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PUBLIC SPENDING, TAXATION AND DEFICITS

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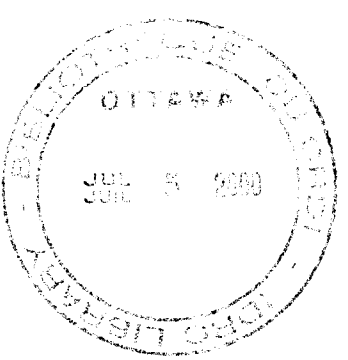

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Public spending, taxation and deficits

Nehemiah E. Osoro

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I. Introduction

Over the past few years several studies in the area of public economics have examined the causal relationship between various pairs of economic variables. One such pair of variables is government spending-tax revenue. All the studies have one thing in common; they have used different variants of the classical Granger causality test (Provopolous and Zambaras, 1991).

In the literature, the high growth of and the persistence of government deficits have been observed in a number of countries. This has aroused the interest in determining causality between government spending and revenues. Singh and Sahni (1984), Manage and Marlow (1986), Anderson *et al.* (1986), Von Furstenburg *et al.* (1986), Marlow and Manage (1987), and Provopolous and Zambaras (1991) have investigated the relationships in question.

The economic effects of fiscal deficits are an important item on the macroeconomics agenda (Khan, 1988). Khan argues that high deficits and the rapid growth in spending have been an issue of persistent debate among US economists and politicians. In participating in the debate, Buchanan and Wagner (1977) postulate that the rapid increase in federal spending is caused by large federal deficits. They argue that federal deficit increases federal spending because it reduces the perceived price of publicly provided goods and services. In this view, citizen-taxpayers, in response, increase their demand for such goods and services. This results in an increase of public spending as long as the elasticity of demand for federal services with respect to the perceived tax price is negative (Niskanen, 1978).

The purpose of this study is to undertake two main investigations. The first focuses on the relationship between spending and revenue. The second is on the relationship between deficits and spending.

The first objective is to test causality between spending and revenue by applying the Granger causality tests to Tanzanian data. The test results are important in explaining the relative significance of sluggish or accommodative growth in revenue or leading expenditure growth in determining high growth and persistence of deficits.

The second objective is to test the hypothesis that the observed high growth and persistence of public deficits in Tanzania are self-perpetuating. Following Buchanan and Wagner (1977), I want to test whether high deficits lead to high public spending. I suspect that a dominant deficit financing of publicly provided goods leads to high demand for these goods since their tax price is reduced by this method of financing. In brief, I intend to vindicate this hypothesis by estimating the demand for public services in Tanzania to include among the explanatory factors the perceived tax price for the services.

On the one hand, some economists and policy makers in Tanzania have concluded that low tax collection caused the high and persistent deficits. They maintain that such high deficits would be eliminated or substantially reduced by designing policies that would raise more tax revenues (or improve tax collection). In this connection President Mwinyi in October 1989 appointed the Tax Commission whose major task is to recommend to the government how tax revenue might be enhanced. On the other hand, there are those who hold that rapid increase in public spending (rather than poor performance of tax revenue) is the major cause of high growth and the persistence of deficits in Tanzania. They argue that government efforts to raise taxes will fail to reduce deficits if they do not go hand in hand with measures to reduce public spending.

It is not easy to determine which of the two arguments is right unless what causes what is known. In view of this, the formulation of policies to deal with deficits requires the knowledge of causality between public spending and revenue. To this end, the causality test results may explain the relative significance of sluggish/accommodative growth in revenue or leading expenditure growth in determining the high growth of and the persistence of deficits. For example, if empirical investigations suggest a unidirectional causality running from public spending to tax revenue, then it will imply that the main force behind the high growth and the persistence of deficits is the high level of spending. As long as spending grows faster than revenue, any policies designed to contain deficits may be successful only in the short run.

On the basis of Buchanan and Wagner's hypothesis, if empirical investigations support the view that the high growth and the persistence of deficits in Tanzania's public sector have caused the rapid growth in public spending, this will imply that measures to curtail the latter should comprise the largest part of any policy aiming at containing a deficit. Nevertheless, a policy to broaden the tax base might also be useful especially if tax revenues do not lead to increased spending.

Section II of this report provides a short description of government finances, followed by a brief account of the budgeting process in Tanzania in Section III. Section IV reviews the literature on public revenue, public spending and fiscal deficits. The discussion of methodology used in the study is presented in Section V and empirical results are presented and discussed in Section VI. Conclusions are drawn in Section VII and policy implications are drawn in Section 8.

II. Analysis of government finances in Tanzania

In principle, the rule that government expenditure ought to be financed by taxation (in addition to charges and other recurrent sources) is widely accepted by developed countries developing countries, and international agencies. Such a rule appears to be unrealistic in developing countries, though it would have a merit, in practice, in enhancing overall saving by forcing households to reduce consumption (Due, 1978).

Virtually all developing countries separate current budget from capital budget and attempt to finance current budget from taxes, with some surplus over this going to the capital budget. The remainder of the capital budget is usually financed by borrowing (domestic and/or foreign).

In general, most developing countries find achievement of such a system of budgeting virtually impossible, economically and politically. On the one hand, there is strong political pressure for services like education, health, water and roads, which certainly contribute to development and growth. On the other hand, there is strong resistance to taxes, particularly when large numbers of people are unemployed.

Expenditure cuts are politically unpopular and detrimental to development; raising taxes is politically unpopular and worsens the unemployment problem. These countries are thus caught in a serious bind. In principle they seek to balance at least the current budget, and are strongly pressured by the IMF to do so, particularly if they are having difficulties in meeting their foreign debt obligations. However, to do so will be suicidal politically; the government may encounter riots, defeat in the next election or overthrow by coup. Therefore the real dilemma is the choice between economic growth accompanied by deficit, growing debt obligation and possible inflation, and measures to reduce deficit that will slow growth and particularly harm the low-income group. There is no ideal solution, but the former alternative is often chosen.

Tanzania, like many other developing countries, has found itself in this predicament due to the tax structure it has pursued and the expenditure structure that has been in place over the years. Tanzania has had and still has a complex tax structure not commensurate with the tax administration capacity. This is one of the possible causes of low productivity of the tax system (Osoro, 1992). The combination of poor revenue performance and rising government spending is the possible cause of the high growth and persistence of deficits.

Public revenue

Current government revenues consist of tax revenue and non-tax revenue. In Tanzania tax revenue is the major source of current revenue. Tax revenue as a percentage of total current revenue grew from about 72% in fiscal year 1970/71 to 86% in fiscal year 1990/91. The highest percentage (of about 100%) was recorded in fiscal year 1982/83 (see Table 1). Thereafter the proportion was declining until fiscal year 1989/90. This decline appears to have been caused by a reduction of parastatal profits and hence dividends to government as a shareholder.

Tax revenue as a percentage of GDP has averaged around 20% (see Table 1). This is well above that of sub-Saharan Africa (17%), Asia (15%) and Latin America (18%), but below that of Middle Eastern and North African countries (23%) and industrialized countries (32%). The tax/GDP ratio of about 30% in fiscal year 1990/91 (see Table 1) is too high a ratio for a poor developing country like Tanzania. This suggests that Tanzanians bear a large burden of taxation despite their poverty. The tax/GDP ratio has doubled over the past two decades (1970/71-190/91), suggesting an increase in tax efforts.

Over the same two decades, current revenue/GDP ratio increased by about 67% and averaged around 24% (see Table 1). Thus, the growth of current revenue relative to that of tax revenue was much slower in the period in question.

Public expenditure

Total expenditure comprises current expenditure and development expenditure. A big chunk of government expenditure has been the former. During the last two decades, total government expenditure/GDP ratio averaged 37%, compared with tax revenue (20%) and current revenue (24%).

High government spending was first registered in the 1970s. In 1971 came the nationalization policy, followed by decentralization of government administration in 1972. The decentralization resulted in immediate expansion of government bureaucracy. Both policies resulted in a massive growth of government spending. Other developments that caused government spending to rise were the 1973/74 oil price shock wave, the 1974/75 drought, the 1978 oil price shock wave and the Uganda War. The 1980s, like the 1970s, were a decade of economic crises. In this period the country recorded large deficits in the fiscal budget and the balance of payments account. To make things worse, foreign funds needed to reduce the deficit were not forthcoming.

