990/91; URT, 1991).

Lastly, are other minor but numerous tax structure changes that involved the introduction, the abolition or the restructuring of minor taxes such as road toll, motor vehicle taxes and licences, interest income tax, capital gains tax, estates duty, etc.

5.3. Structure and Level of Taxation

In this sub-section the performance of level of taxation in Tanzania is examined. Although averages in Table 5.1 show this performance to have been improving over time with minor decline, a careful look at these figures reveals that this performance was not as good as the averages seems to suggest. For one, looking at the trend of the total tax ratio or even real total tax revenue, one observes a totally different picture. The total tax ratio trend was not upward throughout the period as suggested by average tax ratio figures, but rather, it was only upward up to 1975 when it reached a peak and then started fluctuating with a downward trend that

reached its minimum level in 1986 (Figs. 5.1 and 5.2). In respect to total real tax revenue the trend was upward, though with fluctuations, up to 1981 when it declined afterwards only to recover beginning in 1988 (Table A3; Figs. 5.1 and 5.2).

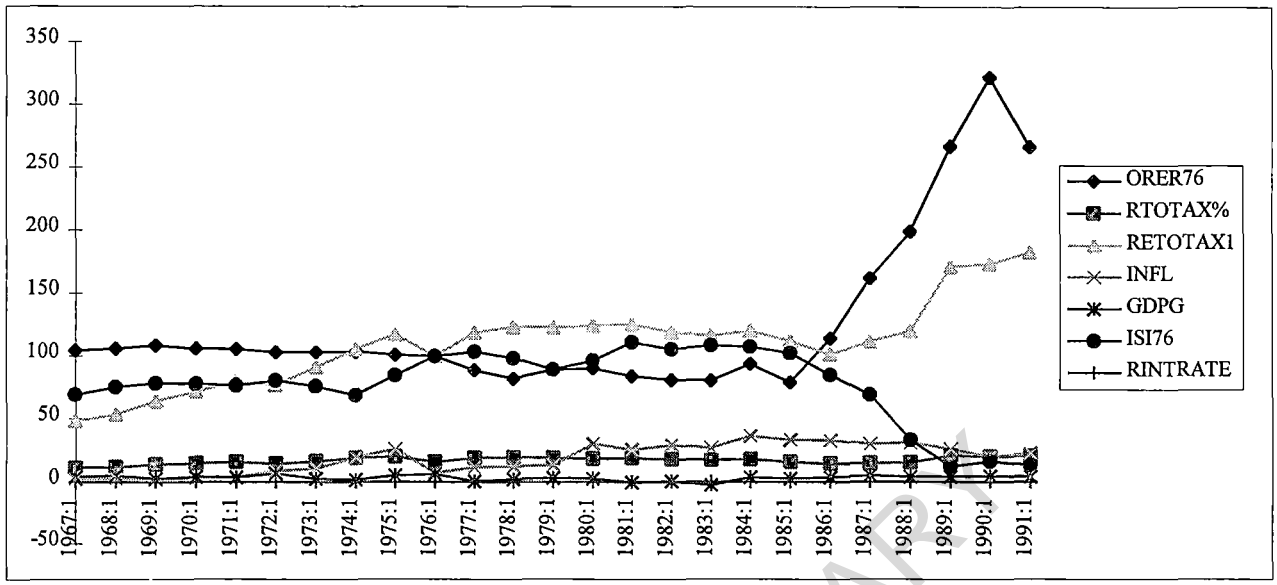
Concentration of the analysis that starts in the next paragraph is more on the level of taxation performance in Tanzania. Unlike tax revenue magnitudes, level of taxation reflects the extent to which the very tax revenue magnitudes change relative to the overall tax base as represented by GDP. Definitely, infrequent references are also made on real tax revenue performance since a glance at the growth rate trends of the two magnitudes reveals an interesting parallel movement, full of short period fluctuations (Figs. 5.1 and 5.2). The analysis covers the 1967-91 period, although sub-period analysis is also undertaken in discussion of various tax components.

Table 5.1: Ratio of Total Tax Revenue and Various Taxes to GDP (%) (Averages), 1967-91.

ITEM	1967-77	1978-85	1986-91
Total Tax Revenue	15.4	17.9	17.5
Trade Taxes	4.7	2.5	2.3
Import Duties	3.7	1.8	2.3
Export Taxes	1.0	0.6	-
Sales Tax and Excise Duties	5.2	9.1	9.1
Sales Taxes	4.4 [1970-77]	8.8	7.9
Income Taxes	4.8	5.8	5.2
Company Taxes	2.8	3.6	3.7
Personal Taxes	1.2	0.52	0.6
PAYE	0.7 [1973]	1.7	0.8
Motor Vehicle Licences and Taxes	0.3	0.1	0.2
Production Taxes	0.22	0.05	0.03
Property Taxes	0.05	0.1	0.04
Miscellaneous Taxes	0.22	0.3	0.7

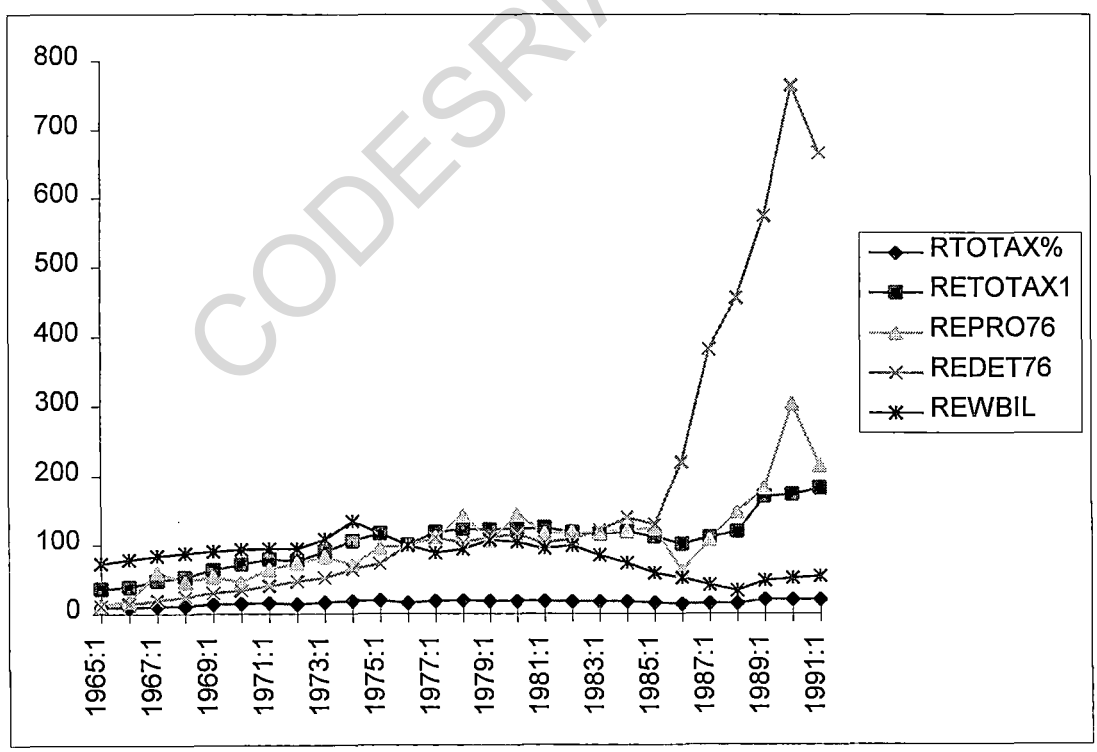
Source: Computations based on Financial Statement and Revenue Estimates, vol.I, (various) and Tables 1.1 and A3.

Fig. 5.1: Tax Revenue-GDP Ratio, Real Tax Revenue and Some Macroeconomic Variables



Key: ORER76 = Official Real exchange Rate; RTOTAX% = Total Tax revenue as % of GDP; RETOTAX1 = Real Total Tax Revenue (1976=100); INFL = Inflation; GDPG = GDP Growth Rate; ISI76 = Import Substitution Index (1976=100); RINTRATE = Real Interest Rate; REPRO76 = Real Parastatal Profits (1976=100); REDET = Real External Debt (1976=100); REWBIL = Real Wage Bill.

Fig. 5.2: Tax Revenue-GDP Ratio, Real Tax Revenue and Other Macroeconomic Policies



Clearly, looking at both the change in the tax ratio and change in real tax revenue one notices an interesting pattern of performance that resembles the performance of the economy in general and macroeconomic policies that affected it, in particular. For example, whereas during the 1967-77 period total tax ratio grew at an average rate of 7.4 percent and real tax revenue at an average of 11.2 percent, during the 1978-85 period corresponding growth rates were -2 percent for total tax ratio and -0.6 percent for real tax revenue (Table 5.2). Just as a reminder, annual real GDP growth rates were 3.7 percent and 1.4 percent on average during the 1967-77 and 1978-85 periods, respectively.

Table 5.2: Growth Rates of Total Tax and Other Major Taxes (%) (Averages), 1967-91.

ITEM	1967-77	1978-85	1986-91
Total Tax Ratio	7.4	-2.0	5.1
Real Total Tax Revenue	11.2	-0.6	9.6
Trade Taxes	12.0	-13.2	22.7
Import Duties	1.4	-4.8	22.7
Sales Tax and Excise Duties	21.0	3.9	6.3
Sales Taxes	21.7 [1970-77]	7.6	-0.4
Income Taxes	7.4	-1.0	14.2
Corporate Tax	7.3	1.3	19.0

Source: Computations based on Financial Statement and Revenue Estimates, vol.I., (various) and Tables 1.1 and A3.

A link between macroeconomic and economic performance on one hand and tax performance on the other, continued to be noticeable during the 1986-91 ERP period. Thus, economic recovery that we saw earlier brought some recovery in tax revenue collection. A decline in the level of total tax revenue that reached its minimum in 1986, the very year that an agreement was reached with the IMF and the World Bank on economic recovery, started to recover in years that followed. As percentage of GDP, total tax revenue took a rising trend and increased from 14 percent in 1986 to the highest level ever attained since independence of 20.7 percent

in 1989 before declining slightly to 20.3 percent in 1991 (Table 1.1). Although during 1986-91 period average total tax revenue was 17.5 percent of GDP, a ratio that is lower than 17.9 percent attained during economic crisis (mainly because of low ratios during the 1986-88 period), in growth terms its change was positive and the trend upward (Figs. 5.1 and 5.2). The total tax ratio and real total tax revenue increased at an annual average rates of 5.1 percent and 9.6 percent respectively during 1986-91 period, compared to annual average rate of -2.0 percent and -0.6 percent, respectively, during the 1978-85 period (Table 5.2).

Figs. 5.1 and 5.2 depict the relationship between total tax ratio and real total tax revenue and important macroeconomic variables, including real GDP growth rate. Although the pattern of relationships is not very clear, during 1967-85 period the total tax ratio and total real tax revenue appear to follow the movement of the real exchange rate, real interest rate, and economic growth (Fig. 5.1) and real parastatal profits and real wage bill (Fig. 5.2), which are variables that through their poor performance seem to have adversely affected the level of taxation. Inflation also affected both the total tax ratio and total real tax revenue, but in an opposite direction. That is, the higher was the inflation, the lower was the total tax ratio and total real tax revenue and vice versa (Fig. 5.1). In Fig. 5.2, whereas an increase in total real external debt seems to have followed or have been followed by a movement in the total tax ratio and total real tax revenue especially beginning late 1970s when the debt begun to rise fast, the intensification of import substitution policies seems to have depressed the share of total tax revenue in GDP and total real tax revenues especially in the 1970s and early 1980s, while their relaxation in the second half of 1980s seems to have contributed to the rise in real tax revenue collection.

Slightly lower average inflation rate of 27 percent compared to an average of 30.2 percent during 1980-85 period; exchange rate depreciation; increase in real interest rates as a result of reduced inflation and upward adjustment of nominal

interest rates; trade liberalisation accompanied by relaxation of import controls (as shown by a fall in ISI), devaluation and tariff reductions especially in financial year 1988/89; and real overall GDP growth are some of the reasons behind improvement in real tax revenue growth during the period 1986-91. As Fig. 5.1 and 5.2 show, trends in the total tax ratio and total real tax revenue were upward, most likely because of these factors.

As details below will show, poor performance in total tax revenue during 1986-88 was caused by among other reasons poor performance of manufacturing sector especially in 1986, tax evasion and avoidance, smuggling of imports, duty and tax exemptions both statutory and discretionary, corruption and low tax collection effort (Tables 5.4, 5.5 and A4). Smuggling of imports, underinvoicing of imports, evasion and avoidance might have been compounded by a combination of high tariff and tax rates and devaluation. The fact that tax revenue increased substantially after the reduction of tariff and tax rates in 1988/89 is a clear testimony to this. In any case, one can easily understand the overall performance of tax revenue by discussing disaggregated categories or individual taxes. Such an approach is useful in that it makes it easier to trace the links or transmission channels of performance from different taxes to the total tax revenue. The period 1967-91 witnessed a changes in performance and relative contribution of different tax categories and components as analysed hereunder.

International Trade Taxes: These include import duties and export taxes. Taxation of imports and exports has had its legal foundation in the Customs Tariff Act No.12 of 1976, which provides for the imposition of import duties and suspended duties into Tanzania, and the Export Tax Act No.17 of 1970 which provides for the imposition of export tax on certain goods exported from Tanzania. International trade taxes (trade taxes in short) are supposed to also include sales tax on imports, but because sales tax on imports was lumped and reported together with sales tax on

local goods before financial year 1976/77, they are not included in this category. Out of total trade taxes import duties contributed an average of 83 percent and export tax the rest, during the 1967-85 period, while during the 1986-91 period import duties contributed 100 percent of trade taxes after the abolition of export taxes in 1985/86. In terms of importance, trade taxes ranked number one up to 1970, afterwhich they ranked number three throughout the 1971-91 period (Table 5.3).

Trade taxes were more important in the 1960s than in the 1970s and 1980s partly because in the 1960s the economy was relatively more open and its performance, particularly the performance of exports was very good, and partly because of the prominence of sales tax and excise duties in the 1970s and 1980s as will be shown below. Import controls together with overvalued exchange rate seem to have affected negatively the amount of import duty collection beginning early 1970s when the controls were introduced. As a percentage of total taxes, for example, trade taxes decreased from their highest level of 46.4 percent in 1968 to only 9 percent in 1985 before recovering slightly to 14.8 percent in 1991 (Table A3). On average the contribution of these taxes to GDP was 4.7 percent during 1967-77 period, 2.5 during 1978-85 period, and 2.3 percent during 1986-91 period (Table 5.1). Thus, the trend of the ratio of these taxes to total tax as well as to GDP was a continuously declining one both before and after the abolition of export taxes in 1985. Note, however, that inspite of this *average* decline, trade taxes (only import duties) recorded an upward trend beginning 1986. In real terms they grew by 22.7 percent on average during 1986-91 period, an average which is higher than -4.8 percent and -38.1 recorded by trade taxes and import duties, respectively, during 1978-85 period (Table 5.2).

Import Duties: Import duties were more important in the 1960s and the early 1970s before import controls were instituted and subsequently strengthened as balance of payments worsened. Low elasticity of this tax during 1969-79 period and

1974-84 period confirms the role of import compression in reducing its revenue contribution (Table 5.5). From their highest level of 42.3 percent in 1968, for example, import duties as percentage of total tax revenue declined to only 8.9 percent in 1985 before rising fairly to 14.8 percent in 1991 (Table A3). On average import duties contributed 3.7 percent of GDP during 1967-77 period, 1.8 percent during 1978-85 period and 2.3 percent during 1986-91 period (Table 5.1).

During the 1967-85 period import duties as a share of total tax revenue had a declining trend with a slight rise in 1978 as a result of import liberalisation which, however, brought in more imports of the public sector, most of which are exempted from taxes. During the 1986-91 period import duties as a percentage of total tax revenue recorded an upward trend (Table A10) mainly because of import liberalisation, devaluation, and a reduction in tariff rates following tax and tariff rates rationalisation that started in 1986 but was widely implemented in 1988/89.

Table 5.3: Share of Various Taxes in Total Tax Revenue (%) (Averages), 1967-91.

ITEM	1967-77	1978-85	1986-91
Trade Taxes	31.6	13.5	12.6
Import Duties	25.6	10.1	12.6
Export Taxes	5.9	3.4	-
Sales Tax and Excise Duties	32.0	51.2	52.5
Sales Taxes	25.7 [1970-77]	49.8	46.3
Income Taxes	31.5	32.3	29.4
Company Taxes	17.4	20.0	21.0
Personal Taxes	1.2	0.52	0.6
PAYE	09.0 [1973]	9.4	5.0
Motor Vehicle Licences and Taxes	2.0	0.7	1.4
Production Taxes	1.3	0.3	0.2
Property Taxes	0.3	0.6	0.2
Miscellaneous Taxes	1.4	1.4	3.8

Source: Computations based on Financial Statement and Revenue Estimates, vol.I., (various) and Table A3.

Table 5.4: Tanzania's Value of Imports Exempted From Taxes (Tshs. m) and Exempted Duties and Taxes as % of Their Actual Collections, 1982-91.

Year	Imports Exempted from Taxes (Tshs. m)	Total Imports (Tshs. m)	Exempted Imports as % of Total Imports	Import Duty Exempted as % of Collected*	Sales Tax Exempted as % of Collected	Excise Duty Exempted as % of Collected*
1982	4732.671	10519.0	44.99	n.a.	n.a.	n.a.
1983	3880.618	8547.4	45.40	140	n.a.	n.a.
1984	5361.249	9652.8	55.54	95	n.a.	n.a.
1985	6140.631	15287.8	40.17	78	n.a.	n.a.
1986	12730.961	30577.1	41.64	95	n.a.	n.a.
1987	31119.337	59340.1	52.44	70	n.a.	n.a.
1988	50970.3	80828.0	63.06	137	n.a.	n.a.
1989	54126.415	146705.2	36.89	n.a.	n.a.	n.a.
1990	121673.566	136091.1	89.41	91	122	29
1991**	205737.189	335993.6	61.23	147	241	147

*Based on Financial Year, e.g., 1982 Corresponds to Year Ending 30th June, 1982. ** Provisional.
Source: Eriksson (1993) and Customs & Sales Tax Department

Factors that contributed to poor import duty performance during the 1967-85 period include: the compression of imports which constitute the base of the import duties as a result of import controls and other quantitative restrictions; overvalued exchange rate; poor performance of exports, less foreign exchange earnings and therefore less imports; low collection 'effort' (Table A5); and evasion and avoidance of taxes through such means as underinvoicing of imports and smuggling of imports to beat import controls (see e.g. Maliyamkono and Bagachwa, 1990). Others are increasing use of tax exemptions especially the statutory ones (discussed in detail below), and laxity in evaluation of taxable imports due to complicated tax schedules, too much documentation, corruption and low motivation on the part of customs and other tax department workers whose salaries are, like those of other employees and especially fellow civil servants, very low[1] in real terms and command about 1/4 of 1967 basket of goods.

Although there was an improvement in collection of import duties during the period 1986-91, there is every reason to believe that the ratio of import duties to total tax revenue would have been much higher if it were not for low 'effort' made to

collect these duties (Table A5). As Table A5 shows, the ratio of import duty revenue to imports of goods (its base) has had a declining trend beginning in 1986. Apart from administrative weaknesses as will be shown later, low effort was caused by illegal import related practices such as underinvoicing, smuggling, 'illegal' discretionary duty exemptions[2], underpayment and non-payment of duties for various reasons including corruption, etc. For example, as percentage of total imports, duty and tax exempted imports have had a rising trend, rising from 45 percent in 1982 to 89.4 percent in 1990. They were 45.4, 55.5 and 40.2 percent, in 1983, 1984 and 1985, respectively, in that order (Table 5.4).

Table 5.5: Buoyancy and Elasticities of Major Taxes in Tanzania

Mtatifikolo & Katabaruki (1992)			**Osoro (1993)**			
	BUOYANCY	*ELASTICITY*	***1969-90***	*BUOYANCY*	*ELASTICITY*	*Difference, %*
Income Tax			**Income Tax**	1.0397	0.9159	12.39
1969-79	1.44	1.48	**Company Tax**	1.1349	1.1349	0
1980-90	0.92	0.62	**PAYE**	0.6601	0.6601	0
1974-84	1.17	0.97	**Sales Tax**	0.8961	0.7943	10.18
Sales Tax			**Import Duty**	1.0843	0.5518	53.25
1969-79	1.84	0.97	**TOTAL TAX**	1.0602	0.7588	30.14
1980-90	0.9	0.67				
1974-84	1.16	0.94	***1979-89***	*Tax- to-income elasticity*	*Base-to-income elasticity*	*Tax-to-base elasticity*
Import Duty						
1969-79	0.6	0.2	**Income Tax**	0.9158	0.8698	1.0743
1980-90	1.37	1.18	**Company Tax**	1.1349	1.117	0.9006
1974-84	1.16	0.59	**PAYE**	0.6601	0.4231	1.5062
TOTAL TAX			**Sales Tax**	0.7943	0.7083	1.0171
1969-79	1.12	0.71	**Import Duty**	0.5518	1.5923	0.4367
1980-90	1.04	0.78				
1974-84	0.998	0.86				

Source: Mtatifikolo and Katabaruki (1992) and Osoro (1993).

Given these levels of exemptions, it is obvious that the Government incurred substantial losses of import duty revenue. Import duty exempted as percentage of that collected, for example was 140, 95 and 78 percent in 1982/83, 1983/84 and 1984/85, respectively in that order (Table 5.4). Some of these exemptions ('legal') were issued

in accordance to laid down procedures while others ('illegal') were issued without following the laid down procedures. A quick look into the Controller and Auditor General's reports for 1981/82 and 1982/83, for example, reveals the amount of import duty exempted 'illegally' or under obsolete exemption orders to be Tshs 25.6 million in 1981/82 and Tshs 26.4 million in 1982/83. These constitute 3.7 and 3.6 percent of total import duty revenue collections in the two years, respectively. Combining these amounts with other sources of import related tax revenue losses implies an even higher amount of government revenue loss. Other revenue loss sources as revealed by the Controller and Auditor General's reports include misappropriation, missing customs entries, and wrong levy of import duty and sales tax as a result of classification of imports under wrong tariff headings, among others.

Exemptions continued to increase over time as percentage of total imports, rising from 41.6 percent in 1986 to 89.4 percent in 1990 (Table 5.4), thus causing a substantial loss of revenue to the government. Import duty revenue "lost", for example, was 95, 70, 137 and 95 percent of import duty collected in 1986, 1987, 1988 and 1990, respectively, in that order (Table 5.4). The distribution of exemptions to different beneficiaries[3] are shown in Table A4. A casual observation of all import related tax categories, reveals that the biggest beneficiaries of exemptions were the Government itself and parastatal organisations. These two categories of exemptions constituted 65 percent of all duty and tax exempted imports. Other astonishing figures are those of partial payments (4 percent of total exemptions) and Ministerial exemptions (2.1 percent of total exemptions) (Table A4).

While partial payments amount to a lag in collection and therefore real revenue erosion by inflation since no interest payments are attached, the discretionary exemptions by the Minister for Finance are too large to rule out any abuse of his powers. One of the concerns that has repeatedly been raised by the Controller and Auditor General relates to this, that is, wrong or doubtful exemptions of import duty

and sales tax on imports, based on the authority of Government Notices though the exemptions in question were clearly outside the scope of the respective Government notices. In 1990/91, for example, 45 import duty and sales tax exemptions valued at Tshs. 406 million were granted in this manner. Notes the Controller and Auditor General in part: "I am not certain whether the treasury letters were followed up by issue of proper Government Notices by the Minister" (URT 1992, p.49).