It may be useful to quickly examine the government expenditure structure. While the level of government spending substantially increased over the past two decades, its structure varied considerably (Table 2). Government spending on general public services (which include administration) continuously rose in the period under consideration. This reflects the expansion of government bureaucracy mentioned earlier. Likewise, government spending on public debt has grew rapidly, rising from about 7% of total spending in 1970/71 to about 30% in 1990/91 (an increase of more than four times). In the fiscal year 1990/91 public spending on public debt was the highest, surpassing that on general public service (Table 3).

Table 1: Central government finances, 1970/71-1990/91 (Tsh million)

Year	Tax revenue	Non-tax revenue	Current revenue	Total expenditure	Deficit	Tax revenue as % of current revenue	Loans grants as % of total financing
1970/71	1,209.2	473.0	1,683	2406	-687.0	71.8	37.5
	(14.7)	(5.7)	(20.5)	(29.3)	- (8.4)		
1971/72	1,307.8	551	1,859	2,359.5	-538.9	70.3	64.5
	(14.8)	(6.2)	(21.0)	(26.6)	(6.1)		
1972/73	1,699.2	753.8	2,294.9	3,156.6	-521.2	74.0	71.6
	(16.9)	(7.5)	(22.9)	(31.5)	(5.2)		
1973/74	2,255.4	747.0	3,002.4	4,040.3	-661.6	75.1	33.2
	(19.6)	(6.5)	(26.1)	(35.2)	(5.8)		
1974/75	2,974.4	967.9	3,942.3	6,079.5	1,782.2	75.5	35.4
	(21.2)	(6.9)	(28.1)	(43.4)	(12.7)		
1975/76	3,129.0	933.0	4,062.0	6,000.0	-1,459.8	77.0	28.3
	(18.4)	(5.5)	(23.9)	(35.3)	(8.6)		
1976/77	3,439.7	1,493.7	4,933.7	7,785.6	-2,179.1	69.7	79.4
	(15.9)	(6.9)	(22.8)	(35.9)	(10,1)		
1977/78	5,333.7	1,297.7	6,629.3	9,061.1	-1,817.4	80.5	38.5
	(20.7)	(5.0)	(25.8)	(35.3)	(7.1)		
1978/79	5,377.3	1,064.8	6,442.0	12,397.1	-4,645.8	83.5	29.5
	(18.8)	(3.70)	(22.5)	(43.4)	(16.2)		
1979/80	6,147.9	1,531.7	7,679.6	13,943.0	-4,980.5	80.0	22.4
	(19.00	(4.7)	(23.7)	(43.10	(15.4)		
1980/81	7,908.4	6,63.0	8,571.4	14,755.2	-6,183.8	92.3	29.8
	(21.1)	(1.8)	(22.9)	(39.4)	(16.5)		
1981/82	8,502.0	904.0	9,406.0	17,387.0	-7,981.0	90.4	23.0
	(19.4)	(2.1)	(21.4)	(39.6)	(18.2)		
1982/83	12,529.1	51.7	12,581.0	18,993.0	-6,412.0	99.6	28.9
	(23.80	(0.1)	(23.9)	(936.0)	(12.2)		
1983/84	13,397.9	108.1	13,506.0	20,409.0	-6,903.0	99.2	27.4
	(21.4)	(0.2)	(21.6)	(32.6)	(11.0)		
1984/85	18,482.5	155.5	18638.0	28,509.1	-9,871.1	99.2	26.9
	(23.6)	(0.2)	(23.8)	(36.5)	(12.6)		
1985/86	21,781.8	249.9	22,031.5	31,710.0	-9,678.5	98.8	21.1
	(20.1)	(0.2)	5 (20.4)	(29.30)	(8.9)		
1986/87	27,406.6	1924.4	29,321.0	47,870.4	-18,549.4	93.5	100.9
	(19.4)	(1.4)	(20.8)	(34.0)	(13.2)		
1987/88	42,556.7	4922.7	47,479.4	75,296.9	-27,817.5	89.6	99.6
	(21.2)	(2.4)	(23.7)	(39.0)	(13.9)		
1988/89	63,083.1	7332.3	70,417.4	10,6097.9	-35,680.5	89.6	83.3
	(22.1)	(2.6)	(24.7)	(37.2)	(12.5)		
1989/90	81,470.7	13184.1	97,886.9	14,0870.4	-43,003.5	82.3	113.3
	(24.3)	(3.9)	(29.2)	(42.0)	(12.8)		
1990/91	118,257.2	18,835.7	137,092.9	207,292.4	-70,199.5	86.2	106.5
	(29.5)	(4.7)	(34.2)	(51.70)	(17.5)		

Source: *Bank of Tanzania Economic and Operations Report*, June 1980, June 1982 and June 1992, and *Financial Statement and Revenue Estimates Volume I, various* years.
Notes: Figures in parenthesis are percentage of GDP.

Table 2: Allocation of government expenditure by sector, 1970/71–1990/91 (Tsh million)

Year	General public service	Defense	Education	Health	Economic	Public debt	Others	Total govt. expenditure
1970/71	492.2	173.5	336.6	151.7	934.6	167.6	204.6	2,460.6
1970/71	450.4	260.1	378.6	159.0	906.3	238.8	151.7	2,553.6
1972/73	603.0	287.9	423.0	207.2	1170.6	296.0	194.7	3,182.2
1973/74	747.4	494.2	543.6	293.7	1660.2	244.3	243.6	4,427.2
1974/75	994.0	726.5	756.6	425.6	2630.0	268.6	364.6	6,185.7
1975/76	945.0	726.1	642.0	424.7	2203.5	434.3	206.7	5,968.2
1976/77	1,290.5	910.0	1,006.7	552.5	2618.7	434.0	-	7,404.5
1977/78	1,386.4	1,349.2	1,327.0	668.9	3364.3	693	-	9,203.6
1978/79	1,951.6	3,297.7	1,574.1	724.1	4337.6	1,140.6	2,490.0	13,514.2
1979/80	2,479.8	1,295.8	1,883.3	841.4	6068.1	1,267.5	577.1	14,413.0
1980/81	2,772.4	1,665.2	1,795.6	815.2	5561.6	1,736.0	546.6	14,895.0
1981/82	3,307.1	2,308.4	2,297.9	992.1	5,495.0	3,279.2	747.4	16,427.1
1982/83	3,297.2	2,556.7	2,543.2	982.1	5,212.7	3,897.3	799.8	19,289.0
1983/84	4,631.0	2,744.0	2,503.0	1,171.0	5,574.0	3,662.0	862.0	21,367.0
1984/85	8,003.0	3,659.0	1,795.0	1,329.0	6,465.0	5,032.0	1,150.0	27,433.0
1985/86	9,889.9	4,979.2	2,303.2	1,461.9	6,369.7	6,698.9	1,371.7	33,104.4
1986/87	13,598.3	7,200.1	3,193.3	2,257.3	9,283.1	12,391.5	1,800.1	49,721.7
1987/88	20,354.8	7,636.4	3,990.1	3,273.3	11,915.6	22,975.7	3,152.2	73,298.1
1988/89	29,467.3	10,074.2	6,132.9	4,985.4	18,723.4	33,766.7	7,344.4	110,494.3
1989/90	42,115.2	11,571.9	8,867.7	6,632.1	21,460.8	34,470.8	9,572.5	134,691.0
1990/91	48,527.3	12,819.5	14,383.1	10,212.6	45,837.9	61,784.2	13,435.4	207,000.0

Notes: *Includes administration, foreign affairs and security.
Sources: Tanzania Economic Survey, various issues, and, Budget Estimates 1992/93.

The growth in expenditure on general public service and public debt was at the expense of a decline in public spending on social services (education and health) and economic services. Substantial reduction of public spending on education recorded a large decline in fiscal year 1984/85 (a 50% reduction after a single year). Spending on economic services declined from about 38% in fiscal year 1970/71 to about 16% in 1989/90, then rose to 22% in 1990/91. The decline in government spending on economic services led to their poor provision, possibly affecting production and the overall performance of the economy.

Fiscal deficits

The demonstrated poor performance of current revenue and the rapid increase in public spending seem to explain the high and persistent deficits. In nominal terms, fiscal deficits increased 100 times over the past two decades (Table 1). Deficit/DP ratio rose from over 8% in 1970/71 to about 18% in 1990/91, more than doubling over the 20-year period. Substantially high deficits have been recorded in recent years, particularly since fiscal year 1986/87. A similar trend is likely to continue in future if the government fails to reduce spending and improve revenue collection.

The role played by foreign resources in financing the deficits has increased over the years. It grew from about 38% in fiscal year 1970/71 to over 100% in recent years (Table 1). This demonstrates the heavy reliance on loans and grants to finance the deficits, which is not a healthy situation.

Table 3: *Allocation of central government expenditure by sector (%)*

Year	General public service	Defense	Education	Health	Economic services	Public debt	Others
1970/71	20.2	7.1	13.6	6.1	37.9	6.8	8.3
1971/72	17.6	10.2	14.8	6.2	35.5	9.3	5.9
1972/73	19.0	9.1	13.3	6.5	37.0	9.3	6.1
1973/74	16.9	11.1	12.2	6.6	42.0	5.5	5.5
1974/75	16.0	11.7	12.2	6.9	42.5	4.6	5.9
1975/76	15.8	12.1	10.7	7.1	36.9	7.3	3.4
1976/77	17.4	12.3	13.6	7.4	35.3	5.9	-
1977/78	14.8	14.6	14.4	7.2	36.5	7.5	-
1978/79	14.4	24.4	11.6	5.3	32.1	8.4	18.4
1979/80	17.2	8.9	13.0	5.8	42.1	8.8	4.0
1980/81	18.6	11.1	12.0	5.4	37.3	11.6	3.6
1981/82	17.9	11.5	12.4	5.4	30.2	17.8	4.0
1982/83	17.1	13.2	13.2	5.1	24.0	20.2	4.1
1983/84	21.6	12.8	11.7	5.4	26.1	18.1	4.0
1984/85	21.8	13.3	6.5	4.8	23.5	18.3	4.2
1985/86	29.8	15.0	6.9	4.5	19.2	20.2	4.1
1986/87	27.3	14.5	6.4	4.5	18.6	25.0	3.6
1987/88	27.7	10.4	5.4	4.4	16.2	31.3	4.3
1988/89	26.6	9.1	5.5	4.5	16.9	30.5	6.6
1989/90	31.2	8.6	6.6	4.9	15.9	25.6	7.1
1990/91	23.4	6.2	6.9	4.9	22.1	29.8	6.5

Source: Computed from Table 2.

III. The budgeting process in Tanzania

The budgeting process in Tanzania is a dynamic, annual exercise. It determines sources of revenue and its use in running various public activities according to set priorities and ground rules. The government budget consists of revenue and expenditure budgets. Both components must be considered in discussing the budgeting process.

Revenue estimates

Revenue estimates are prepared at all levels of government where revenue is collected. The total revenue budget is a summary of revenue to be earned by the government through all votes allocated for revenue sources defined under ministries, regions and independent departments. Revenue forecasting is done for every category of tax, taking into account the relevant factors for each type of tax.

The basis of domestic revenue estimates is usually a review of past performance of revenue collection and the performance of the economy as whole; the likely out-turn of the current year; and projections of the volume of government activities likely to affect revenue generation.[1] The basis for review of estimates of external loans and grants is negotiation with the donors.

On the basis of the review exercise, the Treasury in collaboration with the Planning Commission prepares global revenue projections for the Economic Committee of the Cabinet (ECC)[2] for approval. Once the ECC has approved the estimates, the Treasury sends out guidelines to the collecting agencies in the case of domestic revenue.

Following these guidelines, revenue collectors prepare estimates of revenue under various votes, sub-heads and items using prescribed forms. The returns of TFN32(A) forms are the basis for the domestic revenue estimates. These returns are studied and compiled by relevant divisions in the Treasury. Meanwhile, the External Finance Division provides revenue estimates for loans and grants for the year in question. The two sets of estimates are then consolidated to arrive at the aggregate revenue projections for the entire government budget. At this stage, aggregate revenue estimates are compared with the current and development expenditure estimates before they are submitted to the ECC for approval.

After the ECC approves the estimates, Volume I of the budget documents, which shows The Financial Statement and Revenue Estimates, is printed. In the meantime, the Finance Bill is prepared and printed for submission to the National Assembly (NA) for consideration and approval.[3] Finally, after the debate in the NA, the Finance Act is passed to authorize revenue to be collected for the year in question.

Revenue collection is monitored to measure the success or failure. Every revenue collector is required to furnish monthly returns of the revenue collected, which is accounted for within the laid down procedures.

In the case of collection of foreign revenue, the process of execution begins when requests are submitted by the Treasury to different donors depending on the mode of disbursement. Performance of revenue trends has to be monitored. This is implemented through flash reports and management reports.

Expenditure estimates

Current expenditure estimates

Current expenditure is divided into consolidated fund services and supply votes. Consolidated fund services consist of: (a) the estimates of the amounts required in the year for the salaries and the expenses of the President's household and for maintenance and upkeep of the state house, lodges, and grounds; and (b) the estimates of the amount required in the year for the expenditure on public debt and general services. Supply votes include estimates of the amount required in the year for salaries and expenses for all the votes for ministries, independent departments and regions.

As a procedure, the Ministry of Finance is responsible for the preparation required to get the estimate process started. Within the ministry, this responsibility is formally assigned to the Budget Division. The division works out a schedule for budget activities according to the established calendar (see Table 4). The major activities and events in the budget process are described in Table 4.

The current expenditure cycle starts with the review of the previous year's performance to determine the probable cost of carrying on existing services, providing new ones and maintaining newly completed projects.

Expenditure projections submitted by spending agencies are reviewed in light of the current economic conditions and the outlook for the following budget year as provided by the Planning Commission. After this review, Treasury prepares preliminary expenditure forecasts for the year. These forecasts are then compared with the revenue forecasts and form the basis for recommendations of the budget proposals prepared in conjunction with the Planning Commission for submission to the ECC.

After obtaining ECC approval, the Treasury issues a circular giving guidance to accounting officers on how to prepare their estimates. Sub-vote holders then sit with their accounting officers to review their submitted proposals. The accounting officers check that estimates have been prepared in accordance with the budget guidelines and that ceilings have been adhered to. When vote estimates have been agreed upon, the accounting officers submit their vote estimates to the Treasury in the case of ministries/ departments and to the Prime Minister's Office (PM's Office) in the case of regions. Submitted draft estimates are scrutinized by the officers of the Budget Division of the Treasury and the Planning and Control Division of the PM's Office to ensure that estimates are accurate and consistent with Treasury guidelines and that necessary approvals have been obtained.

Table 4: Summary of key phases in the budget cycle

Date	Institution	Activity
Aug-Nov	1. Technical institutions 2. Central ministries	1. Review of previous financial year's activities to assess budget implementation. 2. Preparation of the annual performance review. 3. Formulation of preliminary guidelines and distribution to technical institutions. 4. First quarter reports - preparation and review.
Dec -Jan	1. Technical institutions 2. Central ministries 3. ECC	1. Mid-year reports - preparation and review. 2. Finalization of guidelines and submission to ECC for approval. 3. Distribution of final guidelines to technical institutions. 4. Preparation of budget estimates.
Feb-April	1. Technical institutions 2. NCEPC 3. Central ministries	1. Submission of estimates proposals from tech. institutions to central ministries 2. Scrutiny of estimates proposals by central committees. 3. Discussion of budget estimates. 4. Consolidation of overall budget estimates. 5. Submission of development expenditure estimates by PC to NCEPC for review and recommendation.
May	1. ECC 2. FECP 3. Technical institutions	1. Presentation of budget proposals for review and approval. 2 .Printing of budget documents. 3. Presentation of budget proposals to FECP for scrutiny examination and approval.
June - July	1. National Assembly 2. Technical Institutions 3. Central ministries 4. Parliament	1. Budget speech. 2. Public debate on budget estimates proposals. 3. Authorization of budget.