Together with revenue loss channels mentioned above, most recent tax evasion loopholes according to the Tanzania's Minister of Finance include: the abuse of tax exemptions offered through Investment Promotion Centre (IPC) to attract investors, selling within the country of goods declared for transit to or from Tanzania's many landlocked neighbours, and reselling of raw material and spare parts imported free of duty as part of incentives to investors (IPS, Feb. 28, 1995; Paris).

Export Taxes: During the period 1967-85 export taxes contributed an average of about 17 percent of trade taxes. Like import duty, export taxes had had a declining trend and contributed less and less to both total tax and GDP, except in 1977 when export earnings were high because of coffee boom (Table A3). As percentage of GDP, for example, they averaged 1 percent during 1967-77 period and 0.6 percent during 1978-85 period (Table 5.1). Poor performance of export taxes was caused by poor export performance because of among other reasons overvalued exchange rate, reduced production for export due to various reasons mentioned earlier, illegal trade practices such as smuggling and underinvoicing of exports (see e.g. Maliyamkono & Bagachwa, 1990); and laxity reasons as mentioned above.

Sales Taxes and Excise Duties: These include excise duties and sales taxes on both domestic or local goods and imports. Beginning 1985 some services such as telephone, electricity, and catering in designated hotels and restaurants have also been liable to sales tax. Sales tax was introduced in fiscal year 1969/70 by the Sales Tax Act No.30 of 1969 and the Sales Tax Regulations of 1969 made under Section

66 of the Act. The 1969 Act was later repealed and replaced by Sales Tax Act No.13 of 1976. Excise duty which dominated this tax category before sales tax was introduced, was initially introduced into East Africa by the British in the 1950s and was a replica of excise duty system of Britain. After the break-up of the East African Community in 1977 the administration of excise duty was vested in the hands of the Customs and Excise Department while the East African Excise Management Act which applied during the Community days was adopted and applied under Act No.19 of 1977 (URT, 1991). Excise duty was abolished and merged with sales tax in the fiscal year 1979/80 but was re-introduced again in the fiscal year 1989/90.

Overall sales taxes and excise duties increased in relative importance becoming the most important tax category beginning in 1973 when they contributed about 39 percent of total tax revenue, having risen from about 18 percent in 1967. By 1985 this tax category contributed as high as 59.2 percent of total tax revenue before its contribution declining to 49.8 in 1991, as the contribution of import duties rose (Table A3). Out of total sales tax and excise duty revenue, sales taxes have contributed an average of around 90 percent. Out of sales taxes, sales tax on domestic goods and services have contributed over 80 percent and sales tax on imports the remainder before 1987. Beginning 1987 the share of sales tax revenue from imports on total sales tax revenue rose to about 25 percent owing to an increase in imports.

As percentage of GDP, sales taxes and excise duties increased from an annual average of 5.2 percent during 1967-77 period to an annual average of 9.1 percent during 1978-85 period, or an increase of 75 percent (Table 5.1). During the 1986-91 period the contribution of sales taxes and excise duties to GDP remained stagnant at 9.1 percent on average, after declining during 1986-89 but recovering slightly only in 1990 following the re-introduction of excise duties. Although the trend of sales taxes and excise duties was upward but fluctuating during 1967-85, in real terms their growth rate was falling over time (Table 5.2). Their declining growth rate trend,

however, was reversed during the period 1986-91 when on average they grew at 6.3 percent, mainly due to high growth in excise duties since sales taxes declined by 0.4. Lower but recovering production and exemptions of sales tax and excise duties on imports (Tables 5.4 and A4) are some of the reasons that adversely affected the performance of these taxes. Since most of the increase in this tax category occurred because of better performance of sales taxes that constitute 96 percent of sales taxes and excise duties, a detailed exploration of them is in order.

Sales Taxes: Sales taxes were introduced in 1969/70 and in the same year contributed 16.3 percent of total tax. They had been rising since then, reaching a peak of 58.9 percent of total tax revenue in 1985, before declining to 32.4 percent of total tax revenue in 1991 (Table A3). On average, as percentage of GDP sales taxes were 4.4 percent during 1970-77 period, 8.8 percent during 1978-85 period, and 7.9 percent during 1986-91 period. In real terms they were, however, growing at a decreasing rate (Table 5.2).

The increase in the share of sales taxes and excise duties, and in particular that of sales taxes to GDP during the 1978-85 period when output was decelerating, imports were compressed and exchange rate overvalued, is surprising. One plausible explanation is that the Government increased discretionary measures available at its disposal so as to collect more of these taxes given that other taxes such as trade taxes and income taxes were declining. Available evidence confirms this explanation (see Tables 5.5 and A5). Domestic goods' average tax (a crude measure of effort also), for example, was high during the period as shown by the ratio of collection of these taxes to their major base, the manufactured output (Table A5). Moreover, whereas the elasticity of sales tax was less than unity during each period shown (see Table 5.5), its buoyancy was higher than unity, except for the period 1980-90. Even then 1980-90 period had higher buoyancy compared to elasticity, a sign that the government used discretionary means to collect these taxes. This is not strange since sales tax and

excise duties have been levied on an increasing number of products and services, and their rates raised frequently (see, Financial Statement and Revenue Estimates, various; Maliyamkono and Bagachwa, 1990). Between 1977/78 and 1983/84, for example, the tax rate on beer was increased by about 6 times, on cigarettes by 11 times and on sugar by 2.2 times (Maliyamkono & Bagachwa, 1990).

During 1986-91 period the growth in real sales tax revenue was -0.4 percent compared to their growth rate of 7.6 percent during 1978-85 (Table 5.2). The greatest fall in sales tax revenue occurred in sales tax on domestic goods although the share of sales tax on imports also declined beginning in 1987. One of the possible reasons for the decline in sales tax is the significant reduction in tax rates probably without corresponding increase in collection efforts especially of sales tax on imports (Tables 5.5 and A5). In a way this also confirms the role of high tax rates in good performance of these taxes during the economic crisis. Other reasons include, poor production in some sectors such as manufacturing especially in 1986 which affected the amount of sales tax collected from domestic output, and for sales tax on imports, illegal trade and especially import practices shown earlier affected them. In 1990 and 1991, for example, sales taxes exempted were 122 and 241 percent of those collected, respectively (Table 5.4 and A4).

Income Taxes: These include corporate (company) income tax, individual or personal income tax, Pay-As-You-Earn (PAYE) income tax and other minor taxes such as withholding tax, capital gains tax, shipping tax, and training levy, which are mostly paid by companies. All these income taxes with the exception of training levy, were a product of the Income Tax Act 1973. Training levy was imposed by the Training Levy Act 1973. Whereas corporate income tax accrues more from company profits, individual income tax accrues from incomes of small businesses or self-employed individuals, and PAYE from incomes of employees of all sectors. Capital gains tax accrues from the gains realised on the sale of premises and motor vehicles;

shipping tax from non-resident shipowners and air transport operators; and training levy from employers of non-citizen employees (URT, 1991).

Income taxes have been the second most important tax category during the 1967-91 period. They were second to trade taxes in the late 1960s, contributed more to total tax than any other tax category in 1971 and 1972, and were second again, this time to sales taxes and excise duties beginning 1973 (Table A3). As percentage of GDP income taxes averaged 4.8 percent during 1967-77 period, 35.8 percent during 1978-85 period, and 5.2 percent during 1986-91 period (Table 5.1). The performance of income taxes was thus stable up to 1980 when their trend started to decline due to deteriorating performance of the economy (Table A3). They, however, showed a slight recovery during the 1986-91 ERP period most likely due to the recovery in output and slight reduction in inflation that affects income taxes, especially corporate income taxes, which are collected with a lag.

In real terms income taxes grew by 7.4 percent during 1967-77 period, -1 percent during 1978-85, and 14.2 percent during 1986-91 period (Table 5.2). Their initial rise occurred mainly because of slightly better performance of the corporate income tax and to a certain extent due to the 1973 income taxes reorganisation exercise that saw the introduction of PAYE, and individual income tax from a combination of old personal income tax and surtaxes. The introduction of PAYE with progressive tax rates and the raising by Government of company tax rates in 1976 thus helped to ensure an upward trend in income taxes from 1967 to 1980. High buoyancy (1.17) compared to elasticity (0.97) of these taxes is an evidence of government's use of such actions during 1974-84 (Table 5.5).

Corporate (Company) Income Tax: Company tax is levied on both resident and non-resident company profits at different tax rates (see subsection 5.2). Among all income tax categories, corporate income tax contributed the largest share, averaging 58.9 percent during 1967-77 period, 61.7 percent during 1978-85 period,

and 71.7 percent during 1986-91 period. As a percentage of GDP corporate tax averaged 2.8 percent, 3.6 percent, and 3.7 percent during 1967-77, 1978-85, and 1986-91 periods respectively (Table 5.1).

During 1967-85 and especially the 1967-80 period corporate income tax revenue had a rising trend mainly because of increases in real profits (Table 4.3), average tax rate and probably tax effort (Table A5). This revenue, however, started to fall in 1981 (Table A3). Its fall occurred mainly because of the decline in company and especially parastatal enterprise profits (Table 4.3), and evasion and avoidance of taxes as evidenced in the Controller & Auditor General's various reports. Evasion and avoidance cases include incomes escaping assessment, wrong assessment of profits due to incorrect deductions, wrong assessment of incomes due to inadequate consideration of losses on exchange, omission to undistributed dividends, wrong assessment of income due to inadequate examination of company accounts, etc.

Individual (Personal) Income Tax: Individual is levied on self-employed individuals and small businesses. Individual income tax has had a declining trend since 1973 (Table A3). As percentage of GDP individual tax declined from an average of 1.2 percent of GDP during 1967-77 period to 0.52 percent of GDP during 1978-85 period, before rising slightly to 0.6 percent of GDP during the 1986-91 ERP period (Table 5.1). Overall, the trend of this tax revenue was a declining one despite its rising average tax rate trend (Table A5). Poor individual income tax performance reasons include poor performance of the economy, growth of the informal sector that is difficult to tax and encourages evasion and avoidance of taxes, and low tax collection efforts that are exarcebated by poor work incentives, low worker's morale, corruption, etc.

PAYE: PAYE is levied on employment income. It is progressive as the name suggests. Despite being progressive, however, PAYE's contribution both to total tax and GDP declined over time (Table A3). From 0.7 of GDP in 1973, the share of

PAYE rose to 2.2 percent of GDP in 1977, before declining to an average of 1.7 percent of GDP during 1978-85 period, and 0.8 percent of GDP during 1986-91 period (Table 5.1). In real terms, PAYE grew at an average rate of 34.4 percent during 1973-77 period, -4.7 percent during 1978-85 period, and 1.1 percent during 1986-91 period (Table 5.2). Its declining trend was largely a result of the decline in total wage bill both real and as a percentage of GDP (see Tables 1.1 and 4.3) since its average tax rate has had an upward trend at least up to 1988 (Table A5) afterwhich its marginal tax rates were substantially reduced (see Sub-section 5.2). Other factors that contributed to PAYE decline include non-delivery of PAYE collections by some employers and evasion of this tax especially by the private sector employers, through payment of salaries 'under the table' (URT, 1991).

Motor Vehicle Licences and Taxes: These include motor vehicle tax on registration and transfer; foreign commercial vehicles licences; foreign vehicles permit fees; road licence fees; driving licence fees; motor vehicle miscellaneous fees; and car benefit tax. Most of them have been charged under the Road Traffic Act No.3 of 1973, which came into force on January 1st, 1974. The foreign commercial vehicles licences and the motor vehicles tax on registration and transfer, however, have been charged under the Foreign Commercial Vehicles (Licensing) Act 1970, and the Motor Vehicles (Tax on Registration and Transfer) Act No.21 of 1972, respectively.

Motor vehicle licences and taxes were important during the late 1960s and early 1970s when the economy was relatively open, importation of motor vehicles fairly easy, and tax rates were not exorbitant. During 1967-71 period, for example, motor vehicle licences and taxes contributed an annual average of 0.43 percent of GDP. This contribution was much higher compared to an average contribution of 0.3 percent of GDP during the 1967-77 period, 0.1 percent of GDP during the 1978-85 period, and 0.2 percent of GDP during the 1986-91 period, respectively (Table 5.1).

Import controls, both quantitative and qualitative, overvalued exchange rate and exorbitant import duties and tax rates, contributed to the fall in the number and value of motor vehicle imports and therefore tax revenue collected from them. As Table A3 shows, the trend of these taxes was downward especially beginning 1971 when import controls were introduced. Low average tax rate (see Table A5) that started to fall in 1971 imply also that motor vehicle imports were lightly taxed, on average, probably because most of them were government imports. This trend, however, continued (except in years 1984 and 1985) even during 1986-91 import liberalisation period.

Production Taxes: These are taxes that have been charged on certain type of output such as salt, tobacco, pyrethrum, and diamond. Except for tobacco production tax, other taxes have been on and off. Their contribution averaged 1.3 percent of total tax revenue and 0.22 percent of GDP during 1967-77 period, before declining to 0.05 percent of GDP during 1978-85 period, and 0.03 percent of GDP during 1986-91 (Table 5.1). The contribution of these taxes declined partly because of the fall in the base/output of taxable crops for reasons shown earlier, and partly due to the abolition of some of them.

Property Tax: As the name suggests, this tax is levied on properties. It includes such taxes as estate duty, urban house tax, municipal house tax, and land rent and service charges. The tax has, however, never been important in Tanzania because of political as well as administrative reasons. Political reasons in that after the Arusha Declaration private property was not encouraged, hence no need for such a tax. Administrative in that the tax is liable to cheating, evasion and avoidance and hence difficult to administer at reasonable costs. As such, the tax has been contributing only a small share to total tax revenue and GDP. As percentage of GDP, for example, property tax contributed an average of 0.05 percent of GDP during the

1967-77 period, 0.11 percent of GDP during the 1978-85 period, and 0.04 percent of GDP during the 1986-91 period (Table 5.1).

The contribution of property tax has been fluctuating on the declining direction partly due to base widening as new taxes were added. It fell, however, on average during the 1986-91 period partly due to an increase in importance of other taxes such as import duties, and partly due to the continued increase in informal activities even when the economy was recovering, since political controls and restrictions on property ownership were still in place. Low average tax rate also indicates that low effort was made to collect this tax during this period (Table A5).

Miscellaneous Taxes: Comprise of many minor taxes, duties, charges, fees and licences such as trade or business licences, liquor licences, stamp duty, airport charges, driving licences, etc. that have been introduced regularly or their rates have been increased by the government as part of its discretionary actions. It is not surprising, for example, to see their share in total tax rising beginning in 1983 as total tax collection became more and more problematic (Table A3). Their contribution both to GDP has been fluctuating on average being 0.22 percent during the 1967-77 period, 0.25 during the 1978-85 period and 0.7 percent during the 1986-91 period. Their increase in the later period was caused mainly by both an increase in the number of taxes classified under this category and an increase in tax rates, in line with discretionary actions of the Government.

5.4. Tax Administration Weaknesses and Tax Revenue Losses

Details on organisational arrangement of tax administration in Tanzania during the period ending in 1990/91 can be found in the Report of the Presidential Commission of Enquiry into Public Revenues, Taxation and Expenditure in Tanzania (URT, 1991), popularly known as the *Mtei Commission* (due to its chairman Mr. Edwin Mtei). In the present section this study examines the country's sources of tax

revenue under-collection and losses due to administrative weaknesses and other factors such as evasion and non-compliance during the period under study. In this examination the study uses as reference four phases in the process of taxation at which weakness in tax administration can exist. These phases are: the design and enactment of tax codes; information collection and identification of tax payers; the assessment of liabilities, tax litigation and enforcement; and tax collection (Burgess & Stern, 1993).

One of the tax administrative constraints in Tanzania has been the complexity and in some cases weakness of tax laws and overall tax structure. Some of the laws, for example section 4(1)(b) of the Sales Tax Act that defines occurrence of a sales tax liability and who becomes liable to pay the tax under the Act, or Section 7 of the Customs Tariff Act 1976, Section 28 of the Sales Tax Act 1976 and Section 15 of Income Tax Act 1973 all of which give unlimited discretionary powers to the Finance Minister to grant import duty, sales tax and income tax exemptions, or Section 6 of the Sales Tax Act 1976 that gives power to the Minister for Finance and the Commissioner for Sales Tax to defer payments of sales tax, have either not been clear to interpretation or have been abused to the detriment of overall tax administration and revenue collection.

The complexity of the tax structure with too many taxes and rate categorisations for which in some cases collectors are required to use alternatives (*ad valorem* or specific, whichever yields more) have also exerted enormous administrative demands, which could not be easily met given manpower and other resource constraints. The rate structure of sales tax, for example, has gone almost through continuous change since 1969 when there was no more than five *ad valorem* and half a dozen specific rates, to a more complex rate structure by the 1980s. By 1979/80 fiscal year, for example, the rates had increased to over twenty five for each rate category (i.e., *ad valorem* and specific). Income tax and customs duties were not

an exception to this experience (see URT, 1991; Financial Statements and Revenue Estimates, Vol.I, various).

As a result of the above, thus, tax revenue has been lost through misinterpretation of various tax regulations, categorisation of taxable items, rates, and even tax payers. Linient tax laws and penalties have also encouraged evasion and avoidance of various taxes since most laws which stipulate penalties, especially monetary penalties, have not been frequently updated in accordance to the changes in the value of the money and thus over time have become non-deterrent.

Among the critical administrative shortcomings that have affected abilities both to collect taxpayers' information, use such information to assess and collect the assessed taxes are: insufficient staff with appropriate skills on such fields as assessment, collection, auditing, computer usage, etc.; lack of sufficient and up to date equipment and facilities; poor pay and absence of incentives to tax administrators.

Moreover, being government departments, tax administration departments have not been an exception in terms of being underfunded. As a result these departments have been faced with problems of inadequate and poor state of working equipments such as motor vehicles, calculators, papers, computers, etc. Furthermore, being civil servants, tax administrators salaries have not been exceptional either. Despite collecting the bulk of revenue that funds most of government expenditures including the wage bill, tax administrators' work compensation has been in terms of salaries that, as shown earlier, cannot command 1/4 of 1967 basket of goods and hence cannot see them through to the end of the month. Obviously all these factors are demoralising, encourage dishonesty and certainly have contributed to less tax revenue collection and increased revenue loss.

Poor and inconsistent records is another problem that makes tax administration difficult. Because of inadequate staff and poor working facilities,

various departments especially Income Tax and Sales Tax Departments have not been able to identify each individual tax payer. Even when some tax payers are identified, however, their track has usually been lost easily because of poor record keeping caused by lack of modern record keeping facilities and non-existence of a system of numbers or master filing in the country. An index of tax payers that existed at one time in Tanzania, for example, had to be dropped due to lack of card and strip index facilities (URT, 1991). In addition to problems of record keeping, vital information exchange about tax payers has been lacking between various departments for purposes of cross-checking taxpayers informations, say between Income Tax and Sales Tax Departments. As such, a large number of potential tax payers has not been netted especially by Sales Tax authorities (URT, 1991) causing tax revenue loss to the country.

As a result of tax evasion, whether caused by weaknesses in various macroeconomic policies or weak tax administration, a wedge has been driven between the statutory and effective tax systems to the extent that tax revenue that has legally been due has borne little relationship to that collected. This has been true in almost all taxes, with customs duties and taxes being affected most. Examples of the extent of evasion of taxes through questionable exemptions, deferment of tax payment, and other tricks such as payments of salary 'under the table', non-delivery of PAYE collections, distribution of dividends in the form of allowances, etc. were shown earlier in section 5.3. Contribution of weak tax administration to tax evasion and avoidance relates to failure by tax administrators to collect information about various tax payers and amount of tax revenue that could accrue from them, mainly because of lack of information on taxpayers' incomes, production, property records and inheritances.

In developing countries like Tanzania, this information is notoriously difficult to obtain. As Radian (1980) argues, these information problems do not originate

solely from the deficiency of collecting agencies but also from the fabric of economic, social, and cultural relations which exist in a given country. Lack or non-enforcement of convention of issuing receipts, recording transactions, reporting the existence of enterprises to the government, complying with accounting and book-keeping standards and so on are but a few of such relations. In these countries (Tanzania inclusive) taxation has been seen as a strange, unwelcome and sometimes incomprehensible concept by many people.

Whereas problems of information and measurement have implied vulnerability to compliance of various taxes, especially income tax, in some instances evasion has been relatively passive in that the government has made little attempt to impose the tax. A good case in example is lack of efforts to effectively include the self-employed and small enterprises and businesses in the tax net under the pretex that the exercise would be difficult and costly. Tax exemptions and other evasions have also been facilitated by corrupt officials and tax administrators. Given that these are civil servants who are grossly underpaid, it is not surprising to see them supplement their incomes by resorting to rent seeking activities that involve doing favours such as undervaluation of tax due to taxpayers, etc., in exchange for kickbacks, bribes in the form of cash, gifts, etc. In Tanzania these activities are entrenched, and have of late become way of common life.

Another thing that has affected the introduction and maintenance of an effective taxation system relates not only to administration and evasion, but also political pressures. Since taxation involves an attempt by the state to exercise control over the resources which would otherwise be controlled by private agents, political coalitions or representatives thereof, individuals or various groups will always attempt to avoid such claims on resources by influencing both the development and the functioning of the tax system. Pressure groups, for example those with large asset or wealth holdings will always lobby or align themselves with people with political

power, and will always be attentive in blocking the introduction of unfavourable tax measures (Gillis, 1989; Ascher, 1989).

The small contribution of individual income tax, PAYE and property tax in Tanzania, for example, is partly a reflection of the use of political pressure to suppress various tax measures that affect influential groups. Whereas individual and property taxes touch on incomes and wealth of various well-to-do groups thus limiting their coverage, the taxation of fringe benefits has been difficult to effect, despite the law stating to the contrary. Section 5(2)(a) of the Income Tax Act 1973, for example, states that "gains or profits include ... any subsistence, travelling, entertainment or other allowances received in respect of employment or services rendered ... shall be deemed to be income in respect of such year of income". Thus, any allowance whether in money or in kind, granted to an employee other than allowance to reimburse expenses incurred in the course of employment, is assessable to tax. The Mtei Commission found, for example, that various remunerations and bonuses were not properly taxed, while most "benefits-in-kind" have gone untaxed in practice because efforts by the Income Tax Department in the past to charge them, produced much opposition that prompted the Government to instruct the Department to desist "until research was completed". Other political pressures include, for example, the unilateral lowering of customs duties by Zanzibar against the provisions of the Union. This too has led to tax revenue losses to the Union Government[4].

It is clear from the above analysis that both macroeconomic policies and weaknesses in tax administration have had adverse impact on level of taxation. In the next chapter the hypotheses that were mentioned earlier in the introductory chapter are stated and tested empirically to ascertain the impact of macroeconomic policies on the level of taxation in Tanzania.

NOTES TO CHAPTER 5

1. See Table A7. Also Paris, *Inter-Press Services (IPS)*, Tuesday, February 28, 1995: "Tanzania: Anti-corruption Effort Earns $1 Billion in Aid" in which among other things the Tanzania's Minister for Finance is quoted to have admitted that the salaries of tax administration employees are "currently so low that employees can't survive on them and are open to manipulation by unscrupulous traders". Future plans, after the establishment of a new Tax Revenue Authority, is to pay them well so as "to rescue them from the temptation of becoming corrupt".