Source: URT (1984), Table 1, p. 86. Submitted draft estimates are scrutinized by the officers of the Budget Division of the Treasury and the Planning and Control Division of the PM's Office to ensure that estimates are accurate and consistent with Treasury guidelines and that necessary approvals have been obtained.

Notes: ECC = The Economic Committee of Cabinet
FECP = The Finance Economic Committee of Parliament
NCEPC = The National Consultative Economic and Planning Council
PC = The Planning Commission

After thorough scrutiny, detailed budget discussions are held in the Treasury in the case of ministries and independent departments, and by the PM's Office in the case of regions. The PM's Office then submits their proposals to the Treasury. All vote estimates are added up and compared with the budget ceilings before preparing an ECC paper.

Adjustments by the ECC are usually made after consultations between the Treasury and the relevant accounting officers. The accounting officers then submit the typed copies of the draft estimates to the Treasury for printing. While printing is taking place, accounting officers prepare memoranda for each line item for distribution to the MPs

and the Treasury as stipulated in the Treasury guidelines.

Parliament authorizes current expenditure. The execution of current expenditure is accomplished by release of funds by the Treasury, which is automatic and done quarterly in advance, except for the fourth quarter when funds are released monthly.[4]

Current expenditure is documented through implementation reports by technical institutions. These reports are periodic statements of financial operations to document, among other things, that execution is taking place and expenditures are being kept within budgeted limits. Despite all these safeguards, over-expenditure has always occurred due to non-enforcement of expenditure limits.

Development (capital) expenditure estimates

Development expenditure is considered under two aspects: estimates for financing national projects and estimates for financing regional programmes. National projects are generally large in size and of national importance. Such projects are initiated and implemented by central ministries and parastatal organizations. Regional projects are smaller and designed to serve the needs of a particular region. They are initiated and executed by the regions. The Ministry of Finance and the Planning Commission are responsible for coordinating and managing the overall preparation of annual development estimates and the execution of the development budget. As a procedure, the responsibility for coordinating the initial preparation of the regional development estimates is delegated to the PM's Office.

The annual planning and development budgeting process begins with the review of the previous year's performance based on cumulative fourth quarter progress reports. Using these fourth quarter reports, the Planning Commission prepares the annual performance review, a major input for the preparation of the preliminary guidelines. The Mid-Year Review Report prepared and coordinated by the Programming, Budgeting and Control Division is an assessment of the performance of the first six months and the likely out-turn to the end of the current financial year. This report gives up-to-date information to enable the Planning Commission to prepare guidelines. On the basis of this report and those mentioned earlier, the Planning Commission prepares formal budget guidelines for the ECC's approval.

After the ECC approval, the Planning Commission sends the development budget guidelines for the following year to the implementing agencies. The development expenditure guidelines spell out the project priorities for the preparation of the draft development expenditure estimates.

Other aspects of the development expenditure guidelines are: development expenditure ceilings for each implementing agency as approved by the ECC; timetables for submitting draft estimates and budget discussions; and forms to be used.

At the formulation stage, responsible managers at all levels (district, region, ministry and departments) prepare development expenditure estimates. The coordinator of the exercise is the officer responsible for planning assisted by the accountant under the supervision of the accounting officer.

The actual preparation exercise starts at the lowest level of management and is

progressively consolidated upwards through various levels. Development expenditure estimates for each warrant holder are consolidated into vote estimates. Then they are supplemented by memoranda before submission to the Planning Commission in case of national projects and the PM's Office for regional projects.

Accounting officers have to ensure that there is full participation in the estimation process at various levels of management by providing clear instructions as stipulated in the budget guidelines; that consistency of expenditure estimates and project availability is stipulated in the guidelines; that ceilings indicated in the estimates are adhered to; that, where applicable, the preparation of estimates takes into account standard costs; and that estimates are closely and properly documented and duly submitted to the Planning Commission and the PM's Office with adequate memoranda.

Accounting officers consolidate all project proposals and submit them to the Planning Commission and PM's Office for scrutiny. Finally, the Planning Commission prepares a draft of the development budget estimates and submits it to the ECC for approval.

After the ECC's adjustment and approval, the Planning Commission consults with the appropriate implementing agencies on the government adjustments before the draft estimates are sent to the government printer for printing Volume IV of the estimate books.

The authorization of the development expenditure estimates, as noted earlier, follows the same procedure as that of the recurrent expenditure. Once Parliament has approved the development expenditure estimates, all implementing agencies prepare action plans and submit them to the Planning Commission. These project action plans and progress reports form the base for the release of funds.

The reporting system for development expenditure is based on the action plan. The action plan normally gives the activities to be performed and the corresponding expenditures to be incurred in a specific period. Reporting procedures follow recurrent expenditure procedures.

It should be clear from this discussion that the procedures used to make expenditure estimates are more involved than those for revenue estimates. By legislation, Parliament authorizes budgeted expenditures levels for the spending units, which are required to observe these limits. Any over-expenditure by the spending units must be approved by Parliament. In practice, however, the spending units often spend the allocated funds beyond the approved limits.[5] In fact over-expenditure by ministries, departments and regions has become very common in Tanzania, and is one of the causes of excess spending and hence large deficits. Regarding budgeting for revenue, there is a large stochastic element arising from foreign grants.

IV. Conceptual framework

Political economy of fiscal deficits

As pointed out earlier, large fiscal deficits are a common feature in most developing countries. The economic consequences of such deficits (i.e., inflation, devaluation, etc.) constitute an important element of the economic agenda (Khan, 1988). Fiscal deficits are cited as the cause of rising public spending because they reduce the perceived tax price of publicly provided goods and services (Buchanan and Wagner, 1977). Thus citizens/taxpayers respond by increasing their demand for such goods and services. This leads to an increase in public spending as long as the elasticity of demand for public services with respect to perceived tax price is negative (Niskanen, 1978).

Any government has at its disposal various modes of financing its spending. These include taxation, borrowing from public (bond financing), borrowing from the baking system (credit creation), and loans and grants. Bond financing is not a major source of financing in developing countries since personal incomes are generally quite low. Credit creation has often been used by developing countries as an alternative mode of financing. However, this mode is inflationary. Governments of these countries also consistently rely on loans and grants, but foreign sources of finance always have strings attached to them. In the face of the problems inherent in the three modes, the obligation of the government to finance its spending ought to rest on taxation. Yet this does not mean that the government should overtax people, since tax increases are politically unpopular and may eventually be self defeating. The failure of the existing tax system in developing countries to generate adequate revenue may explain increasing reliance on foreign sources of financing.

Different modes of financing have different costs of funds. The perceived cost will depend on the mode chosen. The government has to decide how much to spend today. Once this decision is made, it must decide how much to finance by taxation and how much to finance by other means. For example, through a price effect operating on demand for public goods, tax reductions (increases) will lead to spending increases (reductions) if the government perceives borrowing to be less expensive than taxation. Also, if the cost of taxation is high relative to the other modes, this will lead to higher deficits since the government will opt for the relatively low-cost modes. Because the reliability of the other modes is questionable, a decision by the government to use them will perpetuate deficit.

A government that believes in maintaining a good reputation will carefully choose a better and more reliable mode. However, some governments may be less concerned with good reputation because they are desperate and all they want is to finance their spending. When a government uses an inappropriate mode, in case of revenue shock it will lose credibility. Such revenue shocks may cause increased spending and hence deficits. The magnitude of the shock is important in terms of how the government reacts to it. Finally, government response to revenue shocks will depend upon whether the shock is temporary or permanent.

Public spending and public revenue

In contrast to households, the government can run a deficit over long periods. This renders the concept of "budget constraint" in this context rather weak. To the extent that the preferences of the median voter determine the amount of public good provided by the state (median voter rule), it is crucial to understand how the citizens/voters perceive public borrowing as a means of financing spending.

Provopolous and Zambaras (1991) believe that a more realistic description of the public sector decision-making process should consider some imperfections contained in policy processes, through which the preferences of the individuals are transformed along a social preference scale. Other factors that have played a significant role in the case of Tanzania are: (a) the broad use Keynesian recipes, most often in the form of active expenditure policies, until recently; (b) the systematized creation of political impression through fiscal actions leading to overspending of allocated funds; and (c) the technique itself applied to budget formulation process.[6]

In respect to (a), the public sector has conveniently played a great interventionist role through expansionary expenditure policies considering constraints inherent in raising revenue. Experience has shown in many countries that government spending is often associated with downward rigidity (Provopolous and Zambaras, 1991, p. 278). These features are mainly due to the "incremental budgeting method" used to formulate the budget (Provopolous, 1989). In this study, the objective is to test the possible patterns of causality: (1) revenue causes spending; (2) spending causes revenue; (3) revenue and spending are mutually determined. Pattern (1) supports those theories that assert that the amount of funds available determines the level of spending. Certain authors, like Friedman (1978), hold that politicians hesitate to decide on tax increases meant to finance an increased level of spending. Pattern (2) means that the level of spending is determined ad hoc on political grounds and tax revenue is adjusted accordingly. Pattern (3) is largely the typical textbook case in which citizens, within the framework of benefit principle, select levels of taxes and revenue simultaneously.

Granger causality

The detection of causal relationships among a set of variables is one of the objectives of empirical research. A high degree of correlation between two variables does not necessarily

mean the existence of a causal relationship between them; it may simply be attributable to the common association of a third variable. Accordingly, Granger formulated a procedure for detecting a causal relationship among the variables. The concept of causality in the Granger sense is mainly based on the following two assumptions: (a) that the future cannot cause past, it is the past and present which cause future; (ii) that detection of causality is only possible between two stochastic processes. It is not sensible to talk about causality when two series are deterministic.

Thus, it is assumed that the two series, *xt, yt* , are linear, covariance stationary and purely non-deterministic; if originally non-stationary, they can be suitably transformed to make them stationary. With these assumptions, Granger proceeds to detect causality of one series on the other as described below.

A series x_t is said to cause y_t, if y_t is better predicted by a model using the past values of x and y than by a model using y alone. That is, inclusion of variable x enhances the predictive power of the model in a statistical sense. Denote the information set y_{t-i} , i = 1,2,...,n by $I_t(X)$ and similarly y_{t-j}, 1,2,..., n by $I_t(Y)$. Then x causes y in the Granger sense if

$$Y_t|I_t(Y),I_t((X)) < (Y_t|I_t(Y) \qquad 1)$$

where $Y_t|I_t$ denotes the variance of forecast of y_t using the information set I. If simultaneously x and y cause x, it can be said that there exists a feedback; otherwise causality is considered unidirectional.

Public spending and deficits

According to Buchanan and Wagner (1977), federal deficits increase federal spending because they reduce the perceived price of federal services to the current generation of voters. A reduction in the perceived tax price of federal services in turn would increase federal spending if there is any negative elasticity of demand for federal services as a function of the perceived tax price. Federal spending would increase even if the (absolute) elasticity is less than unity because spending is a product of a unit cost of federal services (which is invariant with the perceived tax price) and the number of units of federal services demanded.

Niskanen (1978) tested the Buchanan and Wagner theory for the United States. On the basis of the approach developed independently by Borcherding and Deacon (1972) and Bergstrom and Goodman (1973), Niskanen estimated the demand function for federal services by the average voter-taxpayer. His empirical results for the United States supported the Buchanan and Wagner theory that federal deficits have increased the level of federal spending.

Using the model developed by Niskanen, Provopolous (1982) presented evidence from Greece. His empirical results also support the hypothesis that government deficits increase the level of public spending. Khan (1988) applied Niskanen's model to Pakistani data, and his results also support the Bauchanan-Wagner hypothesis.

Most of the earlier work on the model was on developed countries. This study attempts to provide evidence from Tanzania, a developing country. In contrast with developed

countries, developing country public sectors play a prominent role in initiating and financing economic growth (Khan, 1988a:1). There is ever-growing public spending that must be financed by tax and non-tax revenue sources, yet one feature commonly observed in developing countries is the failure of public revenue to match the level of spending. The resultant fiscal deficits become a normal experience. It is noteworthy that the growth in public revenues in developing countries is constrained by many factors, such as the low per capita income that limits the direct tax base. Agricultural income, which is a potential tax base (accounting for over 60% of Tanzania's GDP) in the case of Tanzania is exempt from income tax. Added to this is the large number of income tax exemptions in the form of tax holidays that are granted to the manufacturing sector, and which further limit the already narrow tax base in Tanzania. Exemptions on indirect taxes like sales tax, import duty and excise duty have been common in Tanzania. In June 1992, the government abolished most of the exemptions, an exercise that was short-lived. The government failed to sustain that abolition and after only six months it restored the exemptions. In June 1994, the government again abolished most tax exemptions but restored them after six months as it had in 1992. It is yet to be seen if the government will sustain the abolition of the exemption. While the bases of most taxes remain narrow, public spending continues to grow, thereby surpassing public revenue.

During the past two decades, government spending increased at an average annual rate of about 25% compared with 20% for public revenue (see Table 1). It is therefore evident that over the period under consideration, public spending grew faster than public revenue. This has been partly due to low revenue productivity of the tax system (Osoro, 1992) and partly due to the expansionary expenditure policies the government has pursued. Both combined have resulted in a wide gap between public spending and public revenue that is reflected in high fiscal deficit. Deficit/GDP ratio grew from 84 % in 1970/71 to about 18% in 1990/91 (see Table 1).

V. Methodology

Models

Public spending and revenue

The Granger test, which stems from Granger's definition of causality, is an experiment in which a dependent variable R_t is lagged on past values of itself, then is regressed on lagged past values of G_t. The process is then reversed (Granger, 1969). In this study, I use the F-test and the final prediction error (FPE) criterion developed by Akaike (1969) to determine whether or not the inclusion of an additional lag of R_t or G_t helps explain R_t.[7] In the model, G_t is said to cause R_t if the current value of R_t is better predicted by past values of G_t and R_t than by past values of R_t alone.

F-test

Following Granger (1969), I write the general causal model as

$$R_t = r_0 + \sum_{j=1}^{m} a_j G_{t-j} + \sum_{i=1}^{l} b_i R_{t-i} + e_t \qquad (2)$$

$$G_t = g_0 + \sum_{i=1}^{l} \gamma_i G_{t-i} + \sum_{j=1}^{m} \delta_j R_{t-j} + u_t \qquad (3)$$

where R^t and G^t are two stationary series, i and j are the lag lengths, e_t and u_t and are mutually uncorrelated white noise series, so that $E(e_t e_s) = E(u_t u_s) = 0$ for all t and s.

Dealing with regression models 2 and 3, if the null hypothesis that $\alpha_j s$ for $j = 1,2,...,m$, are jointly equal to zero can be rejected, then G_t causes R_t in Granger's sense. Similarly, if the $\delta_j s$ are not jointly equal to zero, then R_t causes G_t. The acceptance of the null hypothesis $\alpha_j = \delta_j = 0 (j = 1,2,...,m)$ implies the lack of causal relationship between G_t and R_t. Just as the acceptance of $\delta_j = 0$ implies that R_t does not cause G_t. Thus, the definition that G_t causes R_t requires that R_t does not cause G_t. The null hypothesis is

tested using the F-statistic. However, running Granger causality tests requires that the series R_t and G_t be stationary and if they are not, they are transformed to make them stationary. If the series in question are non-stationary, they have to be differentiated.