2. There are two types of tax exemptions, statutory exemptions and discretionary exemptions. Whereas statutory exemptions are exemptions that are provided for in the tax legislation, discretionary exemptions are those granted by the Minister for Finance according to the discretionary powers bestowed upon him in the tax legislation. The discretionary aspect here pertains to the requirement for an explicit exemption notice issued by the Minister for Finance. Granting of tax exemptions without following the laid down procedures amounts to what is referred to here as 'illegal exemptions'.

3. Some studies have also provided the categorisation of exemptions by commodity groups. In 1986, for example, exemptions rates for different categories of goods were 57.5 percent for consumer goods, 54.2 for intermediate goods, and 76.9 percent for capital goods (Ndulu *et al*, 1987). In 1989/90 the exemption rates were 58.9, 62.4 and 77.9 percent, respectively, in that order (Semboja *et al,* 1991).

4. According to the Union Act 1964, customs issues are part of the matters that are vested to the Union Government. As such, any policy action such as the lowering of rates cannot be undertaken unilaterally by either side of the Union as happened recently in Zanzibar. Zanzibar's action prompted many Mainland Tanzania importers to route their goods through Zanzibar where they could pay lower duty, before re-routing them into the Mainland. This costed the Union (Mainland) Government a loss of Tshs. 300 million in tax revenue monthly during 1992/93, according to the Finance Minister (Business Times, June 11, 1993).

CHAPTER 6

HYPOTHESES, METHODOLOGY AND EMPIRICAL RESULTS

6.1. Introduction

Having reviewed the literature on the level of taxation in developing countries and also having analysed, albeit qualitatively, Tanzania's experience in macroeconomic policies and taxation, it is possible now to test the hypotheses using empirical tools. This chapter thus draws from the foregone chapters, and it specifies hypotheses, the model to test them, and empirical outcome of their actual testing.

6.2. Hypotheses

The main hypothesis that this study sets to test empirically is that macroeconomic policies have had an adverse impact on the level of taxation in Tanzania during the period under study. In particular, macroeconomic policies that are hypothesised to have affected adversely the level of tax revenue include: the exchange rate policy, monetary and fiscal policies (through inflation), financial policy (through interest rate), import substitution policy, trade and balance of payments management policies (through external debt), parastatal sector policies, and wage policy. Thus, it is hypothesised that:

(i) The level of official real exchange rate has had a tax revenue reduction effect on, in particular, trade taxes and hence total tax revenue. Appreciation (fall in official real exchange rate) reduced tax revenue, while depreciation increased it.

(ii) Inflation has had a negative impact on all tax categories, but its effect being more adverse on taxes that are collected with lag, such as income taxes, custom duties, and taxes that have frequently been exempted and paid in instalments.

(iii) The level of real interest rate has had adverse impact on the level of savings (by discouraging taxable savings mobilisation, encouraging capital flight, currency

substitution, government over-borrowing and crowding out of private loans), investment, overall economic activity and, therefore, tax revenue collection especially from income taxes, and possibly sales/output taxes.

(iv) By taking out of the country part of taxable base (through debt service payments, capital flight or reduction in imports), accumulating real foreign debt and hence debt service payments, affected negatively tax revenue collection especially from income taxes and trade related taxes.

(v) Restrained imports under import substitution policy hampered domestic production, and hence reduced the potential tax base and tax revenue collection from such taxes as import duty, sales taxes and excise duties, and possibly income taxes. Trade liberalisation had the opposite impact.

(vi) Deteriorating performance of public enterprises affected adversely profits and hence tax (company tax, and also PAYE) revenue collection from them. Owing to high inflation, the real level of taxes collected from these profits was even further reduced, affecting also overall tax revenue collection.

(vii) Restrained government wage policy affected adversely the amount of wage related taxes (PAYE and Payroll tax), income taxes and overall tax revenue.

6.3. Methodology

This section discusses the sources of data and specifies the model, both of which are used to test the above hypotheses. The section also discusses and performs preliminary or pre-model estimation tests such as unit root or stationarity test and cointegration test. As it will be shown, these tests are important in the decision of what type of estimation model should one finally adopt.

6.3.1. Data Sources

The empirical part of this study utilises many variables. Data for these variables were obtained from secondary sources, mainly statistical journals, both local and international. Broadly these variables include various taxes (as will be shown in the model), GDP and GDP deflator, Consumer Price Index (CPI) and inflation, interest rate, wage bill, external debt and external debt service payments, U.S. Wholesale Price Index, official exchange rate, parastatal or public enterprise profits, domestic output of manufactured goods, export of manufactured goods and imports of manufactured goods.

Data for various taxes were compiled from various Ministry of Finance yearly publications called Financial Statements and Revenue Estimates, while the Selected Statistical Series: 1951-1991, various Statistical Abstracts and also various Economic Surveys provided data on GDP, manufactured output, wage bill and minimum wage rate. Various Tanzania Economic Trends (TET) contained data on consumer price index from which inflation was calculated, and recent official and black market exchange rate figures were obtained. Interest rates, exports and imports of manufactured goods data were extracted from Bank of Tanzania publications, mainly from various annual Economic and Operations Reports and the quarterly Economic Bulletin, while parastatal profits data were obtained from various bulletins on Accounts of Parastatal Enterprises.

International statistical journals that contained useful data include the World Bank's World Debt Tables (various) from which external debt data were obtained, and the IMF's Financial Statistics (various), which provided data on official exchange rate and U.S. Wholesale Price Index.

Obviously the list is long and many other sources of data were got hold of for comparison purposes, and also for extraction of various data that were used in the analysis and discussions of various economic variable trends in chapters 4 and 5 of

this study. This section has mentioned only data sources that contained the variables that this study utilises in the empirical analysis.

6.3.2. The Model

Based on theory in chapter 3, discussion of Tanzania's macroeconomic policy experiences in chapter 4, analysis of the interaction between macroeconomic policies and level of taxation in Tanzania in chapter 5, and hypotheses just specified above, it follows that the relationship to be estimated can be specified as:

$$RTOTAX = f(ORER, ISI, REDET, INFL, RIRATE, REPRO, REWBIL, GDPG, U) \quad (6.1)$$

where,

GDPG : Proportionate change in real output (GDP in 1976 prices), as shown under equations (6.2) and (6.20).

INFL: Officially recorded inflation. Computed as percentage change in CPI (1977 = 100).

ISI: Import Substitution Index as defined in chapter 3, equation (3.3). Briefly, the index equals the ratio of manufactured goods produced for domestic consumption to total supply of manufactured goods in the economy. The trade restrictiveness index as suggested by Anderson & Neary (1994) and others could not be used because it is product specific and requires massive data and almost another study to generate it since its concern is on the product's overall welfare cost to the economy as a result of imposition of trade restrictions.

ORER: The official real exchange rate. ORER was generated using a formula presented earlier in chapter 3. It is the ratio of the product of Nominal exchange rate and U.S. Wholesale Price Index to Tanzania's 1976 GDP Deflator. A rise in the ORER signifies real depreciation and a decline real appreciation.

RSALETAX: Ratio of Sales taxes and Excise duties (or simply Sales and Excise taxes) to GDP. Sales and excise taxes are made up of sales tax and excise duty on local goods and services, and sales tax and excise duty on imports.

REDET: Total Real External Debt. It reflects the debt burden or future claim over the country's resources by foreigners/creditors. Total real external debt is total nominal debt in local currency (converted using average exchange rate) deflated by the 1976 GDP deflator.

REPRO: Real Total Operating Profits of Parastatal Enterprises (net of depreciation), or Total nominal operating profits of parastatal enterprises net of depreciation) deflated by the 1976 GDP deflator.

RETOTAX: Total real tax revenue. RETOTAX is total tax revenue deflated by the 1976 GDP deflator.

REWBIL: Real total wage bill, or total nominal wage bill deflated by 1976 GDP deflator.

RINCTAX: Ratio of Income taxes to GDP. Income taxes include corporate or company taxes, individual taxes and PAYE (plus payroll taxes).

RIRATE: Real interest rate on savings deposits held by the commercial banks. RIRATE is nominal interest rate deflated by inflation. This definition of real interest rate was found to be suitable than the familiar definition of real interest rate as the difference between nominal interest rate and inflation, because it does not generate negative values and hence its value could easily be converted into logarithms.

ROTAX: Ratio of Other taxes to GDP. Other taxes here refer to all those taxes that are not broadly categorised to be among trade taxes, income taxes, and sales tax and excise duties.

RTOTAX: Ratio of total tax revenue to GDP. Total tax revenue is the summation of all taxes analysed in the preceding chapter. Broadly, total tax revenue is the summation of trade taxes, income taxes, sales tax and excise duties, and other taxes (ROTAX) as defined above.

RTRATAX: Ratio of international trade taxes to GDP. International trade taxes comprise of import duties and excise duties from imported goods, and export taxes. For the reason given in chapter 4, sales taxes on imports are not included here.

U: Random variable, representing 'all other explanatory variables'.

Writing it in an equation form and taking logarithms on both sides, the relationship specified in (6.1) can be presented as:

$$LRTOTAX = ß_0 + ß_1\ LORER + ß_2\ LISI + ß_3\ LREDET + ß_4\ LINFL + ß_5\ LRIRATE + ß_6\ LREPRO + \beta_7\ LREWBIL + \beta_8\ GDPG + U \quad (6.2)$$

where an 'L' letter before the variables represents *natural logarithm*; GDPG = ΔGDP = (LGDP-LGDP$_{-1}$) since the log change of a variable is a close approximation to the proportionate change (see equation 6.20); $ß_i$, i = 0,1, ... 8 are parameters to be estimated, and as per the above hypotheses, $\beta_i < 0$, i = 2,3,4; $\beta_i > 0$, i = 1,5,6,7,8.

However, it might be informative to also test the impact of the individual policies on various tax revenue components. In this regard the links/transmission channels of various policies that affect total tax revenue would be conceptually and empirically identified. One way in which individual impact analyses can be traced is by disaggregating tax revenue into its components, namely: international trade taxes, income taxes, sales tax and excise duties, and other taxes since the various macroeconomic policies identified have differential impacts on them. In this case the disaggregated relationships can be presented as:

$$RTRATAX = f_1(ORER, ISI, REDET, INFL, RIRATE, GDPG, U_1) \quad (6.3)$$

$$RINCTAX = f_2(ORER, ISI, REDET, INFL, RIRATE, REPRO, REWBIL, GDPG, U_2) \quad (6.4)$$

$$RSALETAX = f_3(ORER, ISI, REDET, INFL, RIRATE, REPRO, REWBIL, GDPG, U_3) \quad (6.5)$$

$$ROTAX = f_4(ORER, ISI, REDET, INFL, RIRATE, REPRO, GDPG, U_4) \quad (6.6)$$

where all variables are as defined above; U_i = random variables, i = 1,2..; and

$$RTOTAX = RTRATAX + RINCTAX + RSALETAX + ROTAX \quad (6.7)$$

which is an identity, and in an equation (reduced) form, is nothing but equation (6.2) above.

In equation form relations (6.3), (6.4), (6.5) and (6.6) can be written as:

$$LRTRATAX = a_0 + a_1\ LORER + a_2\ LISI + a_3\ LREDET + a_4\ LINFL + a_5\ LRIRATE + a_6\ GDPG + U_1 \quad (6.8)$$

$$LRINCTAX = b_0 + b_1\ LORER + b_2\ LISI + b_3\ LREDET + b_4\ LINFL + b_5\ LRIRATE + b_6\ LREPRO + b_7\ LREWBIL + b_8\ GDPG + U_2 \quad (6.9)$$

$$LRSALETAX = d_0 + d_1\ LORER + d_2\ LISI + d_3\ LREDET + d_4\ LINFL + d_5\ LRIRATE + d_6\ LREPRO + d_7\ LREWBIL + d_8\ GDPG + U_3 \quad (6.10)$$

$$LROTAX = e_0 + e_1\ LORER + e_2\ LISI + e_3\ LREDET + e_4\ LINFL + e_5\ LRIRATE + e_6\ REPRO + e_7\ GDPG + U_4 \quad (6.11)$$

where the letter 'L' before the variables represents natural logarithms.

It would be more informative to further disaggregate the above tax revenue components into `sub-components' (e.g. international trade taxes into export tax, import duty, sales tax, etc.) and then estimate them empirically to determine the impact of relevant macroeconomic variables on each. However, because of the estimation technique that this study employs and thus the short-term nature of the data series of most of these tax sub-components, further disaggregation is ruled out.

OLS technique of estimation is used to estimate equation (6.2) and equations (6.8) to (6.11) for the 1967-91 period, after converting them into an *Error Correction Model* set-up, to be discussed below. This conversion, however, is done only after

testing whether the data at hand, which is time series in nature, is *stationary* or *non-stationary*. That is, whether the data exhibit trends over time or not. This is important because estimating the above equations without checking for trending characteristics of the data would produce impressive results, with high R^2, which however may reflect the *spurious correlation* problem rather than strong actual correlation between dependent and explanatory variables. This problem, and the fact that classical regression techniques are invalid when applied to stochastic time series variables that exhibit the trends, have been confirmed in relatively recent findings in econometrics (see, e.g. Hendry, 1986; Granger, 1986; Thomas 1993). The invalidity of the classical regression techniques arises in this case basically because classical statistical inference in general was specifically designed for variables that are stationary, in the sense that their mean, variance and covariances remain constant over time. If a variable is trending, then its mean and possibly its variance will change over time.

Under the classical assumptions the explanatory variables are non-stochastic, that is, they are fixed by the researcher in a controlled experiment which could ensure non-trending regressors. The dependent variable is stochastic but derives its stochastic nature from a disturbance which is assumed to have zero mean, constant variance and zero covariances. Though stochastic, the dependent variable obeys all the assumptions necessary for stationarity. Controlled experiments, however, are not possible in economics. Variables are stochastic and most of the data, especially macroeconomic variables data, consist of non-stationary time series. Consequently, one cannot rely on the standard regression procedures since if variables are non-stationary, the OLS estimators will have sampling distributions with properties very different from those obtained when classical linear regression assumptions are binding, and regression coefficients will tend to appear spuriously significant (Thomas, 1993).

According to Thomas (1993), a popular past method of attempting to overcome the problem of spurious correlation has been to estimate relationships between the rates of change of variables rather than between their absolute levels. The effect of looking at the rate of change in a variable is typically to remove any trend element. That is, many non-stationary economic time series become stationary when they are differenced. Unfortunately, when attention is concentrated on relationships between rates of change, there is a real danger that valuable information on long-run relationship between levels of the variables will be lost. For example, if

$$Y_t = \beta_o + \beta_1 X_{1t} + \beta_2 X_{2t} + e_t \qquad (6.12)$$

where e_t is a disturbance, then

$$Y_t - Y_{t-1} = \beta_1(X_{1t} - X_{1t-1}) + \beta_2(X_{2t} - X_{2t-1}) + u_t \qquad (6.13)$$

where $u_t = e_t - e_{t-1}$. If (6.13) is estimated instead of (6.12), no information about β_o can be obtained. Equation (6.13) focuses on the short-run relationship between Y and X and, hence, is likely to provide poor forecasts for even a few periods ahead if a long-run relationship exists but is ignored.

The above problem can be avoided by adopting a method that is more satisfactory in dealing with the spurious correlation problem. One such method is the use of an *Error Correction Model* (ECM). Whereas ECM also results in equations with first differenced and hence stationary dependent variables, it avoids the problem just discussed above by making use of long-run information in the data. Thus, suppose that when in 'equilibrium' or 'steady state' two variables bear the following relationship to each other (see Thomas, 1993):

$$Y_t = KX_t^{\gamma 2}, \quad \gamma_2 = \text{constant } K = \text{constant} \qquad (6.14)$$

Letting lower case letters denote natural logarithms of variables and $\gamma_1 = \log K$, (6.14) can be rewritten as

$$y_t = \gamma_1 + \gamma_2 x_t \qquad (6.15)$$

If Y and X were at all times in equilibrium then clearly $y_t - \gamma_1 - \gamma_2 x_t = 0$. However there are many times when Y will not be at its equilibrium value relative to X and, at such times, the quantity $y_t - \gamma_1 - \gamma_2$ will be non-zero and will measure the 'extent of disequilibrium' between X and Y. Quantities such as $y_t - \gamma_1 - \gamma_2 x_t$ are hence known as *disequilibrium errors.*

Since Y and X are not always in equilibrium the long-run relationship (6.14) cannot be observed directly. All that can be observed is a disequilibrium relationship involving lagged values of Y and X, which reduces to (6.14) whenever equilibrium happens to occur. Denote this disequilibrium relationship by:

$$y_t = \beta_o + \beta_1 x_t + \beta_2 x_{t-1} + \alpha y_{t-1} + u_t \qquad 0 < \alpha < 1 \tag{6.16}$$

where u_t is a disturbance.

The problem with (6.16) is that it is an equation in the levels of variables that are likely to be non-stationary. However (6.16) can be rearranged and reparameterized. Subtracting y_{t-1} from either side yields

$$\Delta y_t = \beta_o + \beta_1 x_t + \beta_2 x_{t-1} - (1- \alpha)\, y_{t-1} + u_t$$

or

$$\Delta y_t = \beta_o + \beta_1 \Delta x_t + (\beta_1 + \beta_2) x_{t-1} - (1 - \alpha) y_{t-1} + u_t \tag{6.17}$$

where $\Delta y_t = y_t - y_{t-1}$ and $\Delta x_t = x_t - x_{t-1}$. Equation (6.17) can be reparameterized as

$$\Delta y_t = \beta_o + \beta_1 \Delta x_t - (1 - \alpha)[y_{t-1} - \gamma_2 x_{t-1}] + u_t \tag{6.18}$$

where the new parameter $\gamma_2 = (\beta_1 + \beta_2)/(1 - \alpha)$. Equation (6.18) can be further reparameterized as:

$$\Delta y_t = \beta_1 \Delta x_t - (1 - \alpha)[y_{t-1} - \gamma_1 - \gamma_2 x_{t-1}] + u_t \tag{6.19}$$

where $\gamma_1 = \beta_o/1-\alpha$.

Equation (6.19) is nothing more than another way of writing the disequilibrium relationship (6.16). It can be regarded as stating that changes in y depend on changes in x and on the term in square brackets which is *the disequilibrium error from the previous period.* This makes sense since it implies that

the lower (higher) is Y compared with its equilibrium value relative to X, the greater (smaller) will be the immediate rise in Y. The value of Y being corrected for the previous disequilibrium error. Hence the term *error correction model.* Although (6.19) can be derived from (6.16) without referring to the long-run relationship (6.15), it clearly makes sense to give it an error correction interpretation and regard the new parameters γ_1 and γ_2 as parameters in a long-run relationship such as (6.15). Notice that α and $1-\alpha$ determine the extent to which the disequilibrium in period t-1 is 'made up for' in period t. Since $0 < \alpha < 1$, only part of this disequilibrium is made up for in period t, causing a different Δy_t than would otherwise occur.

It is also important to note that ECMs such as (6.19) are not always of logarithmic form but, when they are, then

$$\Delta y_t = y_t - y_{t-1} = \log Y_t - \log Y_{t-1} = \log \frac{Y_t}{Y_{t-1}} \approx \frac{Y_t - Y_{t-1}}{Y_{t-1}} \qquad (6.20)$$

The approximation in (6.20) will hold provided growth rates are small so that $Y_t \approx Y_{t-1}$. Hence Δy_t is the proportionate change in Y and, similarly Δx_t is the proportionate change in X. One property of ECMs such as (6.19) is that they imply that the parameter γ_1 in the equilibrium relationship (6.15) depends on the long-term growth rates.

Finally note that the above exemplified analysis can be generalised to more than two variables relationship without changing the intended intuition. Once the equation or model is specified in an ECM format, the standard classical regression techniques may be used to estimate it, provided the sample is large. The OLS estimators obtained therefrom *will be consistent regardless of whether or not there is a correlation between the explanatory variable and the disturbance* in that equation (see Stock 1987). Moreover, not only are the OLS estimators consistent but *their asymptotic efficiency is very high.* That is, their sampling distributions collapse very rapidly on to the true parameters as the sample size increases. And because this convergence on the true parameter values is more rapid even than when all the

classical assumptions hold, Stock refers to the OLS estimators as 'superconsistent' in this case (Stock, 1987; Thomas, 1993).

The present study adopts an ECM method, since the requirements for stationarity of its level data series are not met, in tests that follow.

6.3.3. Testing for Stationarity/Unit Root

Since the standard classical regression analysis requires that data series be stationary, it is important that this requirement is tested before an estimation using ECM is attempted. Unit root tests are discussed below, followed by actual stationarity testing.

6.3.3.1. The Dickey-Fuller (DF) and Augmented Dickey-Fuller Stationarity Tests

The investigation of stationarity in a time series, it has been shown, closely relates to the tests for "unit roots" (Dickey & Fuller, 1981; Perman, 1991; Thomas, 1993). To show this, consider the first order autoregressive model:

$$Y_t = \beta Y_{t-1} + e_t, \qquad t = 1, 2, ... \tag{6.21}$$

where the process is regarded to have begun at some point in the distant past, β is a real number and e_t is a sequence of independent normal zero-mean random variables with variance σ^2.

The series Y_t is stationary if $|\beta| < 1$ (see Harvey, 1981). If $|\beta| = 1$, the series is not stationary; the variance of Y_t is then $t\sigma^2$ and is thus increasing with time. Model (6.21) with $|\beta| = 1$ is termed as a *random walk.* If $|\beta| > 1$, the time series is again not stationary, and the variance of the series grows exponentially over time. For most economic time series, the autoregressive coefficient β would be *one* or less, such that when we are testing for unit roots, we are essentially testing for the null $\beta = 1$ against the one-tailed alternative $\beta < 1$. Where the null is true and so $\beta = 1$, model (6.21) is

said to have a *unit root*, and the series (Y_t) is said to be *integrated of order one*, denoted I(1).

The hypothesis that $\beta = 1$ can be tested by estimating model (6.21), though it is usual to estimate the following reparameterized version of that model:

$$\Delta Y_t = \beta^* Y_{t-1} + e_t \qquad (6.22)$$

where $\beta^* = \beta - 1$ and the null hypothesis [here $\beta^* = 0$, equivalent to $\beta = 1$ in (6.21)] is tested using the corrected (Dickey-Fuller) tables (and not the standard t and F-statistic tables) for asymptotic distributions of t-statistic and F-statistic, which take into account the inconsistency in estimating β^* under the null (see Dickey and Fuller, 1976; 1981). In testing for null in (6.22), for example, β^*'s t-statistic (denoted here by τ) is compared with its critical values as reported in left hand side of Table 6.1. The null hypothesis is rejected if τ, β^*'s t-statistic, is less than its critical value at a chosen level of significance, implying that Y is stationary.

The difficulty with the above Dickey-Fuller (DF) test is that a data series will not necessarily be well approximated by a first-order autoregressive (AR) process. However, the advantage of a formulation as one in (6.22) with the first difference as the dependent variable is that the general AR process can also be reparameterized in this way. Thus,

$$\Delta Y_t = \beta^* Y_{t-1} + \beta_1^* \Delta Y_{t-1} + \beta_2^* \Delta Y_{t-2} + \ldots\ldots + \beta_m^* \Delta Y_{t-m} + \varepsilon_t \qquad (6.23)$$

where $\beta^* = \beta_1 + \beta_2 + \ldots\ldots + \beta_m - 1$ and the β_j^*s are also functions of the original βs (see Thomas, 1993). For example, a third order AR process of the form

$$Y_t = \beta_1 Y_{t-1} + \beta_2 Y_{t-2} + \beta_3 Y_{t-3} + \varepsilon_t \qquad (6.24)$$

can be reparameterized as:

$$\Delta Y_t = (\beta_1 + \beta_2 + \beta_3 - 1) Y_{t-1} - (\beta_2 + \beta_3) \Delta Y_{t-1} - \beta_3 \Delta Y_{t-2} + \varepsilon_t \qquad (6.25)$$

Notice that if $\beta^* = 0$ then (6.23) becomes an equation in first differences. Equation (6.23) can alternatively be written as:

$$\Delta Y_t = \delta_1 + \delta_2 T + \beta^* Y_{t-1} + \sum_{i=1}^{m} \beta_i^* \Delta Y_{t-i} + \varepsilon_t \qquad (6.26)$$

where δ_1 is an intercept and T is a time trend, and both are included in case the variable has no zero mean or is stationary around a linear trend. Technically including the intercept and the trend does not change the test (see Doornik and Hendry, 1995).