Final prediction error criterion (FPE)

The second method used to estimate the model tested here derives from Hsiao (1981), Caines, Keng and Sethi (1981), and Macmillin and Fackler (1984). The final prediction error criterion is a way to estimate orders of the approximating autoregression, that is, the lag lengths l and m. But this method can also be used to test the null hypothesis that G_t does not cause R_t in the Granger sense. The procedure is used as follows:

1. All variables were first converted into the first difference of logarithms and regressed against time and constant. If the coefficient on time was insignificant the variable was considered stationary and could be used in the test. If time was significant, a second difference specification was constructed and the variable was again tested against time. Time was insignificant for both variables R_t and G_t after a single differencing.
2. After converting both variables to stationary series, the dependent variable was regressed against lags of itself to find the optimum R_t lag length; this length is determined by the FPE criterion.
3. A series of bivariate models was then estimated for each candidate G_t variable. In each of these bivariate models, R_t was regressed against the optimum lags of R_t determined from step 2 plus lags of the candidate G_t variable. The optimum lag length of each G_t variable was again determined by the minimum FPE. If the minimum FPE of the bivariate was less than the FPE of the model containing only lags of R_t, then this implied that G_t causes R_t.

Public spending and deficits

According to Niskanen, the demand function for public services is expressed as

$$X = \mu S^{\delta} C^{\delta} Y^{\lambda} \tag{4}$$

where:

X = the number of units of the bundle of public services
S = the perceived share of the unit cost of public services
C = the unit cost of the bundle of public services
Y = the per capita income

The product, SC, thus represents the perceived tax price of one unit of the bundle of public services. Since the variables X and C are not directly observable, the product XC represents the public spending per capita. The demand function for public spending is

therefore given by:

$$XC = \mu S^{\delta} C^{1+\delta} Y^{\lambda} \tag{5}$$

The total public spending is defined as the product of XCN, where N is the total population of the country. The demand function for the total spending is therefore specified as:

$$CXN = \mu S^{\delta} C^{1+\delta} Y^{\lambda} N \tag{6}$$

Following Niskanen, two assumptions are made to simplify the model. First, it is assumed that variable S is a product of the share of public spending financed by taxation (T/G) and the inverse of total population (I/N), thus:

$$S = (T/\Gamma)(1/N) \tag{7}$$

where T is the total tax revenue and G is total public spending XCN. If government budget is balanced, (T=G), the ratio (T/G) is unity and the perceived share of unit cost of central government services S is inversely proportional to the population.

Second, since variable C is not measurable, it is assumed to be a function of the average wage rate in the private sector and population, thus:

$$C = \phi W^{\rho} N^{\pi} \tag{8}$$

where W is the average wage rate per worker in the manufacturing sector.

Before proceeding, a word on Equation 8 is in order. If $\rho > 0$, then the rate of growth of productivity in the public sector is lower than that in the private sector. If $\rho = 1$, then there is no increase in public sector productivity. In addition, $\pi = 0$ suggests that public services are "pure public goods", while $\pi > 1$ implies "crowding effect" on the unit cost of supplying public services.

To proceed further, substitute Equations 7 and 8 into Equation 6 to obtain:

$$XCN = \mu[(T/G)(1/N]^{\delta}\left[W^{\rho} N^{\pi}\right]^{1+\delta} Y^{\lambda} N \tag{9}$$

After some manipulation and rearranging terms, the following expression is derived:

$$XCN = (\mu\phi^{1+\delta})(T/G)^{\delta} Y^{\lambda} N^{1-\delta+\pi+\pi\delta} W^{\rho+\rho\delta} \tag{10}$$

Further simplifying Equation 10 gives:

$$XCN = \alpha(T/G)^{\delta} Y^{\lambda} N^{\varphi} W^{\eta} \tag{11}$$

where

$\alpha = \mu\phi^{1+\delta}, \varphi = 1 - \delta + \pi + \pi\delta, \eta = \rho + \rho\delta$

The logarithmic transformation of Equation 11 yields:

$$\ln CXN = \ln\alpha + \delta\ln(T/G) + \lambda \ln Y + \phi\ln N + \eta\ln W \quad (12)$$

which is the final estimation equation. Equation 12 was estimated by ordinary least squares (OLS), using annual time series data covering the 1965/66-1991/92 period. Since this paper is an attempt to present evidence from a developing country, Tanzania, the variables defined in this study may differ from those used for developed countries. For example XCN variable in this study is the total real public spending in real terms. Real government consumption, used as an alternative proxy for XCN, is arrived at by deflating nominal government consumption by the CPI, T/G is the ratio of total tax revenue to total public spending in real terms (both variables are derived from deflating their respective nominal values by the CPI): Y is the real per capita income obtained by deflating nominal GDP by the GDP deflator and then dividing by total population, N is the total population of the country, and W is real annual wage per worker in the manufacturing sector obtained by deflating the annual wage bill in the sector and dividing it by the total number of workers for each year..

In addition, Equation 12 was estimated in both the levels and the first difference form to distinguish between the long-run and the short-run effects. The estimated parameters of Equation 12 were used to derive the structural equations 4 and 8.

The magnitude of the coefficient of the variables (T/G) and *Y* in the two equations define the extent to which the perceived tax price elasticity with respect to the demand for public goods and services in Tanzania appeared to have ranged in the short run and in the long run. The negative sign for coefficient (T/G) is postulated. The negative sign implies that the large government deficit has been responsible for excessive public spending in Tanzania. The coefficient of variable *Y* in Equation 12 is postulated to be positive, suggesting that an increase in the per capita income would lead to an increase in demand for public goods. The income elasticity of demand for public goods in Tanzania is expected to be higher than elasticities reported by Provopolous for Greece and Niskanen for the United States. The high income elasticity would suggest that the growth in income is a powerful determinant of the progressive increase in public spending in Tanzania (Khan, 1988 p. 400).

The coefficient of the population variable N is postulated to have a positive sign, implying that the growth in population increases the unit cost of public goods in Tanzania. As suggested earlier, $\pi > 1$ implies "crowding effect".

Finally, the coefficient of variable *W* is postulated to have a positive sign, meaning that an increase in the real annual wage per worker in the manufacturing sector in Tanzania leads to a rise in the real cost of public services.

Data

To carry out causality tests, the quarterly time series data covering 1986:1 to 1992:3 were used. The data were sought from the Treasury and from Bank of Tanzania Bulletin, published quarterly. Tanzania's time series data were used to estimate Equation 12 (see Table 5). The next section provides a discussion of empirical results derived from using Tanzanian deficit, revenue and expenditure data in estimating the models described in the previous section. (See Table 6 for the regression results).

Table 5: Data used in estimating equations (12) and (13')

Year	Real government expenditure (XCN)	Tax-to-GDP Ratio) (T/G	Real per capita income(Y)	Population (N)	Real wage manufact. sector) (W)	Real tax revenue (T)	Real consump-tion(RGC)
1965	2,528.51	0.7980	1,259.55	10.18	2,973.08	-	-
1966	2,843.97	0.7984	1,403.99	10.35	4,154.54	1,441.49	1,619.03
1967	3,166.52	0.8016	1,230.00	12.13	4,731.08	1,667.87	1,805.71
1968	3,501.11	0.7712	1,303.80	12.23	4,123.61	1,988.238	1,961.83
1969	3,674..89	0.9071	1,298.37	12.55	4,695.55	2,282.56	2,174.39
1970	3,833.40	0.8775	1,314.18	12.89	4,604.44	2,495.22	2,491.75
1971	5,277.23	0.6976	1,324.52	13.24	4,534.83	2,590.22	2,703.51
1972	5,925.88	0.7405	1,372.25	13.60	4,101.23	3,161.32	2,779.54
1973	7,390.98	0.6828	1,372.06	13.79	3,948.50	3,760.47	3,282.74
1974	8,567.45	0.6379	1,353.25	14.34	4,052.32	4,121.38	3,608.15
1975	7,173.32	0.6565	1,385.03	14.73	3,038.04	3,758.56	3,914.71
1976	7,474.50	0.8277	1,426.16	15.18	2,508.45	3,440.00	3,989.00
1977	7,501.61	0.6859	1,389.69	15.64	2,200.27	4,512.05	3,644.36
1978	1,0128.91	0.5226	1,267.82	17.52	1,800.43	4,177.19	4,338.54
1979	1,0193.07	0.5382	1,269.60	17.99	1,918.11	4,346.65	4,210.97
1980	9,315.20	0.5956	1,260.44	18.58	2,074.26	4,649.22	3,435.25
1981	9,351.38	0.6221	1,217.10	19.16.	1,542.79	4,486.55	3,239.93
1982	8,579.46	0.7079	1,186.18	19.79	1,319.00	5,588.95	3,589.08
1983	8,647.14	0.6466	1,222.88	20.38	1,234.50	4,896.71	3,451.26
1984	8,094.36,	0.7162	1,125.67	21.01	1,320.80	5,595.16	4,190.96
1985	7,661.75	0.6719	1,117.10	21.73	1,098.13	4,892.70	4,167.88
1986	9,879.13	0.5623	1,116.80	22.45	761.33	4,877.57	4,203.85
1987	10,052.78	0.7170	1,123.43	23.19	775.65	5,595.22	3,343.85
1988	10,287.70	0.6627	1,130.90	23.95	636.18	6,074.85	3,452.81
1989	11,185.49	0.7157	1,147.06	24.74	520.66	6,890.57	4,982.79
1990	13,9611.52	0.7712	1,145.66	25.63	429.75	8,666.90	5,204.58
1991	12,135.06	0.7601	1,156.80	26.35	350.15	8,151.01	4,938.80

Source: All but figures on population are computed by the author from Economic Survey, various years, National Accounts of Tanzania 1976-1992, Selected Statistical series 1951-1992.
Notes: Figures for (XCN), (T), (RGC), and (N) are in millions of Tanzanian shillings (Tsh). The figures for the remaining variables are as they appear in the table. Data are also used for estimating Equation A2 in the Appendix.

Table 6: Regression results

(1) lnG = -13.73 + 0.46 lnT + 1.98 lnY + 1.42 lnN + 0.09 lnW
(-2.40)**(1.82) (2.56)** (1.99) (0.91)
R2 = 0.94 F(4,22) = 82.29 DW = 1.64 RSS = 0.357
SC = -3.74 HQ =-3.91 FPE = 0.02

(2) lnG = -0.03 + 0.25 lnT + 0.73 lnY + 1.72 lnN + -0.11 lnW
(-0.41) (1.01) (0.68) (1.19) (-0.57)
R2 = 0.11 F(4,21) = 0.67 DW = 2.29 RSS = 0.39
SC = -3.58 HQ = -3.75 FPE = 0.02

(3) lnGC = -19.68 - 0.16 ln(T/G) + 2.78 lnY + 2.22 lnN + 0.20 lnW
(-4.33)* (-0.82) (5.53)* (5.52)* (1.76)
R2 = 0.88 F(4 ,22) = 38.99 DW = 1.35 RSS = 0.28
SC = -3.89 HQ = -4.06 FPE = 0.02

(4) lnGC= -0.28-2.63 ln(G/T)+32.99 lnY+27.25 lnN+3.46 nW
(-0.66) (-1.76) (4.46)* (2.77)* (2.72)*
R2 = 0.66 F(4,21) = 10.01 DW = 1.13 RSS = 17.97
SC = 0.26 HQ = 0.08 FPE = 1.02

(5) lnGC -14.71 + 0.31 lnT + 2.07 ln Y + 1.48 lnN + 0.17 lnW
(2.28)**(1.28) (2.63)* (1.87)** (1.44)
R2 = 0.89 F(4,22) = 40.98 DW = 1.57 RSS = 0.27
SC = -3.93 HQ = -4.10 FPE = 0.01

(6) lnGC = -0.19-1.50 lnT+31.76 lnY+27.66 lnN+3.45 lnW
(0.39) (-0.85) (4.10)* (2.67)* (2.47)*
R2 = 0.62 F(4,21) = 8.51 DW = 1.50 RSS = 19.93
SC = 0.36 HQ = 0.19 FPE = 1.13

Notes: Figures in parenthesis are t-values.
* Significant at 1% level,
** Significant at 5% level.

VI. Empirical results

Granger causality tests

Before undertaking Granger causality tests a unit root test was carried out to determine whether R_t and G_t are stationary. The unit root test results are presented in Table 7. As shown in Table 7, the augmented Dickey-Fuller test indicate that G_t and R_t are stationary with two and lags and one lag, respecitvely.

Table 7: Unit root test

Variable	t-ADF	Number of lags	t-lag	t-probability
G_t	-1.0242	4	1.2186	0.2418
G_t	-0.3660	3	-5.1879	0.0001
G_t	-4.5777**	2	2.0219	0.0592
G_t	-4.1203*	1	0.7608	0.4566
G_t	-5.97247**	0		
R_t	-1.6160	4	-0.8975	0.3836
R_t	-2.3823	3	-0.0002	0.9998
R_t	-2.4803	2	-2.1713	0.0444
R_t	-3.9377*	1	0.3198	0.7528
R_t	-5.1824**	0		

**Significant at 1% level.
*Significant at 5% level.
Critical values: 5% = 3.6330, 1% = 4.4410; constant and trend included.

The results of the F-test are found in Table 8. The most striking result is that I find no evidence of causal relationships running from revenues to expenditures. On the other hand, expenditures cause revenues. Furthermore, the FPE analysis results of Table 9 lead to the same conclusion.

These results call into question Friedman's (1972) hypothesis that higher taxes will lead to even greater increases in expenditure and Buchanan and Wagner's hypothesis that increases in direct taxes will lead to decrease in expenditure. These results are consistent with the view that increases in expenditures lead to increases in taxes, but not vice versa.

Therefore it seems that one of the major sources behind the high growth and the persistence of deficits in the public sector of Tanzania is the growth in public spending. The level of spending has been determined on political grounds and tax revenue adjusted accordingly.

Table 8: Summary of results of causality test

$G_t \Rightarrow R_t$ (eq. 4)			$R_t \Rightarrow G_t$ (eq. 5)		
lag structure	F-stat	df	lag structure	F-stat	df
1,4	2.149	(4,16)	1,4	1.753	4,16
1,5	25.580*	(5,15)	1,5	2.206	5,14
1,6	42.736*	(6,12)	1,6	1.770	6,12
1,7	40.080*	(7,10)	1,7	1.400	7,10
1,8	28.794*	(8,8)	1,8	1.230	8,8
2,4	3.051**	(5,15)	2,4	1.342	5,15
2,5	22.882*	(6,13)	2,5	1.926	6,13
2,6	34.349*	(7,11)	2,6	1.509	7,11
2,7	23.816*	(8,9)	2,7	1.162	8,9
2,8	51.644*	(9,7)	2,8	1.100	9,7

* Significant at the 1% level.
** Significant at the 5% level.

Table 9: FPE analysis results

$G_t \Rightarrow R_t$ (eq. 4)		$R_t \Rightarrow G_t$ (eq. 5)	
lag structure (m,l)	FPE	lag structure (l,m)	FPE
1,0	0.4298	1,0	0.2594
1,1	0.4569	1,1	0.2430
1,2	0.5037	1,2	0.2517
1,3	0.5460	1,3	0.2686
1,4	0.4736	1,4	0.3055
1,5	0.08 60	1,5	0.2942
1,6	0.0478	1,6	0.3418
1,7	0.0547	1,7	0.4110
1,8	0.0598	1,8	0.4817
2,0	0.4198	2,0	0.2627
2,1	0.4571	2,1	0.2517
2,2	0.4816	2,2	0.2734
2,3	0.4899	2,3	0.2934
2,4	0.3988	2,4	0.3354
2,5	0.0841	2,5	0.3106
2,6	0.0528	2,6	0.3715
2,7	0.0626	2,7	0.4608

Notes: F PE*(m,l)* < FPE*(m,0)* fi causes .
FPE*(l,m)* > FPE*(1,0)* fi does not cause .
Optimum lag structure: minFPE*(m,l)* = FPE(*1,6)*

Public spending and deficits

Following Niskanen, Equation 12 was estimated in both the level and the first difference forms to distinguish between the long-run and the short-run effects.

The empirical results generated by estimating Equation 12 are reported in Table 10a. With the help of the parameters in Table 10a, the structural equations are derived as shown in Table 10b.