To test for unit root in this case is to apply OLS to equation (6.23), though it is advisable to do so to equation (6.26), and then examine the DF t-ratio (denoted by τ_τ) on the estimate of β^* and compare it with its critical values, as reported on the right hand side of Table 6.1 below. *If* $\beta^* = 0$ *is rejected then the* Y_t *is stationary and vice versa.* The test for a unit root in this general case (6.23) or (6.26) is known as the *Augmented Dickey-Fuller* (ADF) *test*. It is urged that one should include as many terms in the lagged dependent variable as are necessary, so as to achieve white-noise residuals. Note also that the inference on β^* using the test described in (6.26) is valid only if the T coefficient is zero, otherwise the first difference will be time dependent. That is, its mean will vary with T and so the series cannot be I(1) (Perman, 1991).

Where OLS has been applied on (6.26), a joint hypothesis ($\beta^* = 0$ and $\delta_2 = 0$) by means of DF F-statistic should be tested. This involves comparing F-statistic computed in the usual way in the ADF regression with the critical values of Φ_3 statistic (DF F-statistic) of Table 6.2. Provided the value of the F-statistic is less than the tabulated critical value, the null cannot be rejected. That is, the series has a unit root and is non-stationary, but its first difference is stationary implying that $Y_t \sim I(1)$.

Note that more than one root may characterise the series, and indeed, if we require a stationary series then we must continue testing the first difference, the second difference, etc., until the hypothesis of non-stationarity is rejected. Note also that the Dickey-Fuller tests of stationarity lack power and should not be regarded as precise since the critical DF t-statistics (i.e., τ and τ_τ's critical values) are only approximate guides. Finally note that it is not always clear how many differenced terms should be included in equations (6.23) and (6.26) without seriously affecting

the values of the DF-statistics, and also to which equation should conclusions be based on. In other words, the test needs care in its application (Thomas, 1993).

Table 6.1: DF Test Statistics : Critical Values for Rejecting Null in Favour of Alternative

Sample Size	Critical values for τ level of significance			Critical values for τ_τ level of significance		
	0.01	0.05	0.10	0.01	0.05	0.10
25	-2.66	-1.95	-1.60	-4.38	-3.60	-3.24
50	-2.62	-1.95	-1.61	-4.15	-3.50	-3.18
100	-2.60	-1.95	-1.61	-4.04	-3.45	-3.15

Source: Fuller (1976), Table 8.5.2; Thomas (1993), Table 7.1

Table 6.2: Testing $\delta_2 = \beta^* = 0$ in $\Delta Yt = \delta_1 + \delta_2 T + \beta^* Y_{t-1}$ (Φ_3 statistics)

Sample Size	Level of Significance		
	0.01	0.05	0.10
25	10.61	7.24	5.91
50	9.31	6.73	5.61
100	8.73	6.49	5.47
F(2,∞)	4.61	3.00	

Source: Dickey & Fuller (1981), p.1063, Table VI; Thomas (1993), Table 7.2

6.3.3.2. Sargan-Bhargava Durbin-Watson (SBDW) Test for Stationarity/Unit Root

Another test for stationarity or the presence of unit roots is the Sargan-Bhargava Durbin-Watson (SBDW) Test. This test is based on the standard Durbin-Watson statistic, but it is applied not to the residuals of the regression as usual, but on

the level of each individual series (see Sargan-Bhargava, 1983; Adam, 1992; Doornik & Hendry, 1995). The SBDW test is defined as:

$$DW(y) = \frac{\Sigma(y_t - y_{t-1})^2}{\Sigma(y_t - \bar{y})^2} \qquad (6.27)$$

Unlike the Dickey-Fuller tests, the SBDW test is against the null that the series is I(0), in which case the value of the DW will tend towards a value of 2. If the statistic is low then this is evidence of an I(1) series. The relevant critical values for the statistic are given in Table 6.3, where value of the statistic less than the critical value indicates rejection of the null. It is advisable to use the DF and SBDW statistics together, since in each case the null hypothesis is the same as the alternative hypothesis of the other, thus providing cross-check for the test (Adam, 1992).

Table 6.3: Sargan - Bhargava (SBDW) Test Statistics

Sample Size	Critical Value 5%
50	0.78
100	0.39
200	0.20

Source: Banerjee *et al* (1992), Adam (1992), Table 2(b)

6.3.3.3. Results of Stationarity/Unit Root Test

A test of the length of the lag (see Doornik and Hendry, 1995) suggested that the inclusion of only one lag for each variable was enough. Consequently, ADF at one lag [i.e., m = 1 in estimation equation (6.26)] is reported in unit root test results (see Table 6.4). A test for higher-order autocorrelation using Lagrange Multiplier (LM) test (not reported here) also confirmed that no autocorrelation was caused by omitting higher order lagged differenced values of the variables under unit root test.

Table 6.4: Results of Stationarity/Unit Root Test (Intercept & Trend included)

Variable	SBDW	DF	ADF	Φ_3 (DF F-stat)	Comments
LRTOTAX	0.433	-2.792	-2.376	4.62	Non-stationary
LORER	0.142	-0.468	-1.147	2.00	Non-stationary
LISI	0.188	-0.20	-0.557	2.82	Non-stationary
LREDET	0.047	-1.67	-2.006	1.43	Non-stationary
LINFL	0.228	-2.367	-1.363	4.16	Non-stationary
LRIRATE	0.435	-1.775	-0.926	3.44	Non-stationary
LREPRO	0.377	-4.534***	-1.991	10.87***	Non-stationary#
LREWBIL	0.169	-1.901	-2.209	2.32	Non-stationary
GDPG	1.437**	-5.122***	-2.600	14.57***	Non-stationary#
LRETOTAX	0.131	-2.56	-2.158	4.12	Non-stationary
LRTRATAX	0.288	-1.644	-1.424	1.43	Non-stationary
LRINCTAX	0.773	-2.983	-2.444	4.92	Non-stationary
LRSALETAX	0.145	-1.941	-2.025	3.82	Non-stationary
LROTAX	0.760	-2.117	-1.670	2.35	Non-stationary

*** Significant at 1 percent ** Significant at 5 percent * Significant at 10 percent
# Stationary around the stochastic trend. Otherwise non-stationary until differenced.

Briefly, the results show that except for two variables or series LEPRO and GDPG whose results seem to be controversial, all other series are non-stationary random walks (see Table 6.4). These random walks, however, become stationary on being differenced once (see Figs. 6.1 - 6.5 below: all variables with names preceded by a letter 'D'), for it is then that they conform to the requirements of stationarity of series. That is they each "have finite variance, transitory innovations from the mean, and a tendency for the series to return to its mean value" (Adam, 1992). Recall that if

two or more series are stationary, then it implies that OLS can be applied on the regression of one on another without fear of obtaining inconsistent results.

LREPRO and GDPG's results are controversial because they indicate these variables to be stationary when they are actually not. A closer look at their figures (see Fig. 6.3; LREPRO and GDPG), for example, reveals that these series are actually not stationary since they do not meet the above requirements of stationary series. The controversy lessens, however, once one takes a careful look at the results of the DF regression (1967-91) of these variables:

$$\Delta LREPRO = 4.881 + 0.037\ T - 0.753\ LREPRO_{-1} \qquad (6.28)$$

$$(4.708)\ (3.006)\quad (-4.534);\ LM = 1.73;\ \bar{R}^2 = 0.28;\ F(2,22) = 10.87$$

$$\Delta GDPG = 0.024 - 0.000003\ T - 0.806\ GDPG_{-1} \qquad (6.29)$$

$$(1.872)\ (-0.049)\qquad (-5.122);\ LM = 23.9;\ \bar{R}^2 = 0.53\ ;\ F(2,22) = 14.57$$

where in brackets below the explanatory variables are τ_τ or DF t-statistics. Their critical values are shown in Table 6.1.

In equation (6.28) the intercept and the coefficient of $LREPRO_{-1}$ are each significantly different from zero at 1 percent level of significance, while the coefficient of T is not significantly different from zero at all conventional levels (see Table 6.1, RHS). In other words, $\delta_1 = \beta^* \neq 0$, $\delta_2 = 0$ (see equation 6.26). In the same manner, results of equation (6.29) show the intercept and the coefficient of $GDPG_{-1}$ to be significant at 10 percent and 1 percent levels of significance, respectively, while the coefficient of T is not significantly different from zero (i.e., $\delta_1 = \beta^* \neq 0$ while $\delta_2 = 0$).

However, the DF F-statistics (Φ_3s) are highly significant (at 1 percent) indicating that jointly the coefficients of $LREPRO_{-1}$ and T, and $GDPG_{-1}$and T, are not significantly different from zero (i.e., $\delta_2 = \beta^* \neq 0$)(see Table 6.2). Probably this is not surprising since an examination of DF F-statistic when T is excluded as an explanatory variable in both equations (6.28) and (6.29) shows this statistic to be

very high at 9.14 and 12.26, respectively. This suggests that it is the significances of $LREPRO_{-1}$ and $GDPG_{-1}$ that dominate in the significance tests using DF F-statistic in equations (6.28) and (6.29). From these results it is clear that clear that LREPRO and GDPG are series that are only stationary around their stochastic trends. They are thus *difference stationary time processes*, or processes that become stationary on being differenced to remove the trend (see Perman, 1991; Thomas, 1993; Fig. 6.3; DLREPRO and DGDPG).

Normally given a model such as:

$$Y_t = \delta_1 + \delta_2 T + \beta Y_{t-1} + u_t \qquad (6.30)$$

we obtain: a TS (Trend Series) Process if $|\beta| < 1$ and $\delta_2 \neq 0$; and a DS (Difference Stationary) Process if $\beta = 1$ and $\delta_2 = 0$. Note that: first, in a difference form, equation (6.30) is the same as equation (6.26) less lagged differenced terms. Second, series LREPRO and GDPG seem to fit in a class of series known as *random walks with drift*. These consist of a trend (δ_1) plus a random walk or a drift free I(1) process (i.e., $\delta_1 \neq 0$, $\delta_2 = 0$, and $\beta = 1$) (see Nelson and Plosser, 1982; Granger, 1986; Pindyck and Rubinfeld, 1991). Third, like Fig.6.1, stationarity test results (not reported here) show that LREPRO and GDPG become stationary or I(0) on being first differenced. These findings plus the one above that $\delta_2 = 0$, confirm that LREPRO and GDPG series are actually DS processes. Lastly, stationarity test based on DF test are not always accurate and therefore need to be applied with great care. It should be observed, for example, that customary procedures reject null in favour of stationarity far too often; the distribution of β is centered around 0.9 instead of 1.0; and that the t-ratio for testing the hypothesis that $\delta_2 = 0$ is biased towards a trend. Thus, the standard testing procedures are strongly biased towards finding stationarity around a trend, since they tend to reject the hypothesis $\beta = 1$ when it is true in favour of $\beta < 1$ and tend to reject the hypothesis $\delta_2 = 0$ when it is true (Dickey & Fuller, 1979; Nelson & Plosser, 1982).

Fig. 6.1: Stationarity Test for ORER, ISI and REDET Using Graphical Data Analysis

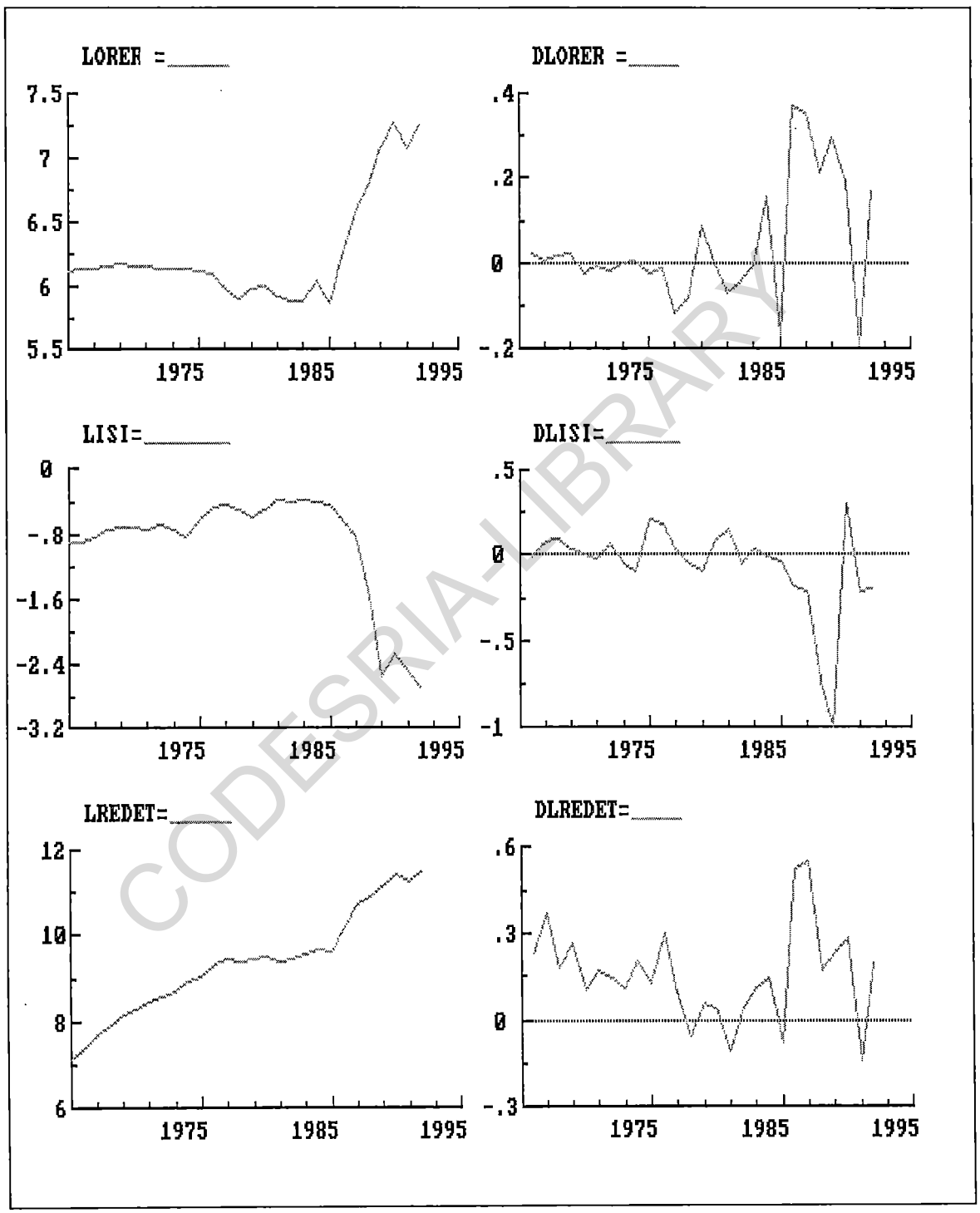


Fig. 6.2: Stationarity Test for INFL, RIRATE and REWBIL Using Graphical Data Analysis

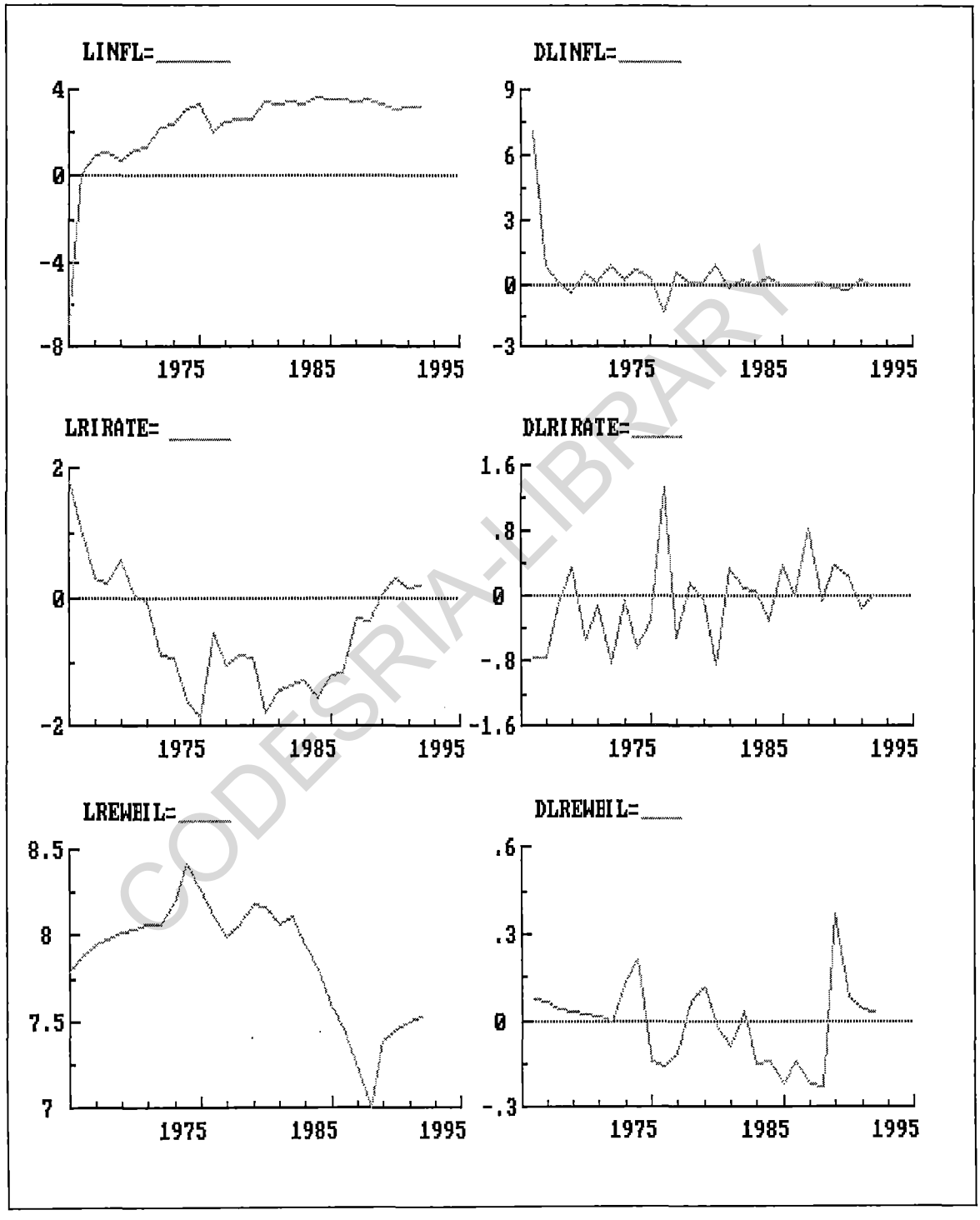


Fig. 6.3: Stationarity Test for REPRO, GDPG and RTOTAX Using Graphical Data Analysis

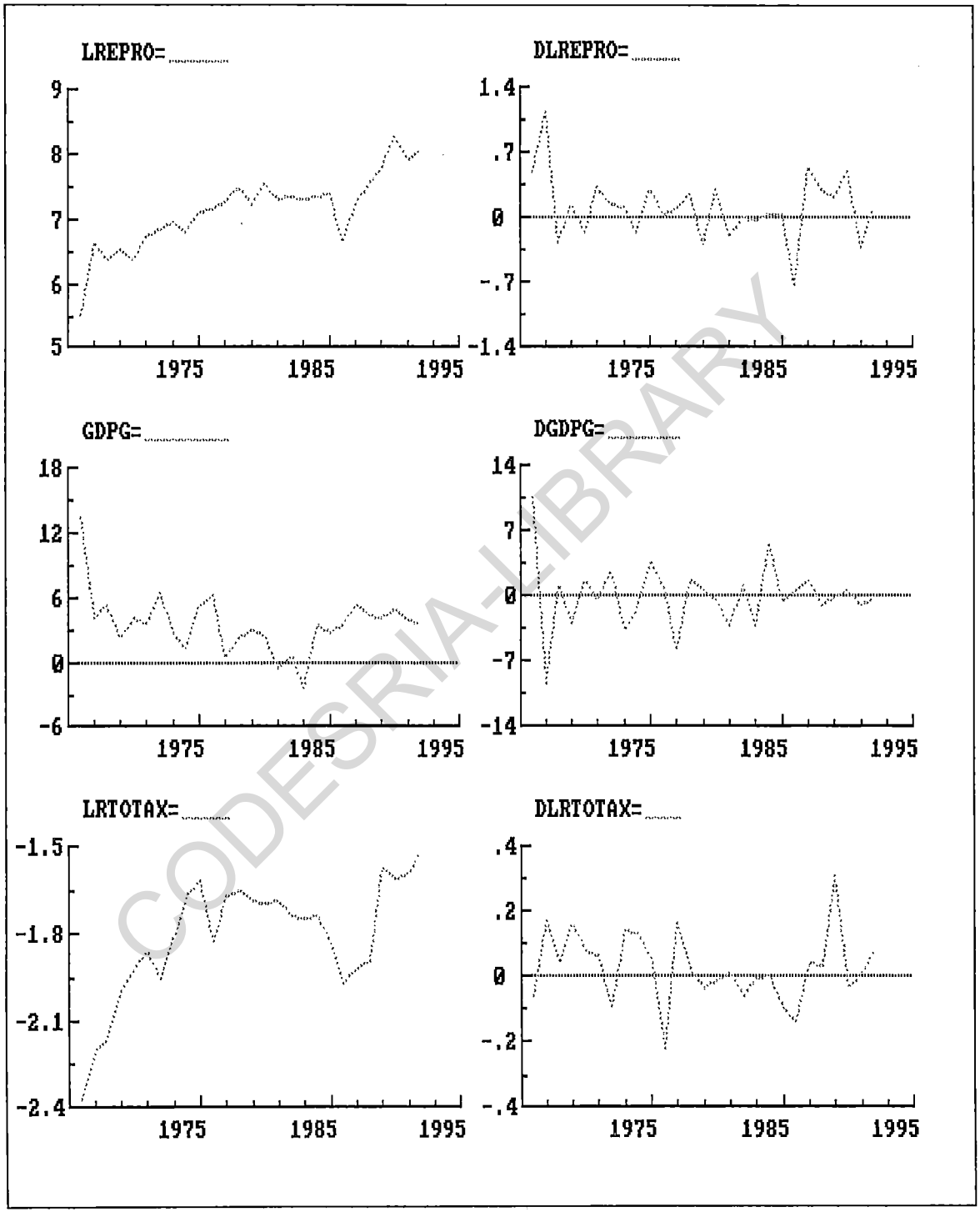


Fig. 6.4: Stationarity Test for RETOTAX, RTRATAX and RINCTAX Using Graphical Data Analysis

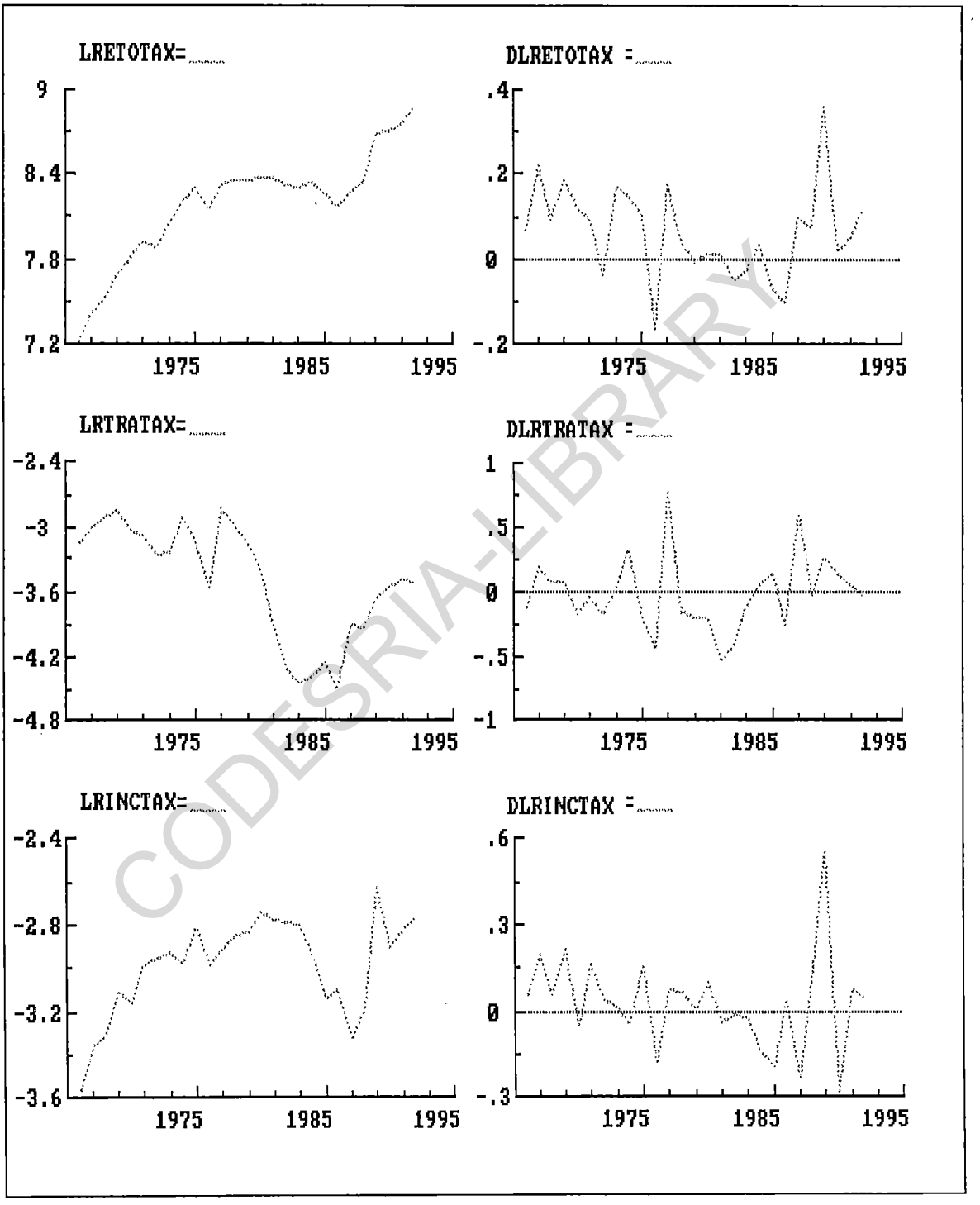
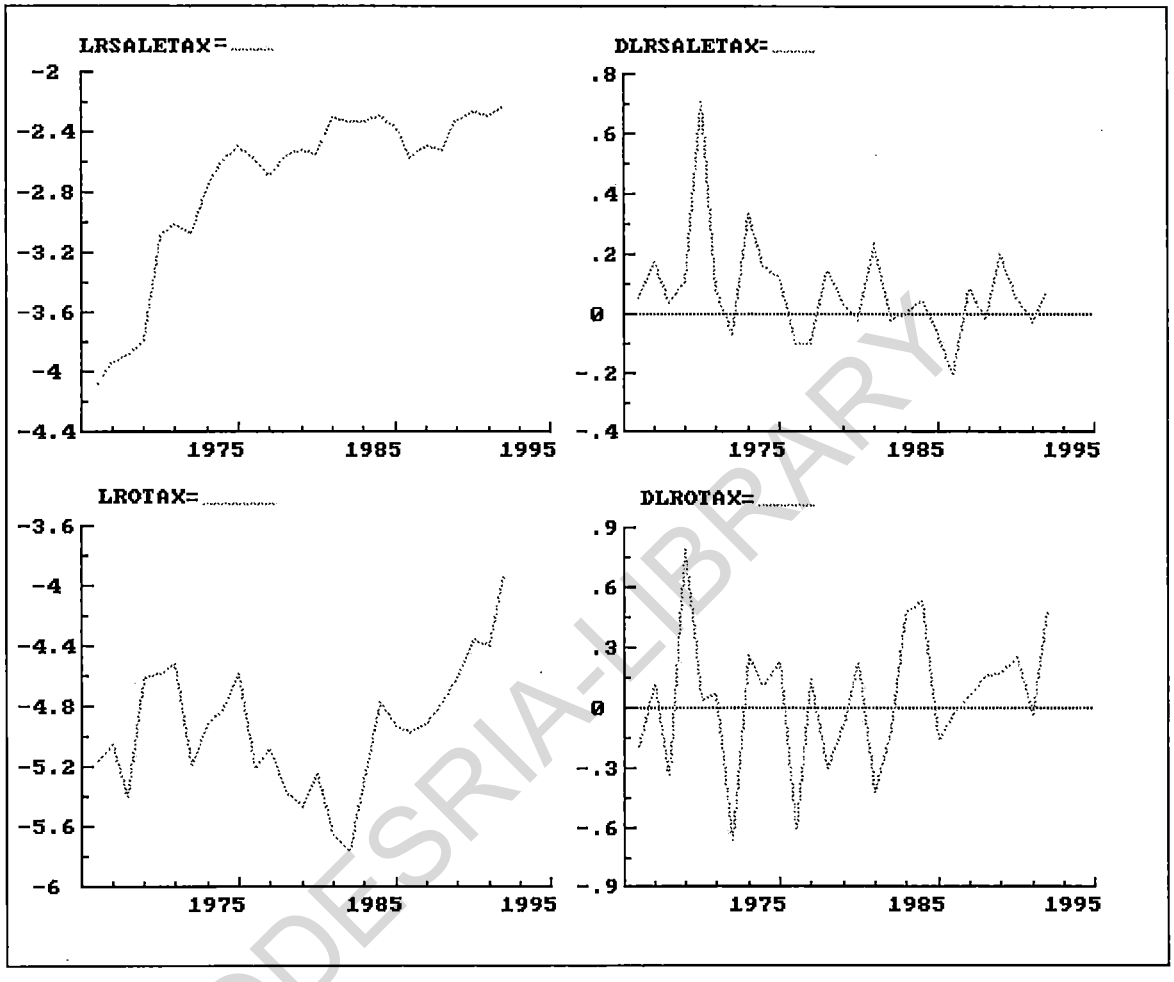


Fig. 6.5: Stationarity Test for SALETAX and ROTAX Using Graphical Data Analysis



The test for unit root using Dickey-Fuller or other procedures enables us to test for the variables in an error correction model for stationarity. However the very concept of an ECM rests on the idea that there exists an equilibrium relationship between the relevant variables. How to test the existence of such an equilibrium relationship, that is, whether the relevant variables are *cointegrated* or integrated in the same order, is what follows next.

6.3.4. Testing for Cointegration

Cointegration is the statistical implication of the existence of a long-run relationship between economic variables. A process or series is said to be *integrated*

of order *d,* denoted I(d), if it has to be differenced *d* times before it becomes stationary. And two time series are said to be *cointegrated* of order *d*, *b*, denoted CI(*d*,*b*) if: first, they are both integrated of order *d*; and second, there exists some linear combination of them that is integrated of order $b < d$ (see Engle and Granger, 1987; Thomas, 1993). The most interesting case is where there are two variables x and y which are CI(1,0). Then both x and y are non-stationary, only becoming stationary on first differencing (that is they are both I(1)), but there is some linear combination of two series which is stationary. That is instead of being I(1) the linear combination is I(0). Notice that normally if both series were I(1) or non-stationary, we would expect *any* linear combination also to be non-stationary. But for *cointegrated* variables there exists a linear combination which is stationary (Thomas, 1993). For example, suppose we have a long-run relationship:

$$y_t = \alpha_1 + \alpha_2 x_t \qquad (6.31)$$

If x and y were cointegrated of different orders, for example if y were a trend variable and I(1), and x had no trend and were I(0), then there could be no parameters α_1 and α_2 such that (6.31) would hold even approximately over time. Thus *the existence of an equilibrium relationship between x and y requires them to be integrated of the same order and vice versa.* Furthermore, consider the disequilibrium errors that result from (6.31):

$$e_t = y_t - \alpha_1 - \alpha_2 x_t \qquad (6.32)$$

As observed above, if an equilibrium relationship such as (6.31) actually exists, then the disequilibrium error (6.32) should fluctuate about zero. This means it must be stationary or I(0). If it were non-stationary and trending upwards, for example, then x and y would be moving further and further away from each other, hardly behaviour consistent with a long-run equilibrium relationship. But from (6.32), if e_t is I(0) then the linear combination of the two series, $y_t - \alpha_1 - \alpha_2 x_t$, must obviously also be I(0). Hence the existence of an equilibrium relationship between x and y also requires that

a linear combination of the two series be I(0) or stationary or vice versa (Engle and Granger, 1987; Thomas, 1993). In the words of Engle and Granger (1987): " .... cointegration would mean that, if the components (y_t and x_t) were I(1), then the equilibrium error would be I(0), and e_t will rarely drift away from zero if it has zero mean and e_t will often cross the zero line. Putting this in another way, it means that equilibrium will occasionally occur, at least to a very close approximation, whereas, if (y_t and x_t) were not cointegrated, then e_t can wander widely and zero crossings would be very rare, suggesting that in this case the equilibrium concept has no practical implications" (p.253). Cointegration tests are discussed and applied below.

6.3.4.1. The Dickey-Fuller and Augmented Dickey-Fuller Tests for Cointegration

To establish the existence or non-existence of an equilibrium relationship between two economic time series x and y first requires a test of whether x and y are integrated to the same order. This is done using the Augmented Dickey-Fuller test for stationarity described above. If it is found that they are both I(1), that is they become stationary on first differencing, which is frequently the case with economic data, then the test for cointegration is completed by estimating the hypothetical equilibrium relationship by OLS. This is known as the *cointegrating regression* or sometimes as the s*tatic regression*. The residuals from this regression are retained. That is retain

$$e_t = y_t - \hat{\alpha}_1 - \hat{\alpha}_2 x_t \quad \text{for all t} \tag{6.33}$$

If the e_t from (6.33) are treated as estimates of the disequilibrium errors, then the obvious way to test them for stationarity is to apply the Dickey-Fuller test described earlier. That is, estimate an equation analogous to (6.23);

$$\Delta e_t = \beta^* e_{t-1} + \sum_{i=1}^{m} \beta_i^* \Delta e_{t-i} + v_t \tag{6.34}$$

and test $\beta^* = 0$ against $\beta^* < 0$ using Table 6.1. Notice that no intercept or time trend is included in (6.34), since e_t must have a zero mean and are expected to have a deterministic trend. Engle and Granger (1987) recommend the Augmented

Dickey-Fuller (ADF) test based on (6.34) with relevant critical values as shown in Table 6.5. Notice that these depend on the number of explanatory variables, *n*, in the cointegrating regression.

Thus, to test $\beta^* = 0$ against $\beta^* < 0$ in (6.34) involves comparing the t-ratio on β^* (ADF statistic) with its relevant critical t-value in Table 6.5. *If* $\beta^* = 0$ *is rejected then the* e_ts *are stationary*. Such a result would imply that a linear combination of x and y which is stationary has been found. This in turn would imply that x *and* y *are cointegrated.*

Table 6.5: Critical Values for the Cointegration ADF (and DF & CRDW) Tests

	m = 2			m = 3			m = 4			m = 5		
	significance level			significance level			significance level			significance level		
Sample Size	0.01	0.05	0.10	0.01	0.05	0.10	0.01	0.05	0.10	0.01	0.05	0.10
50	4.12	3.29	2.9	4.45	3.75	3.36	4.61	3.98	3.67	4.80	4.15	3.85
100	3.73	3.17	2.91	4.22	3.62	3.32	4.61	4.02	3.71	4.98	4.36	4.06
200	3.78	3.25	2.98	4.34	3.78	3.51	4.72	4.13	3.83	4.97	4.43	4.14
CRDW: Sample=50	1.00	0.78	0.69	0.99			1.10			1.28		
DF Critical Values: Sample=50	4.32	3.67	3.28	4.84	4.11	3.73	4.94	4.35	4.02	5.41	4.76	4.42

Source: Engle & Yoo (1987), Table 3 ; Thomas (1993), Table 7.3; Adam (1992), Table 4

6.3.4.2. Cointegrating Regression Durbin - Watson (CRDW) Test

One of the test statistics considered by Engle and Granger is the CRDW. If the differenced terms in (6.34) are omitted then, since $\beta^* = \beta - 1$, this equation can be rewritten as :

$$e_t = \beta e_{t-1} + v_t \qquad (6.35)$$

Testing $\beta^* = 0$ against $\beta^* < 0$ is now equivalent to testing $\beta = 1$ against $\beta < 1$ in (6.35). But (6.35) implies that the residuals, e_t, from the cointegrating regression follow a *first-order autoregressive scheme*. The simplest way to tackle an AR(1) scheme is to use the Durbin-Watson (DW) statistic known here as *cointegrating regression Durbin-Watson* (CRDW) statistic. As the name suggests, CRDW is generated by first estimating the *cointegrating regression* equation and retaining the residuals as shown in equation (6.33), and second by estimating CRDW statistic as:

$$\text{CRDW} = \frac{\sum(e_t - e_{t-1})^2}{\sum e_t^2} \qquad (6.36)$$

Note that when $\beta = 1$ in (6.35), (i.e., if e_t are I(1)), the CRDW statistic is likely to take a value very close to zero. In this case it suggests that the two series y and x are not cointegrated. If $\beta < 1$, we expect a value in excess of zero. Engle and Granger conclude that at the 0.05 level of significance the null hypothesis $\beta = 1$ (i.e. that the e_ts are non-stationary) should be rejected if the CRDW statistic exceed a value of 0.386 is a sample of 100 observations. The CRDW critical values at various levels of significance for 50 observations and regressions with 2 and 5 explanatory variables are reported in the third row of Table 6.5. Unfortunately it was not possible to get hold of CRDW values for a smaller sample with 25 observations. Nevertheless, it is hoped that results are not going to be affected much by this anomaly.

Note also that while the CRDW test works well when the disturbances in the cointegrating regression follow a first-order scheme, it has very different critical values for alternative specifications. This is in contrast to the augmented Dickey-Fuller test statistic for which the critical values are little changed when higher order processes are present.

Finally note that the critical values in Table 6.5 are only approximate and that the value of the ADF statistic or the t-ratio on β^* will depend very much on the order

of AR process assumed [that is on the number of differenced terms included in (6.34)]. Since we have no prior knowledge of what order process we are dealing with, and because the tests lack power, the Dickey-Fuller procedures have to be applied with great care, discrimination and judgement (Thomas, 1993).

This study uses the DF, ADF and CRDW methods to perform cointegration tests on the macroeconomic data series that were found to be I(1), in the test for stationarity above. Results of these tests are reported hereunder.

6.3.4.3. Cointegration Test Results

In testing for cointegration, equation (6.34) was estimated and evaluated at m = 0 and n = 2 for simple regressions and m = 0 and n = 5 for multiple regression to obtain the DF statistics. Similarly, in obtaining ADF statistics equation (6.34) was estimated and evaluated at m = 2 and n = 2 for simple regressions and m = 2 and n = 5 for multiple regressions (see Tables 6.5 and 6.6). LM test for autocorrelation confirmed that there was no first nor higher-order autocorrelation. CRDW statistic, obtainable from cointegration regression, was also observed. All these statistics are summarised in Table 6.6. The same procedure was followed in obtaining results of Tables 6.7 to 6.11, but using different dependent variables. Note that LREPRO and GDPG also qualified for cointegration test because they have no deterministic trends. Otherwise, the two variables with deterministic trends or with trends in their means can be cointegrated only if their trends in mean are same functions of time, or they cancel out (see Granger, 1986).

It is clear from Table 6.6 that results of cointegration test are mixed such that it is difficult to tell clearly, using both statistics at the same time, which variables are cointegrated with the dependent variable, LRTOTAX. This, however, is not surprising given the size of the current sample and the caution just reported above, that the critical values in Table 6.5 are just approximates and that the DF tests lack

power. With these in mind, care, discrimination and judgement are invoked in applying the DF procedures.

Based on *both* three statistics, CRDW, DF and ADF, no variable is cointegrated with the dependent variable. However, based on the individual statistics, three variables namely LINFL, LRIRATE and LREPRO are cointegrated with the dependent variable, LRTOTAX. Whereas LINFL and LRIRATE's ADF statistics are significant (at 10%), LREPRO's cointegration with dependent variable is suggested by CRDW and DF statistics, both of which are significant at less than 5 percent level (see Table 6.5). As per earlier discussion, what this implies is that there is a long-run relationship between the dependent variable LRTOTAX and each of these variables.

Table 6.6: Cointegration Test Results for LRTOTAX Equation

Regression: LRTOTAX on	CRDW	DF	ADF	Comments
LORER	0.27	-2.314	-2.304	I(1) : NC
LISI	0.25	-2.384	-2.35	I(1) : NC
LREDET	0.53	-2.180	-2.024	I(1) : NC
LINFL	0.66	-2.115	-3.160*	I(0) : CI
LRIRATE	0.55	-1.485	-3.242*	I(0) : CI
LREPRO	1.18**	-3.294*	-2.498	I(0) : CI
LREWBIL	0.26	-2.096	-2.100	I(1) : NC
GDPG	0.59	-1.942	-2.148	I(1) : NC
A: All the above variables i.e., LORER, LISI, LREDET, LINFL, LRIRATE, LREPRO, LREWBIL, GDPG	2.18**	-5.549***	-3.701	A is I(0) : CI

Note: NC - Not cointegrated CI - Cointegrated

***Significant at 1 percent **Significant at 5 percent *significant at 10 percent

Table 6.7: Cointegration Test Results for LRETOTAX Equation

Regression: LRETOTAX on	CRDW	DF	ADF	Comments
LORER	0.10	-3.124	-1.810	I(1) : NC
LISI	0.08	-3.835**	-1.713	I(0) : CI
LREDET	0.41	-2.406	-1.949	I(1) : NC
LINFL	0.60	-1.602	-3.582**	I(0) : CI
LRIRATE	0.22	-0.590	-1.523	I(1) : CI
LREPRO	1.59***	-4.728***	-3.357**	I(0) : CI
LREWBIL	0.13	-2.657	-1.664	I(1) : NC
GDPG	0.31	-1.045	-1.177	I(1) : NC
B: All Variables above	2.26**	-5.583***	-4.721**	B is I(0) : CI

Note: NC - Not cointegrated CI - Cointegrated
***Significant at 1 percent **Significant at 5 percent *significant at 10 percent

Table 6.8: Cointegration Test Results for LRTRATAX Equation

Regression: LRTRATAX on	CRDW	DF	ADF	Comments
LORER	0.29	-1.442	-1.511	I(1) : NC
LISI	0.28	-1.430	-1.434	I(1) : CI
LREDET	0.44	-1.609	-1.892	I(1) : NC
LINFL	0.70*	-2.765	-1.613	I(0) : CI
LRIRATE	0.41	-1.657	-1.162	I(1) : CI
GDPG	0.48	-1.825	-1.435	I(1) : NC
C: All Variables above	2.20**	-4.978***	-2.775	C is I(0) : CI

Note: NC - Not cointegrated CI - Cointegrated
***Significant at 1 percent **Significant at 5 percent *significant at 10 percent

Table 6.9: Cointegration Test Results for LRINCTAX Equation

Regression: LRINCTAX on	CRDW	DF	ADF	Comments
LORER	0.46	-3.222	-2.381	I(1) : NC
LISI	0.43	-3.244	-2.386	I(1) : CI
LREDET	0.66	-2.977	-1.969	I(1) : NC
LINFL	0.84**	-2.875	-2.387	I(0) : CI
LRIRATE	0.84**	-2.748	-3.344**	I(0) : CI
LREPRO	1.32**	-3.485*	-1.684	I(0) : CI
LREWBIL	0.43	-3.182	-2.240	I(1) : NC
GDPG	1.13**	-3.065	-2.297	I(0) : NC
D: All Variables above	1.94**	-4.752***	-2.738	D is I(0) : CI

Note: NC - Not cointegrated CI - Cointegrated
***Significant at 1 percent **Significant at 5 percent *Significant at 10 percent

Table 6.10: Cointegration Test Results for LRSALETAX Equation

Regression: LRSALETAX on	CRDW	DF	ADF	Comments
LORER	0.10	-2.770	-2.155	I(1) : NC
LISI	0.09	-2.882	-2.192	I(1) : CI
LREDET	0.33	-1.804	-1.628	I(1) : NC
LINFL	1.27**	-3.368**	-3.200**	I(0) : CI
LRIRATE	0.43	-1.380	-0.790	I(1) : CI
LREPRO	0.90**	-2.761	-3.00*	I(0) : CI
LREWBIL	0.12	-2.758	-2.147	I(1) : NC
GDPG	0.50	-1.826	-2.129	I(1) : NC
E: All Variables above	1.62**	-4.037	-3.304	E is I(0) : CI

Note: NC - Not cointegrated CI - Cointegrated
***Significant at 1 percent **Significant at 5 percent *significant at 10 percent

Table 6.11: Cointegration Test Results for LROTAX Equation

Regression: LROTAX on	CRDW	DF	ADF	Comments
LORER	1.23**	-3.265	-3.012*	I(0) : NC
LISI	1.22**	-3.281*	-2.86*	I(0) : CI
LREDET	1.396**	-2.359	-1.900	I(0) : NC
LINFL	0.77**	-2.179	-1.740	I(0) : CI
LRIRATE	0.92**	-2.928	-2.033	I(0) : CI
LREPRO	0.76**	-2.164	-1.783	I(0) : CI
GDPG	0.94**	-2.777	-2.123	I(0) : NC
F: All Variables above	1.43**	-3.674	-4.549**	F is I(0) : CI

Note: NC - Not cointegrated CI - Cointegrated
***Significant at 1 percent **Significant at 5 percent *significant at 10 percent

Also reported in Table 6.6 are the *joint* explanatory variable cointegration results with the dependent variable (see e.g. Thomas, 1993). Evidently, there seems to exist a long-run relationship between the dependent variable LRTOTAX and all the I(1) explanatory variables jointly. All the statistics except ADF are significant at less than 5 percent and possibly even at less than 1 percent, suggesting that there is a linear combination which is I(0), between the dependent variable and all the explanatory variables together. Consequently, this implies the existence of a long-run relationship between the dependent variable LRTOTAX and all the explanatory variables jointly.

In Table 6.7 through 6.11 results are shown of cointegration test between various dependent variables, namely, LRETOTAX, LRTRATAX, LRINCTAX, LRSALETAX, LROTAX, and various explanatory variables separately and jointly. Estimation and evaluation procedures used are the same as those used in Table 6.6. In short, in each case there seems to be a long-run relationship between the dependent

variable and certain explanatory variables separately, and between the dependent variable and all explanatory variables jointly. Interesting results are those of LRETOTAX (Table 6.7), which almost resemble those of LRTOTAX (Table 6.6) and therefore suggest almost the same form of long-run relationship as that of LRTOTAX and various explanatory variables separately and jointly.