Table 10a: Estimated coefficients of Equation 12

Regress form	Constant	T/G	Y	N	W	R^2	DW
Level	-18.72	-0.72	2.91	2.18	0.06	0.96	1.99
	(-6.34)*	(-4.50)*	(7.51)*	(10.03) *	(0.82)		
First diff.	0.00	-0.53	1.07	1.64	0.04	0.31	2.33
	(0.10)	(-2.73)*	(1.12)	(1.29)	(0.22)		

Notes: Figures in parentheses are t-values.
*Significant at 1% level.

Table 10b: Structural equations

Regression form	Equation
Level	$X = \mu(SC)^{-0.72}Y^{2.91}$
	$C = \phi W^{0.21}N^{1.64}$
First difference	$X = \mu(SC)^{-0.53}Y^{1.27}$
	$C = \phi W^{0.08}N^{0.23}$

The major findings from the empirical results presented above are briefly discussed below:

First, the perceived tax elasticity with respect to the demand for public goods in Tanzania appears to have ranged from 0.53 in the short run to 0.72 in the long run. The negative sign for the coefficient of (T/G) suggests that the large government deficits have been instrumental in the excessive spending in Tanzania. This finding is in line with the theoretical proposition put forward by Buchanan and Wagner that federal deficits increase federal spending. Nevertheless, the estimated tax-price elasticity of demand for public goods reported for Tanzania is much higher than the one reported by Provopolous (1982) for Greece (-0.16 to -0.28) and the other reported by Niskanen (1978) for the United States (-0.61 to 0.56), but slightly lower than that reported by Khan (1988) for Pakistan (-0.58 to -0.75). This finding confirms the dominant role of the public sector in developing countries (Khan, 1988 p. 400).

Second, the income elasticity of demand for public goods ranged from 1.07 in the short run to 2.91 in the long run. These elasticities are much higher than the ones

reported by Provopolous for Greece (1.10 to 0.35) and Khan for Pakistan (1.14 to 1.89). Contrary to the findings for developed countries, the high income elasticity suggests that growth in income is a powerful determinant of progressive increase in public spending in Tanzania.

Third, an increase in population seems to have increased the unit cost of public goods in Tanzania with elasticity of 1.64 in the long run and 0.23 in the short run. As discussed earlier, $\pi > 1$ implies "crowding effect", thus a crowding effect on unit cost of supplying public services (in the long run) is found for Tanzania.

Finally, real wage per worker in the manufacturing sector seems not to be an important determinant of demand for total public spending because real wages in all sectors have been quite low. An increase of 1% in the real wage per worker in the manufacturing sector in Tanzania leads to an increase in real unit cost of public services by only 0.2% in the long run and 0.1% in the short run. Since the coefficient ρ of variable W reported above is positive, that is $\rho > 0$, this suggests that the rate of growth of productivity in the public sector is lower than the growth in the private sector in Tanzania.

VII. Summary, discussion and conclusion

The purpose of this study was twofold. First, it tested the causality between public spending and public revenue. Second, it tested the hypothesis that high deficits lead to increased spending. The following conclusions may be drawn from the findings of this study.

First, in Tanzania public spending (drives) causes revenue. This finding suggests that one of the causes of the deficits in Tanzania is rapid growth in public spending. This means that measures to curtail deficits must consist mainly of policies to reduce spending. Nevertheless, policies designed to enhance revenue collection through broadening the tax base may be useful since empirical results indicate that more tax revenues do not lead to increased spending.

Second, the budgeting process in force is in itself a cause of deficits in Tanzania. The budgeting process has three major problems. The first is the incremental nature or inertial character of government spending. The second is non-enforcement of spending limits (soft budget constraint), which has resulted in mini budgets in recent years. Mini budgets are now turning from the exception to the rule. Finally, there is the large stochastic element on the revenue side, the cause of which is foreign grants. Often these grants are not disbursed as budgeted. All three of these problems may lead to more spending and less revenue and consequently to large deficits. Thus, measures to reduce deficits must address all these problems.

Third, the findings of this study support the view that the deficits of the Tanzania public sector are a result of rapid growth in public spending. The coefficient of the perceived tax price variable (T/G) reported in this study confirms the dominant role of the public sector in developing countries. The high income elasticity reported in this study implies that income growth is a strong factor in successive increase in public spending in Tanzania in the long run.

These conclusions have important policy implications the reduction of deficits. If the government wants to reduce its deficits, it should not determine the level of spending on political grounds and consequently adjust tax revenue accordingly. The amount of funds available should determine the level of spending; revenue should cause spending. This may be achieved by the adoption of a budgeting process that overcomes the problems of the existing one. It should also without fail-if it can-enforce the spending limits.

Measures to curtail spending must consist of policies designed to reduce deficits. The government can reduce deficits by enhancing tax collections and cutting unproductive expenditure. The latter calls for budget restructuring. Improved tax collections will reduce government borrowing, which is a low-cost mode of financing public spending relative to taxation.

Notes

1. There are no specific models used either to estimate or forecast revenues. Naive techniques are used to estimate revenue. When the economy is in crisis, the techniques used to estimate revenue become even more arbitrary and ad hoc.
2. This a committee of the cabinet that is responsible for budget policy and for spelling out budget goals and implementation objectives. It approves the annual plan guidelines and later the annual plan and the budget.
3. The National Assembly is not known to have blocked any major finance bill. The only time in history (since independence) that it attempted to do so was in June 1973. The members of Parliament (MPs) refused to pass the Income Tax Act Bill of 1973. The new retired President Nyerere threatened to dissolve Parliament should the MPs stick to their guns. Following Nyerere's threats, the National Assembly sessions were adjourned. When the sessions were reconvened the MPs immediately passed the bill. Since then the MPs have never ever blocked any major finance bill.
4. With effect from January 1994, funds are released on monthly basis. The government undertook this measure to curb over-expenditure. The success or failure of this measure is yet to be evaluated.
5. According to the legal provisions, the approval of supplementary estimates by Parliament follows the same procedure as the annual estimates. In practice, spending units spend in excess without parliamentary approval. Approval often takes place after expenditures have been incurred.
6. The process was described in detail in Section III.
7. The FPE criterion for a total of n lags on the independent and lagged dependent variable is defined as $FPE(n) = [(T+n+1)/(T-n-1)](SSR/T)$, where T is the number of observations and SSR is the sum of squared residuals. If $FPE(n+1)>FPE(n)$, then the (n+1) lag is dropped from the model.

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Appendix: Alternative specifications for Equation 12

An alternative specification for Equation 12 can be derived by transforming it. This is done by bringing variable G in Equation 12 to the left-hand side, which yields:

$$\ln G = \frac{\ln \alpha}{1+\delta} + \frac{\delta}{1+\delta}\ln T + \frac{\lambda}{1+\delta}\ln Y + \frac{\varphi}{1+\delta}\ln N + \frac{\eta}{1+\delta}\ln W \qquad \text{(A1)}$$

Equation (A1) can further be expressed as:

$$\ln G = \beta + \omega \ln T + \tau \ln Y + \kappa \ln N + \gamma \ln W \qquad \text{(A2)}$$

where

$$\beta = \frac{\ln \alpha}{1+\delta}, \omega = \frac{\delta}{1+\delta}, \tau = \frac{\lambda}{1+\delta}, \kappa = \frac{\varphi}{1+\delta}, \gamma = \frac{\eta}{1+\delta}$$

Equation A2 can be estimated; it is theoretically equivalent to Equation 12, but it has the advantage that may not (hopefully) be correlated with the error term, whereas is. The economic interpretation of the coefficients of the variables in Equation A2 would be the same as in Equation 12.

An attempt was also made to use real government consumption (RGC) as a proxy for *XCN* in Equation 12. The exercise did not generate better estimates than those obtained by using real government spending as a dependent variable in estimation equations. A less interesting fact was that the coefficients of and were insignificant (see Table 10). These coefficients are very important because they measure the perceived tax price elasticity of demand for public goods. I also estimated Equation A2 using both and as dependent variables (see Table 10). This alternative specification of Equation 12 failed to generate better estimates than those of the original model.

Thus, real government expenditure was a better proxy for CXN than real government consumption RGC and Equation 12 proved to be a better specification of the demand for public goods (in Tanzania) than Equation A2.

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