6.3.5 Specification of an Error Correction Model

Having found the existence of cointegration relationship between the dependent and explanatory variables, the next step is to specify an error correction model and then run a regression, since as Adam (1992) points out: "Cointegration analysis provides a powerful discriminating test for spurious correlation: conducting cointegration analysis between apparently correlated I(1) series and finding cointegration validates the regression" (p.13). The model has to be specified *dynamically* in an error correction form because if two or more series are cointegrated, then they will be most effectively represented by an error correction specification. Moreover, if the series are cointegrated, this dynamic specification will encompass any other dynamic specification, including the partial adjustment model, which faces a host of problems when two series, say y and x, are non-stationary (see Engle and Granger, 1987; Adam, 1992).

The error correction parameterization of a log-linear unrestricted autoregressive distributed lag (ADL) model based on Engle-Granger Representation Theorem and also the discussion of ECM (see discussion related to equations (6.14) - (6.19)) implies the transformation of model (6.2) to take the form:

$$\begin{aligned}\Delta LRTOTAX = {} & \beta_1 \Delta LORER + \beta_2 \Delta LISI + \beta_3 \Delta LREDET + \beta_4 \Delta LINFL + \beta_5 \Delta LRIRATE + \\ & \beta_6 \Delta LREPRO + \beta_7 \Delta LREWBIL + \beta_8 \Delta GDPG - \theta[LRTOTAX_{-1} - \beta_0 - \\ & \alpha_1 LORER_{-1} - \alpha_2 LISI_{-1} - \alpha_3 LREDET_{-1} - \alpha_4 LINFL_{-1} - \alpha_5 LRIRATE_{-1} - \\ & \alpha_6 REPRO_{-1} - \alpha_7 LREWBIL_{-1} - \alpha_8 GDPG_{-1} + \varepsilon_t \end{aligned} \quad (6.37)$$

where $\Delta GDPG = \Delta^2 GDP$ (see equation 6.2), θ is the adjustment coefficient, β_i's are short-run parameters, α_i's are long-run parameters, and the term in square brackets is the *disequilibrium error.* The implied long-term relationship is thus:

$$LRTOTAX = \beta_0 + \alpha_1 LORER + \alpha_2 LISI + \alpha_3 LREDET + \alpha_4 LINFL + \alpha_5 LRIRATE + \alpha_6 REPRO + \alpha_7 LREWBIL + \alpha_8 GDPG \quad (6.38)$$

Since this study deals with annual data and a 'small' sample of about 25 observations, a general model (6.37) with first-order lags is adopted before simplification search is started. Opening the brackets and rearranging equation (6.37), the following equation is obtained:

$$\Delta LRTOTAX = \delta_0 + \beta_1 \Delta LORER + \beta_2 \Delta LISI + \beta_3 \Delta LREDET + \beta_4 \Delta LINFL + \beta_5 \Delta LRIRATE + \beta_6 \Delta LREPRO + \beta_7 \Delta LREWBIL + \beta_8 \Delta GDPG - \theta LRTOTAX_{-1} + \phi_1 LORER_{-1} + \phi_2 LISI_{-1} + \phi_3 LREDET_{-1} + \phi_4 LINFL_{-1} + \phi_5 LRIRATE_{-1} + \phi_6 LREPRO_{-1} \phi_7 LREWBIL_{-1} + \phi_8 GDPG_{-1} \varepsilon_t \quad (6.39)$$

where $\delta_0 = \theta\beta_0$ and $\phi_i = \theta\alpha_i$, $i = 1, 2, ..., 8$. Notice that after estimating (6.39), the estimates of the long-run parameters α_is can be obtained from the ratio of the estimated coefficients of lagged explanatory variables (excluding lagged dependent variable) to the estimated coefficient of the lagged dependent variable. Thus, $\alpha_i = \phi_i / \theta$ for all $i = 1, 2, ..., 8$. Similarly, an estimate of β_0 is obtained from the ratio of the constant term to the coefficient of the lagged dependent variable, that is, $\beta_0 = \delta_0/\theta$. As before, β_i, $i = 1, 2, ..., 8$ are short-run parameters and they measure the short-run or immediate impact effect on dependent variable of changes in explanatory variables.

Engle and Granger (1987) propose a two stage procedure to estimate equations like (6.37). Although this procedure produces consistent and highly efficient estimators (in the first stage), this is not always true for small samples. In small samples these estimators will be biased. Their bias can be substantial and it carries over into the disequilibrium errors in the second stage of the procedure, which

can lead to serious sample bias in the estimation of the short-run parameters (Thomas, 1993). Thomas suggests the use of an alternative to the Engle-Granger two-step procedure. The alternative involves applying OLS to equation (6.37) or better to equation (6.39) directly, thus estimating both long- and short-run parameters together. This alternative method is the one that this study has adopted. Equation (6.39) was estimated as it is, and also after being respecified slightly by just changing the dependent variable and the number of the explanatory variables (see equations 6.40 through 6.44, below). Note that equations 6.41 through 6.44 are ECM/ADL versions of equations 6.8 through 6.11, respectively.

$$\Delta LRETOTAX = \delta_0 + \beta_1 \Delta LORER + \beta_2 \Delta LISI + \beta_3 \Delta LREDET + \beta_4 \Delta LINFL + \beta_5 \Delta LRIRATE + \beta_6 \Delta LREPRO + \beta_7 \Delta LREWBIL + \beta_8 \Delta GDPG - \theta\, LRETOTAX_{-1} + \phi_1 LORER_{-1} + \phi_2 LISI_{-1} + \phi_3 LREDET_{-1} + \phi_4 LINFL_{-1} + \phi_5 LRIRATE_{-1} + \phi_6 LREPRO_{-1} \phi_7 LREWBIL_{-1} + \phi_8 GDPG_{-1} \varepsilon_t \quad (6.40)$$

$$\Delta LRTRATAX = \delta_0 + \beta_1 \Delta LORER + \beta_2 \Delta LISI + \beta_3 \Delta LREDET + \beta_4 \Delta LINFL + \beta_5 \Delta LRIRATE + \beta_8 GDPG - \theta\, LRTRATAX_{-1} + \phi_1 LORER_{-1} + \phi_2 LISI_{-1} + \phi_3 LREDET_{-1} + \phi_4 LINFL_{-1} + \phi_5 LRIRATE_{-1} + \phi_8 GDPG_{-1} + \varepsilon_t \quad (6.41)$$

$$\Delta LRINCTAX = \delta_0 + \beta_1 \Delta LORER + \beta_2 \Delta LISI + \beta_3 \Delta LREDET + \beta_4 \Delta LINFL + \beta_5 \Delta LRIRATE + \beta_6 \Delta LREPRO + \beta_7 \Delta LREWBIL + \beta_8 \Delta GDPG - \theta\, LRINCTAX_{-1} + \phi_1 LORER_{-1} + \phi_2 LISI_{-1} + \phi_3 LREDET_{-1} + \phi_4 LINFL_{-1} + \phi_5 LRIRATE_{-1} + \phi_6 LREPRO_{-1} \phi_7 LREWBIL_{-1} + \phi_8 GDPG_{-1} \varepsilon_t \quad (6.42)$$

$$\Delta LRSALETAX = \delta_0 + \beta_1 \Delta LORER + \beta_2 \Delta LISI + \beta_3 \Delta LREDET + \beta_4 \Delta LINFL + \beta_5 \Delta LRIRATE + \beta_6 \Delta LREPRO + \beta_7 \Delta LREWBIL + \beta_8 \Delta GDPG - \theta\, LRSALETAX_{-1} + \phi_1 LORER_{-1} + \phi_2 LISI_{-1} + \phi_3 LREDET_{-1} + \phi_4 LINFL_{-1} + \phi_5 LRIRATE_{-1} + \phi_6 LREPRO_{-1} \phi_7 LREWBIL_{-1} + \phi_8 GDPG_{-1} \varepsilon_t \quad (6.43)$$

$$\Delta LROTAX = \delta_0 + \beta_1 \Delta LORER + \beta_2 \Delta LISI + \beta_3 \Delta LREDET + \beta_4 \Delta LINFL + \beta_5 \Delta LRIRATE + \beta_6 \Delta REPRO + \beta_8 \Delta GDPG - \theta LROTAX_{-1} + \phi_1 LORER_{-1} + \phi_2 LISI_{-1} + \phi_3 LREDET_{-1} + \phi_4 LINFL_{-1} + \phi_5 LRIRATE_{-1} + \phi_6 LREPRO_{-1} + \phi_8 GDPG_{-1} \varepsilon_t \quad (6.44)$$

Where, all variables are as defined earlier. Discussion of results of estimation is next.

6.4. Empirical Results

Tables 6.12 to 6.15 below summarise empirical results obtained from OLS regressions of equations (6.39) through (6.44), both of which were specified in an ECM/ADL model format. Table 6.12, equation (6.39), for example, summarises results of OLS estimation of ΔLRTOTAX general model (6.39), while equations (6.39'a) and (6.39'b) in Table 6.13 summarise "parsimonious" results of equation (6.39') and their equation (6.37) ECM format, respectively. In the same manner, Table 6.14 summarises "parsimonious" results of OLS estimation of equations (6.40) through (6.44), while Table 6.15 presents these results in an ECM format, respectively [see equations (6.40') - (6.44')].

5.4.1. General-to-Specific Simplification Process

As all equations summarising OLS estimation results in Tables 6.13 through 6.15 show, not all explanatory variables that are specified in the original equations do appear in the final equations. This is not surprising for it happens because of the general-to-specific simplification search process, which involves the simplification of the general overparameterized model such as (6.39) to less parameterized, specific or "parsimonious" model such as (6.39'):

$$\Delta LRTOTAX = \beta_1 \Delta LORER + \beta_4 \Delta LINFL + \beta_5 \Delta LRIRATE + \beta_6 \Delta LREPRO + \beta_7 \Delta LREWBIL - \theta[LRTOTAX_{-1} - \beta_0 - \alpha_1 LORER_{-1} - \alpha_2 LISI_{-1} - \alpha_3 LREDET_{-1} - \alpha_4 LINFL_{-1} - \alpha_5 LRIRATE_{-1} - \alpha_6 REPRO_{-1} - \alpha_7 LREWBIL_{-1} - \alpha_8 GDPG_{-1} + \varepsilon_t \quad (6.39')$$

Through a series of linear transformations of the general model and imposition of coefficient restrictions, this process produces a model which is consistent with theory and with the data. This is what this study has done. On applying OLS procedure on equation (6.39), for example, results presented in Table 6.12 equation (6.39) were obtained.

Table 6.12. Regression Results for RTOTAX General Model [Equation (6.39)]

Dependent Variable: ΔLRTOTAX	*Equation Number*..... **(6.39)**	
Explanatory Variables	*Estimated Coefficients*	*T-Statistics*
Constant	-2.858	(-1.571)
ΔLORER	-0.210	(-2.072)*
ΔLISI	0.075	(0.368)
ΔLREDET	-0.176	(-1.181)
ΔLINFL	-0.578	(-3.168)**
ΔLRIRATE	-0.543	(-3.276)***
ΔLREPRO	-0.210	(-2.072)*
ΔLREWBIL	0.672	(2.007)*
ΔGDPG	-0.501	(-0.481)
$LRTOTAX_{-1}$	-1.537	(-5.192)***
$LORER_{-1}$	-0.418	(-1.812)
$LISI_{-1}$	-0.300	(-1.766)
$LREDET_{-1}$	0.699	(4.007)***
$LINFL_{-1}$	-0.325	(-3.346)***
$LRIRATE_{-1}$	-0.422	(-4.101)***
$LREPRO_{-1}$	-0.579	(-2.881)**
$LREWBIL_{-1}$	0.211	(1.021)
$GDPG_{-1}$	-2.556	(-2.478)**
$\bar{R}^2 = 0.97$ F(17,7) = 14.25*** DW = 2.86 AR 1-3F(3,4) = 1.801		
ARCH 2 F(2,3) = 1.225 Normality $Chi^2[2] = 0.519$ RESET F(1,6) = 0.508		

***Significant at 1 % **Significant at 5 % *Significant at 10 %

Model (6.39) shows all signs of being a good model. It has a good fit ($\overline{R}^2 = 0.97$ and is highly significant as shown by F-statistic); it is well specified since there is no autocorrelation as shown by an insignificant AR statistic; no heteroscedasticity as shown by insignificant autoregressive conditional heteroscedasticity (ARCH) statistic; and the RESET, a measure of functional form mis-specification is also insignificant. However, model (6.39) is not necessarily parsimonious. That is, there must be another model with fewer parameters that encompasses model (6.39). This, can be obtained by a search process that involves dropping insignificant variables (i.e., imposing coefficient restrictions) while testing for each transformation and simplification using various diagnostic tests. In the present case, the most insignificant variables, namely, ΔLISI, ΔGDPG and Δ LREDET were dropped in that sequence and their effect on the model assessed.

To show that the final model (6.39') or (6.39'a) (see Table 6.13) is a simplified version of (6.39) and that it encompasses (6.39), important diagnostic statistics such as $\overline{R}^2$, a measure of the fit of the model, AR, ARCH, NORMALITY and RESET are considered first. Whereas $\overline{R}^2$ of 0.96 is very high and highly significant at 1 percent, all other diagnostic tests are insignificant showing that model (6.39'a) is correctly specified. The model has no autocorrelation nor heteroscedasticity thus confirming that no important variable has been omitted. Using sum squares of residuals (SSR) in (6.39) and (6.39'a), an F-test is conducted to ascertain whether dropping variables ΔLISI, ΔGDPG and ΔLREDET (i.e., imposing zero restrictions on them) from (6.39) is model justifiable and data acceptable (For details see, e.g., Thomas, 1993). The test statistic takes the value 0.75. Since the critical F-value with (3,7) degrees of freedom is $F_{0.10} = 3.07$, dropping the above three variables is model justifiable and data acceptable even at 10 percent level of significance.

Table 6.13. Regression Results: Parsimonious RTOTAX Model and its ECM Representation

Dependent Variable: **ΔLRTOTAX**		*Equation Number* ..... **(6.39'a)**
Explanatory Variables	*Estimated Coefficients*	*T-Statistics*
Constant	-3.446	(-2.248)**
ΔLORER	-0.655	(-4.302)***
ΔLINFL	-0.564	(-5.409)***
ΔLRIRATE	-0.528	(-5.450)***
ΔLREPRO	-0.180	(-2.894)**
ΔLREWBIL	0.652	(7.673)***
$LRTOTAX_{-1}$	-1.638	(-9.653)***
$LORER_{-1}$	-0.529	(-3.233)***
$LISI_{-1}$	-0.351	(-3.670)***
$LREDET_{-1}$	0.711	(7.130)***
$LINFL_{-1}$	-0.325	(-4.149)***
$LRIRATE_{-1}$	-0.422	(-4.435)***
$LREPRO_{-1}$	-0.579	(-4.692)***
$LREWBIL_{-1}$	0.211	(1.862)*
$GDPG_{-1}$	-2.556	(-5.154)***

$\bar{R}^2 = 0.96$ F(14,10) = 18.25*** DW = 2.92 AR 1-3F(3,7) = 3.038

ARCH 2 F(2,6) = 0.366 Normality $Chi^2(2) = 1.117$ RESET F(1,9) = 0.056

$$\Delta LRTOTAX = -0.655\,\Delta LORER - 0.564\,\Delta LINFL - 0.528\,\Delta LRIRATE - 0.180\,\Delta LREPRO + 0.652\,\Delta LREWBIL - 1.638\,[LRTOTAX_{-1} + 2.104 + 0.323\,LORER_{-1} + 0.214\,LISI_{-1} - 0.434\,LREDET_{-1} + 0.198\,LINFL_{-1} + 0.258\,LRIRATE_{-1} + 0.353\,LREPRO_{-1} - 0.129\,LREWBIL_{-1} + 1.560\,GDPG_{-1}] \quad \textbf{(6.39'b)}$$

***Significant at 1 % **Significant at 5 % *Significant at 10 %

The same procedure was used in all other general equations before arriving at the final preferred equations (6.40) through (6.44) in Table 6.14. Various diagnostic statistics shown under these equations confirm also that all these equations are the preferred ones. Generally, all the equations are robust, have good coefficients of determination, and are not in any way mis-specified or defective. In addition they are all parsimonious and nested within their general models.

One other important observation relates to the stability of the parameters of the model. Using Chow test it is established that in their generality the parameters of model (6.39'a) are stable. The Chow test statistic takes the value 1.0. Since the critical F-value with (6,4) degrees of freedom is $F_{0.10} = 3.18$, it is correct to conclude that the parameters of the level of taxation model (6.39'a) and the total real tax revenue model (6.40) (its Chow test statistic = 1.1), are stable. That is, there were no significant shifts in the two functions during the period 1967-91. Same observations were made for the disaggregated models (6.41) through (6.44).

6.4.2. Interpretation of Estimation Results

As mentioned above, all equations are robust. Except for LROTAX equation which represents residual taxes and has $\bar{R}^2$ of 0.46, all other equations have high coefficients of determination or $\bar{R}^2$s ranging from 0.64 for the ratio of trade taxes (RTRATAX) equation (6.41) to 0.97 for the real total tax (RETOTAX) equation (6.40) (see Tables 6.13 and 6.14). Moreover, most of the explanatory variables are highly significant at 1 percent and 5 percent, while few remaining ones are significant at 10 percent level of significance.

In short, the results verify most of the hypotheses that were being tested, and confirm that it is actually macroeconomic policies that matter in explaining the changes and variation in the level of taxation in Tanzania and probably in other developing countries. All macroeconomic variables, namely: real interest rate, import substitution index, real total external debt, inflation, real interest rate, real parastatal profits and real total wage bill, together with real growth in output are found to influence both the ratio of total tax revenue to GDP (Table 6.13, equation 6.39'a) and real total tax revenue (Table 6.14, equation 6.40). The two equations have similar results. Detailed discussion of how each of these macroeconomic variables influenced the level of taxation in Tanzania and the channels through which it did so

during 1967-91, is undertaken below after the general discussion in the next two paragraphs of how to interpret equations such as (6.39'b) and (6.40') through (6.44').

As mentioned earlier, an ECM model provides both short-run and long-run solutions to estimated equation. As such, it is possible to infer from these equations, the short-run and the long-run impacts of various macroeconomic variables in influencing various tax revenues. In equation (6.39'b), for example, the coefficients of the variables with the symbol Δ measure, in elasticity terms, the short-run or immediate impacts of these variables in influencing RTOTAX, while the coefficients of lagged variables measure, also in elasticity terms, the long-run effects of these variables on RTOTAX. Thus, in equation (6.39'b), for example, the short-run or impact effect of ORER with respect to RTOTAX is -0.655, while its long-run effect with respect to RTOTAX is -0.323. The impacts and effects of all the explanatory variables to RTOTAX or any other dependent variable can thus be read in the same manner.

It may be important to also interpret in equation (6.39'b) and others, the coefficient just before the square brackets or that corresponds to θ in equation (6.37). As noted earlier, this coefficient (of adjustment) measures the extent to which the disequilibrium (as measured by disequilibrium error or the term within the square brackets) in period t-1 is 'made up for' in period t. Since the data used in this study is annual, this coefficient hence measures the proportion of any disequilibrium one year previous, that is compensated for in the current period. In the case of LRTOTAX and LRETOTAX equations (equations (6.39'b) and (6.40')), this coefficient equals 1.638 and 1.447 in absolute terms, respectively, indicating that there appears to be overcompensation. For equations (6.41') to (6.44'), that is, LRTRATAX, LRINCTAX, LRSALETAX, and LROTAX equations, in absolute terms this coefficient takes the values of 0.607, 0.473, 0.545 and 0.554, respectively (Table 6.15).

Table 6.14. Regression Results for Parsimonious **RETOTAX, RTRATAX, RINCTAX, RSALETAX & ROTAX** Models

Dep. variables Exp. variables	Eqn.(**6.40**): *LRETOTAX*	Eqn.(**6.41**): *LRTRATAX*	Eqn.(**6.42**): *LRINCTAX*	Eqn.(**6.43**): *LRSALETAX*	Eqn.(**6.44**): *LROTAX*
Constant	9.225	-8.589	4.593	2.144	-1.522
	(5.337)***	(-4.047)***	(1.783)*	(1.208)	(-1.380)
ΔLORER	-0.559				
	(-4.062)***				
ΔLISI			-1.473	1.009	
			(-4.584)***	(3.748)***	
ΔLREDET		0.603		-1.216	
		(2.043)*		(-4.148)***	
ΔLINFL	-0.399			-0.674	-0.979
	(-4.650)***			(-2.301)**	(-2.186)**
ΔLRIRATE	-0.380			-0.632	-0.978
	(-4.762)***			(-2.355)**	(-2.424)**
ΔLREPRO	-0.177		0.224	-0.779	
	(-3.157)***		(2.83)**	(-3.518)***	
ΔLREWBIL	0.648		-1.310	1.875	
	(8.360)***		(-3.124)***	(4.336)***	
ΔGDPG			-3.803		
			(-3.366)***		
$(DEP.\ VAR)_{-1}$	-1.447	-0.607	-0.473	-0.545	-0.554
	(-9.650)***	(-4.140)***	(-1.979)*	(-3.136)***	(-3.333)***
$LORER_{-1}$	-0.677	0.655	-1.365		
	(-4.107)***	(2.18)**	(-3.773)***		

Continues to next page

Table 6.14. Continued

$LISI_{-1}$	-0.350		-1.399	0.369	
	(-3.998)***		(-4.383)***	(2.667)**	
$LREDET_{-1}$	0.894	0.500		0.992	0.394
	(8.104)***	(2.915)***		(3.951)***	(3.119)***
$LINFL_{-1}$	-0.189	-1.169	-0.705	0.258	
	(-3.017)***	(-4.018)***	(-5.259)***	(2.875)***	
$LRIRATE_{-1}$	-0.289	-0.874	-0.686		
	(-3.762)***	(-3.301)***	(-5.228)***		
$LREPRO_{-1}$	-0.508		0.378	-1.803	-0.679
	(-4.639)***		(3.416)***	(-3.937)***	(-2.919)***
$LREWBIL_{-1}$	0.280				
	(2.677)**				
$GDPG_{-1}$	-1.455		-5.366		
	(-3.732)***		(-3.307)***		
$\bar{R}^2$	0.97	0.64	0.89	0.77	0.46
F - statistic	22.86***	5.25***	9.44***	3.91***	3.30**
DW - statistic	2.59	1.82	2.46	2.51	1.76
AR 1-3F-stat.	1.527	1.324	0.782	0.750	1.216
ARCH 2 F-stat	0.471	1.877	0.064	0.854	0.471
Normality $Chi^2[2]$	0.072	0.335	2.468	2.065	0.838
RESET F-stat	2.96	1.409	0.030	1.348	1.311

( ) In brackets are t-statistics
***Significant at 1 percent **Significant at 5 percent *Significant at 10 percent

Table 6.15. ECM Represantation: RETOTAX, RTRATAX, RINCTAX, RSALETAX & ROTAX

$\Delta LRETOTAX = -0.559\ \Delta LORER - 0.399\ \Delta LINFL - 0.380\ \Delta LRIRATE - 0.177\ \Delta LREPRO + 0.648\ \Delta LREWBIL - 1.447\ [LRETOTAX_{-1} - 6.375 + 0.468\ LORER_{-1} + 0.24\ LISI_{-1} - 0.894\ LREDET_{-1} + 0.131\ LINFL_{-1} + 0.200\ LRIRATE_{-1} + 0.351\ LREPRO_{-1} - 0.194\ LREWGBIL_{-1} + 1.006\ GDPG_{-1}]$ **(6.40')**
$\Delta LRTRATAX = -0.603\ \Delta LREDET - 0.607\ [LRTRATAX_{-1} + 14.150 - 1.079\ LORER_{-1} - 0.824\ LREDET_{-1} + 1.926\ LINFL_{-1} + 1.440\ LRIRATE_{-1}]$ **(6.41')**
$\Delta LRINCTAX = -1.473\ \Delta LISI + 0.224\ \Delta LREPRO - 1.310\ \Delta LREWBIL - 3.803\ \Delta GDPG - 0.473\ [LRINCTAX_{-1} - 9.710 + 2.886\ LORER_{-1} + 2.958\ LISI_{-1} + 1.490\ LINFL_{-1} + 1.450\ LRIRATE_{-1} - 0.799\ LREPRO_{-1} + 11.345\ GDPG_{-1}]$ **(6.42')**
$\Delta LRSALETAX = 1.009\ \Delta LISI - 1.216\ \Delta LREDET - 0.674\ \Delta LINFL - 0.632\ \Delta LRIRATE - 0.779\ \Delta LREPRO + 1.875\ \Delta LREWBIL - 0.545\ [LRSALETAX_{-1} - 3.934 - 0.677\ LISI_{-1} - 1.820\ LREDET_{-1} - 0.473\ LINFL_{-1} + 3.308\ LREPRO_{-1}$ **(6.43')**
$\Delta LROTAX = -0.979\ \Delta LINFL - 0.978\ \Delta LRIRATE - 0.554\ [LROTAX_{-1} + 2.747 - 0.39\ LREDET_{-1} + 0.679\ LORER_{-1}$ **(6.44')**

Based on empirical results, the discussion that follows focuses on macroeconomic determinants of the level of taxation in Tanzania.

6.4.3. Macroeconomic Determinants of Level of Taxation in Tanzania

Based on empirical findings, this sub-section explores the impact and channels through which various macroeconomic variables that were found to be significant above, influenced the level of taxation in Tanzania.

Official Real Exchange Rate (ORER): ORER has a negative sign and is highly significant implying that official real exchange rate did have significant negative impact, both immediate and long-run, on tax revenue in Tanzania during the period under study [see Table 6.13 equations (6.39'a); Table 6.14 equation (6.40)]. This finding is surprising for it does not conform well with the theory and experiences that Tanzania has had, in conducting its exchange rate policy. The

exchange rate policy was until 1986 passive, leading to overvaluation of the shilling which, however, seem to have had favourable impact on incomes including profits and hence income taxes collection [see Table 6.14, equation (6.42)]. Moreover, it seems that after 1986 the depreciated real exchange rate moved in the opposite direction with incomes and hence income tax revenue. There is no strong evidence to show that real official exchange rate also affected negatively trade taxes that mostly comprised of customs duties after export taxes were abolished in 1985. The short-run coefficient of ORER was insignificant in equation (6.41), while its long-run coefficient is positive and significant suggesting that real official exchange rate has had positive impact on trade taxes. That this was so is not surprising given that ORER and import duty base move in the same direction, and the sample of this study encompasses the period 1986-91 that, as was shown earlier, was marked by very large adjustments of the exchange rate. Short sample period could not allow the impact of real official exchange rate on trade taxes to be disentangled for the 1967-85 period. Also, since trade taxes were not disaggregated further, it is possible that one of its components such as import duty, sales tax or export tax was negatively affected by ORER, in the short-run.

Import Substitution Index (ISI): ISI also has a negative sign and is highly significant, suggesting that import substitution policies have had a negative influence on tax revenue in Tanzania during the period under study [see Tables 6.13 and 6.14, equations (6.39'a) and (6.40)]. Their effect though is a long-run one, implying that these policies affected negatively total taxes by adversely affecting the performance of economic activities that contribute to the income taxes. In this way the contribution of income taxes to total tax revenue became negative [see Table 6.14, equation (6.42)]. Although import substitution policies contributed positively to some of economic activities that contribute to the base of sales and excise taxes and hence to these taxes, their effect on total tax revenue was not as strong as the negative effect exerted on income taxes by these policies [see Table 6.14, equations (6.42) and

(6.43); also Table 6.15, equations (6.42') and (6.43') for ISI long-run elasticities]. ISI's long-run elasticities with respect to RINCTAX and RSALETAX are 2.958 and 0.677, respectively. Import compression, as shown in chapter 4, seems to have had a devastating effect on economic activities and hence income taxes collection in general. The fact that parameters of the models are stable and that there was no shift in the function after 1986 implies that trade liberalisation and ERP did not reverse much the negative impacts of import substitution policies.

Real Total External Debt (REDET): Contrary to the hypothesis that real total external debt would influence negatively total tax revenue, coefficients of $REDET_{-1}$ in equations (6.39'a) and (6.40) are positive and highly significant. This implies that real total external debt has had a positive influence, in the long-run, on ratio of total tax to GDP and real total tax revenue during the period under study. Obviously, as equations (6.41), (6.43) and (6.44) show (see Table 6.14), this effect reflects the collective positive impact of this variable on income taxes, sales and excise taxes, and other taxes. Accordingly, the explanation why $REDET_{-1}$ has positive effect on ratio of total tax revenue and real total tax revenue can be inferred also from these taxes. As it appears, the fact that $REDET_{-1}$ led to an increase in total tax revenue collection is not accidental, rather a policy issue. That is, as total external debt stock increased, it implied more debt service payments, which had to be paid through increased tax collection. Apart from increased effort, more tax collection was facilitated by tax rate increases for certain taxes. Being the leading tax revenue sources, sales tax and excise duties and income taxes became unavoidable targets of statutory tax rate increases, while *other taxes* became the target of discretionary tax rate increases (see chapter 5).

Although they did not affect significantly total tax revenue, *current* real total debt (REDET) increases impacted positively on trade taxes, and negatively on sales tax and excise duties [see Table 6.14, equations (6.41) and (6.43)]. While the explanation for REDET's positive impact on trade taxes would resemble that just

given above, for example on income taxes, a negative impact of REDET on sales and excise taxes would stem from theory. That is, an increase in external debt would lead to reduction in tax revenue collection (in this case sales tax and excise duties), through evasion, capital flight, etc., to avoid future high taxes, which as evidenced in chapter 5 and the discussion of the effect of $REDET_{-1}$ on various taxes just above, were a fact in Tanzania during the period under study.

Real Parastatal Enterprise Profits (REPRO): Against hypothesis, the impact of REPRO on total tax to GDP ratio and real total tax revenue is negative both in the short-run and in the long-run, as indicated by the coefficients of REPRO and $REPRO_{-1}$ [see Table 6.13, equation (6.39'a); Table 6.14, equation (6.40)]. A careful look at the disaggregated tax level equations indicates that the negative signs of the coefficients of these variables stem mainly from the negative impacts of REPRO and $REPRO_{-1}$ on sales tax and excise duties, which overshadow the positive impacts of the same variables on income taxes [see Table 6.14, equations (6.42) and (6.43); Table 6.15, equations (6.42') and (6.43')]. As it appears, two explanations are possible here. First, it is profits that seem to determine the amount of sales and excise taxable base, output. That is, the lower (higher) are the profits (losses) in the past year, the lower is the output and hence the lower is the amount of sales and excise taxes collection in the current year.

The second and probably more plausible explanation is that related to profit-motive-driven tax evasion. That is, the desire for higher profits leads to less tax payments by sales and excise taxable output producers. This is so in the current period and through a learning process, in the future. That is, higher profits this year will induce more evasion in the next year. In a country like Tanzania where in practice sales are not accompanied by issuance of receipts to customers and auditing is not thorough enough, this motive is easily facilitated. Since sales taxes and excise duties on imports have been classified to fall under this tax category (see chapter 5),

and since it was shown in chapter 5 that these taxes are among taxes that are highly evaded, the profit motive can thus not be ruled out.

Real Total Wage Bill (REWBIL): The impact of REWBIL on the ratio of total tax revenue to GDP and on real total tax revenue is positive both in the short-run and in the long-run. At the disaggregated level, however, the signs of the coefficients of this variable are mixed. Whereas current REWBIL affects positively sales tax and excise duties [Table 6.14, equation (6.43)], its impact on income taxes is negative suggesting that wage bill has had a reducing effect on company tax and hence income taxes. It is not clear why the impact of REWBIL on sales and excise taxes is positive (and larger) to the extent of overshadowing the negative (smaller) impact of this variable on income taxes. One probable explanation, as in the case of total external debt is that government's wage bill requirements tended to put pressure on government to raise wage tax rates so as to collect more revenue from them. Frequent increases of excise duty rates so as to ensure "maximum" contribution of these taxes (see chapter 5) is a good case in point. Moreover, that the impact of REWBIL on sales tax and excise duties is positive is not strange, given the contribution of these taxes in total tax revenue and also their very high rates at least up to 1988/89.

Inflation (INFL): The hypothesis that inflation in Tanzania affected negatively the level of total tax revenue was proved to be correct. All INFL coefficients are negative implying that the impact of inflation on the ratio of total tax revenue to GDP and on total tax revenue was negative both in the short-run and in the long-run during the period 1967-91 [see Table 6.13, equation (6.39'a); Table 6.14, equation (6.40)].

At the disaggregated level, tax components that were negatively affected by INFL include sales and excise taxes and other taxes in the short-run, and income taxes and sales and excise taxes in the long-run [Table 6.13, equation (6.41); Table 6.14, equations (6.41) to (6.444]. The only tax category that was positively affected by INFL in the long-run is sales and excise taxes [Table 6.14, equations (6.43)].

One major reason that was also shown in the theoretical chapter as to why inflation affects negatively certain tax revenues is the delay or lag in collection of these taxes. That some tax revenues have been collected with a lag in Tanzania was mentioned in chapter 5, and empirical findings here confirm this. Otherwise, the level of inflation that existed in Tanzania during the period under study was not so serious to affect negatively the above taxes, had they been collected in time. On the positive long-run effect of INFL on sales and excise taxes, one plausible explanation is the cost-plus- inflation pricing policy. That is, past levels of inflation were used as a gauge in the joint setting of current product prices between companies and the Price Commission before it was dissolved. This practice, it appears has had positive impact on the value of current output and therefore sales and excise taxes collection.

Real Interest Rate (RIRATE): The impact of real interest rate on the ratio of total tax revenue to GDP and real total tax revenue was negative during 1967-91 period [see Table 6.13, equation (6.39'a); Table 6.14, equation (6.40)]. At the disaggregate tax revenue level, the negative impact of real interest rate is traceable to sales and excise taxes and other taxes in the short-run, and trade taxes and income taxes, in the long-run [Table 6.14, equations (6.40) through (6.44)].

Based on the theoretical discussion in chapter 3 and Tanzania's macroeconomic experience discussion in chapter 4, it is surprising that the impacts of RIRATE on all tax revenue categories where this variable is significant, are negative instead of being positive. Three explanations, both based on disaggregated results, are plausible. First, by discouraging savings, real interest rates limited government borrowing from banks. In order to finance its activities, the government raised taxes through discretionary action, thus making tax revenue and real interest rate move in the opposite direction. Second, low real interest rates encouraged borrowing and hence more economic activities by major borrowers mostly parastatals, thus raising output and hence sales and income taxes. Third, low real interest rates discouraged domestic savings but encouraged capital flight both outright and through illegal trade

practices, which culminated into more profitable import trade that boosted import/trade taxes.

Real GDP Growth Rate (GDPG): Assuming other things are equal, it is theoretically sound for economic growth, by increasing the tax base, to positively influence an increase in the tax revenue collection. The converse is also true for economic downturn. This is so partly because the ability to tax grows faster than income, and also because the "handles" to which the tax revenue system may be attached to become more diverse with economic development thus resulting in a widening in the tax base and extensions of the coverage of different types of taxes (Hinrichs, 1966; Musgrave, 1969).

Against hypothesis, during the 1967-91 period real economic change affected negatively and significantly the level of total tax and real total tax revenue collection in Tanzania, especially in the long-run [see Table 6.13, equation (6.41); Table 6.14, equation (6.43)]. It is a bit surprising that economic performance and level of taxation moved in the opposite direction in the face of Tanzania's poor overall economic performance during this period (see chapter 4). The significant major contributor to the rise in the level of total tax revenue despite poor economic performance, both in the short- and long-run, was income taxes [see Table 6.14, equation (6.45)]. Equation (6.50) in Table 6.15, for example, shows the short-run and long-run elasticities of this tax category to be as high as 3.803 and 11.345, respectively, thus showing how income tax revenue and hence its share in total tax revenue increased despite poor economic performance. One possible explanation for this scenario is that as output performance worsened, tax revenue collection from output and profits also worsened. However, to compensate for the reduced tax revenue and even raise more of it, the government increased tax rates.

CHAPTER 7

CONCLUSION

7.1. Introduction

The main objective of this study was to investigate the impact of macroeconomic policies on level of taxation in developing countries, taking Tanzania as case study. To attain this objective, the study explored various theoretical arguments that have been advanced in support of the role of macroeconomic policies in influencing the level of taxation in developing countries. Using qualitative and statistical tools, the study examined also the Tanzania's macroeconomic environment and experiences, and attempted at showing the influence of these on the country's structure and level of taxation during the 1967-91 period. In a more formal analysis the study utilised econometric techniques to examine the impact of various macroeconomic policy variables, namely; the real exchange rate, import substitution, real external debt, inflation, real interest rate, real parastatal enterprise profits, real total wage bill, and real output (GDP) changes, on the level of taxation in Tanzania.

This study was thought to be significant for one obvious reason that Tanzania is one of the developing countries that have been characterised by economic crises that have, among others, manifested themselves in chronic macroeconomic imbalances of which an imbalance between revenue and expenditure, even when the latter was falling in real terms, has featured prominently. Since macroeconomic policies are postulated to have had adverse effect on the level of taxation in Tanzania, the carrying out of this study, it was thought, would be timely. Its findings would be informative in terms of policy implications especially to Tanzania, which is struggling to increase its revenue collection and recover its economy. Apart from showing what went wrong and when, the findings of this study will hopefully serve as a lesson and a handy aid in policy formulation, implementation, or even assessment. In addition, this study and its findings are expected to contribute to the

existing literature on the subject, since no similar study has been undertaken in Tanzania and in other developing countries.

7.2. Important Findings

7.2.1. *General Observations*

Based on qualitative and statistical analysis, this study showed how various macroeconomic imbalances emerged especially beginning in 1978 and worsened over time to affect overall economic performance and revenue collection efforts in Tanzania. Major macroeconomic imbalances that this study brought into light include savings-investment gap, recurrent and overall budget deficit, and trade and balance of payments deficits. Behind all these imbalances was a poor conduct of macroeconomic policies including, among others, the exchange rate policy, monetary and fiscal policies, trade and balance of payments policies, financial policy, saving and investment policies, public sector policy, pricing policy, and wage policy.

Either individually or jointly, all these policies had a hand in influencing the magnitudes of various tax bases and therefore level of tax revenue collection from them. It was shown for example that real total tax revenue and total tax revenue as a ratio of GDP had upward trends up to 1981 and 1975, respectively, after which each took a declining trend that was only to be reversed one year after the adoption of Economic Recovery Programme (ERP) in 1986. The major aim of ERP was to correct the macroeconomic imbalances and to reverse economic decline.

Albeit briefly, the role of tax administration in influencing tax revenue collection was also discussed. Weaknesses in tax administration were shown to exist at each of the four phases in the process of taxation. These phases are the design and enactment of tax codes; information collection and identification of tax payers; the assessment of liabilities, tax litigation and enforcement; and tax collection. Flawed tax laws, non-deterrent penalties, complicated tax structure with too many taxes and

tax rates are both a result of weak tax administration. Corruption, negligence, poor workmanship due to lack of proper training, working tools and incentives, and pressures from different directions are also some of the factors that were shown to have had influence on the performance of the tax departments, and hence tax revenue collection in general. Basically, these weaknesses in tax administration are the manifestations of macroeconomic and general economic crisis although to a certain extent they also reflect poor tax policy or its implementation.

7.2.2. Empirical Findings

To verify the above observations and various theory-based hypotheses, an empirical analysis was undertaken in chapter 6, the findings of which this sub-section sets to report. Briefly, all the hypotheses that were being tested hypothesised the existence of either negative or positive but adverse relationships between various levels of tax revenue and various macroeconomic policies (mentioned above) in Tanzania, during the period 1967-91. To test and capture both the short-run and long-run effects of various macroeconomic variables on the level of taxation and real total tax revenue, an Error Correction Model (ECM) was used. A similar method was used to capture the impacts of various macroeconomic policies on disaggregated tax revenue components in an effort to identify transmission channels through which these policies affected total tax revenue.

From empirical results this study established the following: First, all the hypothesised macroeconomic variables and hence their policies are important in determining the level of taxation in Tanzania. Their impacts and influences on total tax revenue, however, differ from one variable to another, and from one period to another (from short- to long-run). The impact of various macroeconomic policies on all major tax components also differ in the same manner.

Second, the official real exchange rate is negatively related to the level of total tax revenue and real total tax revenue in Tanzania, both in the short-run and in

the long-run. This is surprising, however, given the passive exchange rate policy that the country pursued especially before the adoption of ERP. This led to overvaluation of the shilling that in turn affected tax revenue both directly and indirectly (see chapter 3). As it appears, the tax revenue category through which the official real exchange rate exerts its overall negative influence on total tax revenue is income taxes. The effect of official real exchange rate on this tax category is negative and is presumably exerted via various economic activities both legal and illegal (see chapter 3) that affect the base of this tax, with a time lag of one year. The tax category through which the real exchange rate exerts its positive influence on total tax revenue, in the long-run, is trade taxes. It is not clear, though, whether it does so through import duties or trade taxes, and whether its impact is uniform throughout the period, or just during heavy devaluation period 1986-91. Another thing that is not clear is through which tax the official real exchange rate impacts negatively on total tax revenue in the short-run.

Third, the impact of import substitution policies on the level of total tax revenue and real total tax revenue is negative and is exerted with a time lag of one year. The channel through which this negative effect is exerted on total tax revenue is income taxes. Import substitution affects negatively these taxes both in the short-run and in the long-run most probably through affecting economic activities, both legal and illegal, that generate income taxable base (see chapter 3). Although the impact and effect of import substitution policies on some tax categories such as sales and excise taxes are positive most probably as result of the encouragement by these policies of domestic production of import substitutes and other activities that contribute to the base of these taxes, their overall impact on total tax revenue still remains negative. Trade liberalisation seems not to have reversed the negative impact of these policies on tax revenue.

Fourth, an increase in the stock of real external debt leads to an increase in the level of total tax revenue. Thus, as total external debt increases in real terms, debt

service payments also increase in real terms thereby exerting pressure on tax collection through tax rate increases. The most affected taxes in this way in the *long-run* are income taxes, sales tax and excise duties, and other taxes, while in the in the short-run trade taxes are the most affected. Thus, external debt influences positively revenue collection from these taxes. The only tax category that real external debt has impacted upon negatively in the *short-run* is sales and excise taxes, possibly as a result of evasion, capital flight etc. to avoid future taxes that external debt induces.

Fifth, the impact of real parastatal profits on the level of taxation and real total tax revenue is negative, both in the short-run and in the long-run. Although real total profits impact positively on income taxes, their impact on these taxes is outweighed by their negative impact on sales and excise taxes that also carries over to the total tax revenue. The negative impact and effect of real parastatal profits on sales and excise taxes suggests that it is past and present parastatal profits that determine current output, which is the base for sales tax and excise duty. Alternatively, the desire for higher profits lead to less tax payments by importers and sales and excise taxable output producers. On the other hand, the impact of real parastatal profits on income taxes is positive despite the profits' declining trend beginning in 1978. It is positive mainly because of company tax rates increases.

Sixth, the impact of real wage bill on the level of total tax revenue and real total tax revenue is positive, both in the short-run and in the long-run. At the disaggregate level though, real wage bill exerts a negative impact on income taxes suggesting that its increase exerts a negative pressure on profits and hence tax revenue from them. The impact of real wage bill on sales and excise taxes is, however, positive to the extent of dominating the negative impact of this variable on income taxes at total tax level. Its impact is positive in this case because of the pressure that wage bill requirements exert on total tax revenue and hence the 'victim' sales and excise taxes by frequent tax rate increases on them.

Seventh, as postulated in theory and hypothesised above, inflation affects negatively the level of total tax revenue and real total tax revenue both in the short-run and in the long-run, in Tanzania. Except for sales and excise taxes that inflation affects positively in the long-run, all other tax categories including sales and excise taxes are impacted negatively by inflation in the short-run. High level of inflation and delay in collection of these taxes is the major reason behind the erosion of their real values. As argued in chapter 5, the positive effect of inflation on sales and excise taxes could be a result of cost-plus-inflation pricing policy.

Eighth, financial repression as proxied by very low and negative real interest rate is 'tax revenue increasing' since the impact of real interest rate on total tax revenue to GDP ratio, real total tax revenue, and all other tax categories is negative in Tanzania. Whereas in the short-run real interest rate impacts negatively on all taxes except trade taxes and income taxes, in the long-run it negatively affects these latter tax categories. This clearly shows how by discouraging savings, very low/negative real interest rates limit government borrowing from banks and encourage tax rate raising; or encourage borrowing by major output producers who pay more sales and income taxes in return; or discourage domestic savings but encourage capital flight and profitable import trade which has positive impact on trade taxes.

Lastly, unsatisfactory real output increases are one of the factors that have had tax revenue increasing effect in Tanzania. Thus, although theoretically retarded growth of especially real output does not allow the tax "handles" to which the tax revenue system is attached to become diverse to allow for a widening of the tax base, in Tanzania this was not the case probably because tax rates on output and profits were frequently adjusted upwards to compensate for revenue loss resulting from poor economic performance. As such real GDP growth, as has been the case in Tanzania, affected negatively and in the long-run the level of total tax and real total tax revenue through affecting income taxes both in the short- and long-run.

7.2.3. Relevance of the Findings to Other Developing Countries

Caution is needed in interpreting or adopting the results of this study. This is because the degree of autonomy across developing countries and over time of the findings emanating from the estimated relationships may be different or may change. Consequently, the extent to which these findings will be relevant to other developing countries (or to Tanzania in future) depends on economic conditions. In countries with similar characteristics as those of Tanzania, the results and their policy implications as discussed below, will certainly be applicable.

7.3. Policy Implications

The findings of this study call for a need to correct various macroeconomic imbalances in the economy. This, in other words, implies re-examining the way in which various macroeconomic policies have been designed and implemented so as to rectify past mistakes and ensure sustainable growth of the economy and smooth government revenue collection. As empirical findings have demonstrated, the way macroeconomic policies are carried has an important bearing on the conduct of various economic activities, tax base changes and of course tax revenue collection.

There is a need, for example, to ensure that the real exchange rate does not drift away from its long-run equilibrium. This is important given the fact that overvalued real exchange rate adversely affects various economic activities and tax revenue collection as has been the case in Tanzania. One way in which the real exchange rate can be corrected in the short-run from becoming overvalued or drifting away from its long-run equilibrium is by devaluation or adjustment of its value according to inflation differential between Tanzania and its major trading partners. Small and frequent currency adjustments are recommended because they do not breed expectations about future devaluation, which are adverse to the economy. Correcting exchange rate fundamentals, especially the endogenous ones is another sure way of stabilising the value of the domestic currency (see e.g. Ndulu, 1993).

Efforts that have been done towards this since ERP was initiated in 1986 are encouraging, though they need to be consolidated by ensuring well alignment of other macroeconomic policies.

The best environment where the real exchange rate can stabilise is one in which inflation is low and inflationary expectations are at minimum. Inflation differentials between one country, say Tanzania, and its trading partners is one of the factors that lead to unstable value of the real domestic currency. Apart from affecting the value of the local currency, inflation affects negatively real value of total tax revenue and it also has other social and welfare costs that adversely affect the majority of people in a society. The only sure way of reducing or doing away with inflation is by rectifying its causes. That is, reducing the budget deficit that frequently has been monetised, and increasing output supply especially of food crops. Oversupply of money as a result of monetisation of the deficit has been the cause and at the same time the consequence of high rates of inflation as inflation increased faster the monetary value of expenditure, while at the same time eroding the tax base and real value of tax revenue. Food shortages, on the other hand, have exerted a pressure on domestic prices thus fuelling inflation. Ways in which food supply can be increased in the economy include proportional adjustment of relative prices in the economy so as to ensure that both food and cash crops are given important weights, but more importantly by ensuring that infrastructure is available for easy movement of supplies from surplus to deficit areas.

Apart from fuelling inflation, budget deficit financing, especially from external sources has led to an increase in external debt to unsustainable levels. The dangers of huge debt stock and debt service payments to the economy and tax revenue were shown earlier and need not be repeated here. One sure way in which external debt can be reduced is by not borrowing at all from external sources. However, this is not possible in an economy like that of Tanzania that has meagre export earnings and is also faced with scarcity of foreign resources to pay for

imports. One of the short-run considerations then should be that of increasing annual exports and reducing foreign borrowing. Reducing the budget deficit through expenditure cutting and/or increased revenue collection is an important means of reducing foreign borrowing. In the long-run the aim should be to raise economic growth in general and export growth in particular, over and above the growth rate of the debt burden (see e.g. Feldstein, 1986). This will ensure the sustainability of the debt and also eliminate considerably its adverse effects on economic activities and tax revenue.

Promotion of exports calls for an environment in which resources are efficiently allocated and utilised to produce internationally competitive products. Apart from the requirement that exchange rate should not be left to become overvalued, export increase and diversification calls for elimination of other quantitative controls that are associated with import substitution policies. Exchange controls, import controls in the form of quota or prohibitive tariffs, control of resources or movement of goods within the economy are but a few examples of them. As shown in this study, these controls breed inefficiency by hampering smooth resource allocation and utilisation, encouraging illegal activities such as smuggling, over- and under-invoicing of imports and exports, respectively, black marketeering, etc., all of which affect adversely economic activities, output and tax revenue collection. Whereas a need might arise of protecting certain important industries to the economy from collapsing because of outside competition, this should be done selectively and carefully. Measures such as exemption from tax on inputs of these industries would help achieve this objective in the short-run. In the long-run, however, these industries ought to be able to compete without exerting a costly burden to the economy. In short, protectionism and other measures of import substitution are costly to the economy and should be done away with in favour of a healthy competition.

Financial repression is another characteristic of government controlled economies. This ought not be encouraged since negative or extremely low real interest rates lead to excess demand for loanable funds that result into credit rationing. Whereas credit rationing leads to inefficient allocation of resources, negative or very low real interest rates discourage saving. Low savings means less investment, low output and low tax revenue collection. While nominal interest rates in Tanzania are at the moment being set at high levels that are above inflation rate, concerted efforts should be made to reduce the level of inflation and therefore nominal interest rates to one digit. Moreover, market allocation of resources should be encouraged and credit rationing and government claims for a major share of loanable funds discouraged.

One way of ensuring that the government reduces its claims over banking sector resources is by allowing its entities, mostly parastatal enterprises to operate commercially and competitively without depending on loans or loan guarantees from the government. This will in turn ensure an increase in accountability, efficiency, quantity and quality of output, profits and tax revenue from them. Measures such as privatisation of inefficiently operating parastatals is one of the right moves in the right direction. Otherwise, these entities will continue to siphon rather than add to the government revenue coffers.

The issue of low and falling real total wage bill is a difficult one. Whereas high wages that are not matched with productivity contribute not only to wage taxes but also to inflation, low wages discourage productivity and contribute less to wage taxes. In this regard, measures ought to be taken to raise productivity that will ultimately break this vicious circle. In the short-run, however, productivity increase calls for the raising of wages. One way in which wages can be raised is through cutting on over-employment. In the long-run, an increase in productivity will lead to more employment and probably higher wages. In addition, the currently under-employed workforce will be available for full employment elsewhere, where it will

be more beneficial to the economy. Not to say the least, corruption and weaknesses in tax administration will most likely be reduced if take home pay of tax administrators is raised and working tools improved tremendously. Peace-meal improvement in the wages of civil servants, starting with tax administrators in the hope that their improvement in tax collection will 'trickle-down' to others in the civil service, is probably a good strategy to adopt. This ought to be coupled with strict adherence to work ethics and respect for working rules. With the advent of multiparty politics one expects also the accountability and checks at the abuse of power at all levels of the government machinery to be fostered. All the same various weaknesses in tax administration call for rectification if efficiency in tax administration is to be raised. Tax payers' record keeping, provision of modern working facilities such as computers and vehicles, updating of various laws and monetary penalties, reduction of discretionary powers of the Minister for Finance, continued dialogue on resolving the issue of tax rates differential between Zanzibar and Mainland, reducing tax structure complexity by merging some taxes such as sales and excise into value added tax, lowering tax rates, and abolishing minor taxes such as production tax are but a few important things that need an immediate attention.

As hinted in various paragraphs above, overall economic growth can only come about if various macroeconomic policies are 'rightly' conducted. To the extent that economic growth is important for raising more tax revenue, reducing budget deficit and inflation, increasing savings and investment, increased exports etc., a call for concerted efforts to rectify various economic policies is probably not uncalled for.

7.4. Limitations of the Study and Areas for Further Research

This study has examined the role of various macroeconomic policies in influencing the level of tax revenue in Tanzania during the period 1967-91. One obvious thing is that macroeconomic policies covered in this study are not the only determinants of level of tax revenue in developing countries. Other variables such as

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The period after 1991 has been marked by continued liberalisation of the economy that was started during the ERP and subsequent periods. The exchange rate continued to adjust with inflation in Tanzania's major trading partners. Private money changing shops (bureaux de change) were established following the financial liberalisation in 1992, while private domestic and foreign banks were allowed to operate in Tanzania. There are currently close to ten private banks and over twenty bureaux de change in Tanzania. In August 1993 foreign exchange market was unified and currently foreign exchange is being interchanged at the Interbank Foreign Exchange Market. Interest rate setting has also been liberalised, allowing for market determination of nominal interest rate. Private savings, in all currencies, are also no longer illegal.

Although the implementation of the above policies has had some drawbacks, in general, distortions in the economy have been reduced and resource allocation improved. Consequently, the economy and the taxable base have expanded, giving room for increase in tax revenue collection.

Since the coming into office of the third-phase government in November 1995, tax revenue collection has improved and fiscal and monetary restraints have closely been observed. As result government borrowing from the central bank has been put to an end, and money supply reduced in the economy. This has had the effect of slowing down the inflation to the current 18.2 percent and stabilising the real exchange rate, both of which are pre-conditions for improvement in tax revenue collection. Revenue collection has also improved following the establishment and coming into operation of the Tanzania Revenue Authority (TRA) on July 1, 1996. Except for transit routes and the "Zanzibar route" issue which has taken the political dimension and is still under discussion by the two governments, Union and Zanzibar, efforts towards plugging many other revenue loss loopholes have started to show positive results.

There has been an encouragement of private sector and withdrawal of the government from directly productive and commercial activities. Major evidence to this effect is the government's drive to commercialise or privatise the parastatal enterprises. So far over 100 enterprises have been privatised or commercialised and a good number of others liquidated. For those which have been privatised or commercialised, their performance has improved both in terms of output, profits, and contribution to tax revenue. Since the success stories are still few, there is a possibility that net tax revenue contribution from all parastatal enterprises taken together has fallen because of bankruptcies, liquidation, or other inefficiencies common to public enterprises.

To encourage the private sector to operate freely, the government has liberalised wage setting and determination in all sectors except the civil service. All companies and institutions which are not directly under the Civil Service Commission can now determine the wage structure for their employees without being interfered by the Government. Whereas wage level for many commercial entities has been adjusted substantially upwards, wage level for civil servants is still insufficient despite some upward adjustments. Except for housing allowance, other allowances are set to be lumped together with the basic salary and made taxable. Net pay is expected to decline as a result, while tax revenue collection from wages is expected to increase.

One major problem that continues to deter good efforts that are directed at reviving the economy is the continued increase in external debt (which now stands at over 7 billion US dollars), and hence debt service payments obligations. As per the 1996/97 budget, for example, 40 percent of all recurrent expenditures will be absorbed by debt service obligations. Definitely this amount of debt is detrimental to efforts geared towards improving the economy (which is currently growing at a moderate rate of around 4 percent) and tax revenue collection.

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Table A1: Central Government Budgetary Operations (Shs. mn.), Money Supply Growth (%), Shares of Total Credit Outstanding (%), and Sectoral Composition of Public Expenditure as % of Total Expenditure, 1966/67 - 1990/91.

ITEM/YEAR	66/67	67/68	68/69	69/70	70/71	71/72	72/73	73/74	74/75	75/76	76/77	77/78	78/79	79/80	80/81	81/82	82/83	83/84	84/85	85/86	86/87	87/88	88/89	89/90	90/91
A. Recurrent Revenue	1024	1130	1270	1577	1683	1859	2457	3023	3946	3919	6129	6082	6812	7757	8872	10960	13145	15466	17958	20832	31387	46954	71789	94655	135920
B. Recurrent Expenditure	1024	1065	1186	1527	1631	1781	2276	2786	3961	3716	4703	5563	8295	9229	10136	13214	14872	18182	21337	27402	40390	61765	92562	115983	160304
C. Recur. Surplus(+)\Deficit(-)	0.2	64.5	83.8	50.2	51.7	78.5	181	237.1	-15.2	202.9	1427	518.8	-1483	-1472	-1264	-2254	-1727	-2716	-3379	-6570	-9003	-14811	-20773	-21328	-24384
D. Development Expenditure	294	344	461	611	829	739	744	1642	2225	2253	3244	3331	4750	5184	4759	5185	5146	5736	5391.1	5817	15091	15091	15747	16263	38200
E. Overall Surplus(+)\Deficit(-)	-294	-280	-377	-561	-777	-660	-563	-1405	-2240	-2050	-1818	-2812	-6233	-6656	-6023	-7439	-6872	-8452	-8770	-12387	-24094	-29902	-36520	-37591	-62584
F. Financing:																									
(i)External Loans & Grants	127	84	123	122	270	351	352	481	1038	1031	1402	1369	2427	2320	1872	1795	1852	2965	2723.7	2911.1	8567.3	19864	29694	11681	18200
(ii)Domestic Bank Borrowing	0	0	162	211	314	179	6	521	834	570	0	232.3	3057	2804	2916	3278	4206	4699	3310.4	4925	1656.3	913.6	0	754	0
(iii)Dom. non-bank borrowing	0	159	68	166	143	110	180	196	362	336	308.6	563.3	454.4	671	751	783	814	788	1125	1308	2556.7	2500	2648.5	4400	7769.4
(iv)Other Internal Sources	167	36.2	24	62	50	21	25	6	6	113	107.2	647.6	285.6	860.7	484	1583	0	0	1659.5	3243.3	11414	6624	4177.5	20756	36615
Dev. Expend. as % of GDP	4.37	4.79	6.18	7.44	9.36	7.36	6.48	11.72	13.1	10.41	12.62	11.65	14.7	13.84	10.82	9.87	8.22	7.34	5	4.13	7.53	5.29	4.69	3.96	6.58
Total Expend. as % of GDP	19.6	19.6	22.1	26	27.8	25.1	26.3	31.6	36.41	27.57	30.92	31.12	40.37	38.48	33.92	35.02	31.97	30.61	24.73	23.59	27.69	26.95	32.23	32.18	34.18
Rec. Rev./Rec. Expend.(%)	100	106	107	103	103	104	108	108.5	99.62	105.5	130.3	109.3	82.12	84.05	87.53	82.94	88.39	85.06	84.16	76.02	77.71	76.02	77.56	81.61	84.79
Total Tax Rev./Rec. exp. (%)	72.6	77.7	85.3	78.9	84.9	80.1	82.8	94.4	85.08	92.87	95.02	98.42	72.24	74.34	80.41	69.89	73.59	76.83	80.75	71.73	72.52	69.72	75.14	70.98	73.51
Overall Deficit as % of GDP	4.36	3.89	5.05	6.83	8.77	6.58	4.9	10.03	13.19	9.47	7.07	9.84	19.29	17.77	13.72	14.16	10.98	10.82	8.11	8.8	12.02	10.49	10.87	9.15	10.78
Ext. finance/overall def.(%)	43.3	30	32.6	21.8	34.8	53.2	62.5	34.24	46.34	50.29	77.13	46.68	38.94	34.86	31.08	24.13	26.95	35.08	31.06	23.5	35.56	66.43	81.43	81.31	31.07
Dom. bank bor./overall def.(%)			43	37.6	40.4	27.1	1.07	37.08	37.23	27.8	0	8.26	49.04	42.13	48.41	44.06	61.2	55.59	37.75	39.76	6.87	3.06	0	2.01	0
Change in Money Supply, M2 (%)		-2.7	25.4	18.1	18.2	17.7	18.2	24.44	25.11	20.15	12.58	46.94	26.9	18.12	19.49	17.79	3.74	28.97	29.21	31.95	35.17	29.49	43.32	26.94	42.7
Shares of Total Credit Outstanding (%)																									
(i) Government	-5.4	-3.5	13	17.5	24.7	25.2	25.2	33.3	39.7	40.8	39.7	43.2	54.2	59.8	62.1	65.2	66	64.6	63.4	60	40.4	42.6	36.7	28.2	17.5
(ii) Official Entities	8.9	16.7	24.3	41.8	45.6	41.2	51.1	50.8	47.4	39	50.1	47	38.1	33.6	32.1	28.9	27.7	31.7	31.8	35.7	52.9	44.3	48.2	47.2	58.6
(iii) Private Sector	95.4	85.9	61.2	38.9	26.1	30.4	20.4	14.1	11.6	6.9	9.3	9.2	7	6.2	5.4	6.3	6	3.7	4.7	5.3	6.6	13	25.1	24.6	23.9
Sectoral Composition of Public Expenditure as Percentage of Total Public Expenditure 1967/68 - 1986/87 (Selected Sectors).																									
General Public Service		24.4	21.1	20.9	20	17.5	18.9	16.9	16.1	15.8	17.4	16	16	14.7	16.4	17.9	17.1	22	29.9	28.9	25.5	27.6	26.7	31.3	23.4
Defence		6.3	4.7	6	7.1	10.1	9	11.2	11.8	12.2	12.3	13.5	24.6	7.7	11	12.5	13.3	12.8	13.9	10.4	14.6	10.3	9.1	8.6	6.2
Education		13.8	13.4	13.5	13.7	14.7	13.3	12.3	12.2	14.1	13.6	13.3	11.3	11.2	11.8	12.5	13.2	11.7	7.3	7.3	6.4	5.9	5.5	6.6	6.9
Health		5.3	5.2	5.5	6.2	6.2	6.5	6.6	6.9	7.1	7.1	6.7	5.3	5	5.4	5.4	5.1	5.5	5	4.3	3.7	4.4	4.5	4.9	4.9
Economic Services		30.3	37.1	34.7	38	35.3	36.8	42	42.5	36.9	38.1	34.1	35.1	36.1	34.8	29.8	27	26	24.2	22.8	16.5	16.8	16.9	15.9	22.1
Public Debt		9.5	6.9	8.3	6.8	9.3	9.3	5.5	4.7	7.3	5.9	7	3.9	7.5	11.4	17.8	20.2	18.1	15.4	24.2	31.4	31	30.6	25.6	26.3

Source: Tanzania Economic Trends (various), Economic Surveys (various) and BOT, Tanzania: Twenty Years of Independence (1961-81).

*Lipumba (1991) and Own Computations based on BOT's Economic and Operations Report, June 1993

**World Bank (1989), Tanzania Public Expenditure Review, Report No. 7559-TA ; and Economic Surveys (various).

Table A2: Tanzania's Balance of Payments (Million US $), 1967-91.

ITEM/YEAR	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
A. GOODS																									
Exports	244.4	238	240.4	245.9	262	316.4	363.6	399.2	372.9	490.4	538.5	476	545.7	582.7	613	412.9	383.2	398.5	328.5	335.9	287.9	386.5	415.1	407.8	393.6
Imports	212.5	229.9	218.1	283.5	345.3	359.8	437.8	660.4	670	555.6	646.7	992.5	960.7	1090	1061	952	708.4	760.3	869.2	913.3	1001	1033	1070	1186	1174
TRADE BALANCE	31.9	8.1	22.3	-37.6	-83.3	-43.6	-74.2	-261	-297	-65.2	-108	-517	-415	-506.4	-448	-539	-325	-362	-541	-578	-713	-647	-655	-779	-781
B. SERVICES																									
Exports (Receipts)	40.9	52.9	.65	75.9	87.6	95.5	92.1	89.2	118.4	142.8	117.9	149.3	151.6	179.1	195.7	117.3	108	107.4	108.1	110.2	111.2	120.6	123.3	140.3	141.2
Imports (Payments)	82.5	76.3	72.6	86.7	109.9	113.4	130.4	162.5	153.5	166.7	195.7	270.1	257.8	322.6	284.3	220.7	190.7	264.2	309.1	327.9	427.6	471.1	479.2	481.1	586
SERVICES BALANCE	-41.6	-23.4	-7.6	-10.8	-22.3	-17.9	-38.3	-73.3	-35.1	-23.9	-77.8	-121	-106	-144	-88.6	-103	-82.7	-157	-201	-218	-316	-351	-356	-341	-445
C. TRANSFERS BALANCE	7.3	9.2	10.5	12.8	5.8	-4.1	4.9	49.2	102.3	54.6	114.7	164.1	174.8	127.7	129.3	118.4	102.8	159	366.7	473.4	583	621.2	652.3	693.5	956.3
D. CURRENT ACCOUNT BALANCE	-2.4	-6.1	25.2	-35.6	-99.8	-65.7	-108	-285	-230	-34.5	-71.4	-473	-347	-522	-408	-524	-305	-359	-375	-322	-446	-376	-359	-426	-269
E. CAPITAL ACCOUNT BALANCE	-4.8	22.3	5.8	63.8	100	100.3	137.3	120.1	217.9	60.4	111	214.2	150.3	218.7	242.5	193.4	278.4	11.8	-27.2	-86.5	-4.6	33.9	21.7	126.5	
F. ERRORS & OMISSIONS	5.6	-1.2	-29.3	-48.8	-13.5	15.4	2.3	20.5	-38.3	-4.4	69	8.4	23.8	-46.6	78.7	58.2	-61.8	125.1	-39.6	51.6	158.6	-42.5	-115	133.1	
G. OVERALL BALANCE	-1.6	15	1.7	-20.6	-13.3	50	32	-145	-50	21.5	108.7	-251	-172	-350	-86.3	-273	-88.6	-223	-487	-357	-292	-384	-452	-166	
H. RESERVES & RELATED ITEMS	1.6	-15	-1.7	20.6	13.3	-50	-32	144.6	50.6	-21.5	-109	250.7	172.4	350.1	86.3	272.5	88.6	222.6	487	356.6	292	484.4	452	166.3	
I. EXCEPTIONAL FINANCING	_	_	_	_	_	_	_	7.1	35.9	0.8	46.2	63.5	98.9	270.1	89.1	271	131.3	258.4	483.6	394.3	232.9	396.2	437.8	307.2	
J. USE OF FUND CREDITS & LOANS	_	_	_	_	_	_	_	46.8	28.2	24.2	8.8	-12	43.3	25	-11.3	-12.4	-28.1	-28.4	-7.5	7.3	28.4	34.2	-9.3	_	
K. CHANGE IN RESERVES	-0.4	-15.8	-2.7	15.3	4.7	-59.3	-25	94.4	-15.2	-46.8	-170	182	31.8	47.7	1.5	14	-14.6	-7.5	10.9	-45.1	29.3	-45.9	23.5	-139	

Source: IMF Financial Statistics, 1993

Table A4: Direct Imports by Exemption Type (Tshs. mn.) and Exemptions as % of Exempted Imports in Tanzania.

CODE	DESCRIPTION	Value of Exempted Imports (Shs. mn)	Exempted Imports as % of Total Exempted Imports	Value of Import duty Exempted (Shs. mn)	Exempted Import Duty as % of Value of Imports Exempted	Exempted Import Duty as % of Total Exempted Imports	Value of Sales Tax Exempted on Imports (Shs. mn)	Exempted Sales Tax as % of Value of Imports Exempted	Exempted Sales Tax (Imports) as % of Total Exempted Imports	Value of Excise Duty Exempted on Imports (Shs. mn)	Exempted Excise Duty as % of Value of Imports Exempted	Exempted Excise Duty as % of Total Exempted Imports
450	TZ Government Projects	4233.53	3.48	844.39	19.95	0.69	1110.56	26.23	0.91	206.31	4.87	0.17
451	TZ Government Departments	36430.74	29.94	10098.73	27.72	8.30	11039.62	30.30	9.07	5011.92	13.76	4.12
452	Foreign Gov't Projects	12017.73	9.88	2364.40	19.67	1.94	2319.39	19.30	1.91	463.95	3.86	0.38
453	Foreign Projects Personnel	347.72	0.29	80.92	23.27	0.07	91.88	26.42	0.08	29.98	8.62	0.02
454	Diplomatic Missions	4340.46	3.57	1112.15	25.62	0.91	1139.82	26.26	0.94	258.73	5.96	0.21
455	United Nations Projects	1228.87	1.01	355.55	28.93	0.29	381.62	31.05	0.31	68.82	5.60	0.06
456	Diplomatic Mission Personnel	1840.98	1.51	458.21	24.89	0.38	583.77	31.71	0.48	160.39	8.71	0.13
457	Religious Organizations/Bodies	7502.02	6.17	1837.28	24.49	1.51	1999.92	26.66	1.64	451.65	6.02	0.37
458	Charitable Organizations	536.09	0.44	171.33	31.96	0.14	175.70	32.77	0.14	34.62	6.46	0.03
459	1st Arrival/Returning Residents	753.27	0.62	81.99	10.88	0.07	104.29	13.85	0.09	51.89	6.89	0.04
501	Partial Payments	4805.03	3.95	855.17	17.80	0.70	114.11	2.37	0.09	487.01	10.14	0.40
502	Ministerial Exemptions	2505.89	2.06	451.37	18.01	0.37	459.95	18.35	0.38	47.96	1.91	0.04
503	Parastatals	38488.12	31.63	8515.47	22.12	7.00	6932.96	18.01	5.70	998.93	2.60	0.82
504	Private	6167.22	5.07	1253.04	20.32	1.03	1401.10	22.72	1.15	147.74	2.40	0.12
506	Foreign Private Companies	161.59	0.13	35.03	21.68	0.03	48.46	29.99	0.04	5.99	3.70	
603	Approved M/V Manufactures	214.67	0.18	11.39	5.30	0.01		0.00			0.00	
	CCM Exemptions for CCM*	99.63	0.08	19.11	19.18	0.02	23.01	23.09	0.02		0.00	
	GRAND TOTAL	121673.57	100.00	28565.62	23.48	23.48	28958.16	23.80	23.80	8426.10	6.93	6.93

*CCM refers to Chama Cha Mapinduzi, the Country's Ruling Party Source: Customs and Sales Tax Department. Own Computations