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Inflationary finance and the dynamics of inflation in Tanzania
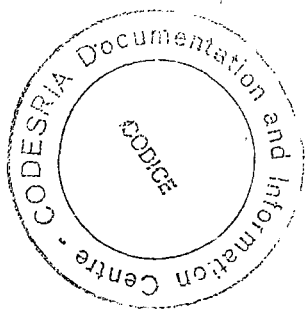
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INFLATIONARY FINANCE AND THE DYNAMICS OF INFLATION IN TANZANIA

By

ALI A.L. Kilindo

A Dissertation for Submission to the Department of Economics of the University of Dar es Salaam in Fulfilment of the Requirement of Doctor of Philosophy.

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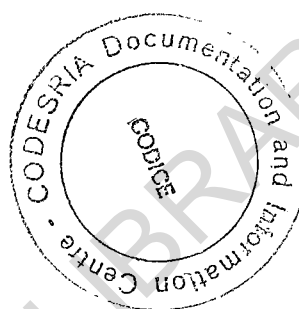
CHAPTER 1

INTRODUCTION

1.1 Introductory Remarks

The two major theories of inflation i.e. demand-pull and cost-push prevail in both developed and developing countries. The demand-pull theory is the traditional one that states that inflationary rises in prices are brought about mainly by monetary demand for goods that can not be matched by their supply.[1] Money supply expansion is the main reason for the expanding demand for goods.

The cost-push theory, however, states that the active cause of inflation is autonomous rises in the cost of production due to say, autonomous increases in wages or prices of important raw materials which then force producers to raise the prices of their finished products.

Another important explanation of inflation is the structuralist theory. This theory emphasizes the relationship existing between changes in relative prices and increases in the general prices level. Changes in relative prices are the outcome of changes in economic structure. In developing countries, low agricultural sector productivity and

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[1]. See for example Friedman (1956, 1969); Friedman & Schwartz (1963).

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balance-of-payments difficulties are the main elements in the structuralist analysis.[2]

Both a growing industrial sector and an increasing urbanization produce a change in the amount and structure of food and raw materials demanded. Low agricultural sector productivity does not allow for a quick response of supply to the new demand. The relative price of agricultural goods tends to rise. If industrial prices are inflexible downwards because of an oligopolistic market structure, money prices of agricultural goods must rise. Propagation elements then transfer such structural inflationary pressure: rises in wages take place because of the rising cost of living and thus rises in cost of production in the industrial sector are induced; such rises in costs imply a higher money price for industrial goods if benefit margins are to be kept constant and so a new adjustment of relative prices is needed beginning again the process just described.[3] The whole process assumes the existence of a passive money supply that assures equilibrium in money markets. If money supply is increased higher prices are ratified. Structural inflation is therefore similar to cost-push inflation in that monetary expansion is assigned a passive and accomodating role.

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[2]. See Canavese, (1982).

[3]. See Canavese, op. cit.

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In developing countries, an exhaustive analysis of the inflationary process would certainly require a merging of the theories outlined above. This follows from the fact that most developing countries have mixed characteristics favouring both demand-pull and structural analysis of inflation.

For instance, in most developing countries there is generally no strong organization on the side of labour force and it is unlikely that wages in those countries can provide continuous upward push for a long period on inflation. However, conditions that would make Keynesian multiplier principle to work, i.e. involuntary unemployment, elastic supply curve, excess capacity in consumer goods industries and elastic supply of working capital, are non existent in developing countries.[4] What is prevalent in these economies is disguised unemployment, predominance of agriculture in the economic structure, production for self consumption rather than market exchange and dominance of household production and capital scarcity. These conditions favor the classical demand-pull model rather than the Keynesian model.[5]

It is when costs affect domestic industries to the extent that they operate below capacity, and the authorities in their pursuit of growth through capital accumulation resort to running budget deficits, that they could lead to continuous

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[4]. See Rao (1978).

[5]. For a detailed exposition See Tanzi (1978).

price increases. This outcome results from the absence of developed capital markets and adequate external borrowing necessitating the financing of the fiscal deficits by the Central bank and commercial banks.[6] This involves money creation. One can then hold money creation as the source of price inflation in most developing countries.

False structures such as a low tax base, an inefficient tax administration, tax collection lags would make the authorities be unable to raise resources through normal taxation sources. As a result they run budget deficits which are financed by the Central Bank.

Events in Tanzania since the mid-seventies require an investigation following the above line of analysis. Inflation as measured by the National Consumer Price Index has accelerated from an annual average of 11.4 percent during 1969-1978 to 25 percent during 1978-83. Between 1984 and 1988 the rate rose to over 30%. Rapidly growing demand generated by high money supply growing rates to finance growing budget deficits in the face of declining output have been among the main causes of inflation in Tanzania.[7]

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[6]. See Tanzi, op. cit.

[7]. Studies in Tanzania on inflation include those by Hyuha and Osoro (1982, Ndulu (1975); Rwegasira (1974, 1976a, 1976b), and Kilindo (1982).

In Rwegasira and Kaneworf (1980) several studies have dealt with both structural and monetary factors extensively.

Budget deficits have grown at an average of more than 13 percent per annum for the past ten years. As a proportion of GDP the deficit has stood at 14 percent over the period. The main financier of the deficit has been the Central Bank and this has a strong impact on monetary expansion in the economy. Between 1978 and 1984 money supply broadly defined to include currency in circulation, demand deposits, savings deposits and time deposits stood at an annual average of 26 percent. Between 1984 and 1988 there was a slight decrease in money supply growth to 20 percent after deliberate policy to control government expenditure and budget deficits was effected. However, this growth rate was still higher than the planned targets. The main sources of the money supply expansion was domestic credit growth. While during the late seventies domestic credit expansion was on average 19 percent per annum by the period between 1978-84 it jumped to 34 percent. The rate between 1984 and 1988 was above 40%. These developments on the monetary side were taking place when on the real side the economy was growing at a very low rate and in some years at a negative rate. Inflationary pressures were thus innevitable.

1.2 The Problem

As pointed out by Ndyeshobola (1983) inflation has many adverse economic consequences. On the balance of payments,

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inflation has negative consequences via its effect on relative price and terms of trade movements between different sectors of the economy, and exogenous price changes and the resultant foreign exchange implications in real terms.

Via its effect on nominal expenditure movements, given the government attempt to sustain its real expenditures and certain levels of output performance in the inflation hit sectors and cost of servicing government's use of credit facilities, inflation has a negative impact on government finances.

Another negative impact on government finances by inflation falls on revenue resources constraints when major revenue sources are adversely affected by this phonomenon. This happens when narrowing of the tax base and drawing of domestic income away from government taxability become consequences of inflation.

Fourthly, inflation has monetary implicationms particularly as related to balance of payments disequilibrium, fiscal deficits and non-government public sector deficit spending.

Despite the above effects of inflation, this phenomenon has become uncontrollable in the economy. Several factors have perpetuated inflation in the country. The government has increasingly faced the major task of promoting social and economic development. It has to play the role of enterpreneur and participate directly in production. More expenditure requirements have to be met by the government while revenues

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have grown slowly given the inefficient tax collection system. The major sources of tax revenue, domestic production and imports have been declining due to imp~~act~~ ort strangulation reducing tax revenues.

The result of the above process has been large budget deficits which, given the lowly developed capital market have been financed by the banking system particularly the central bank with the consequences of rapid money supply growth as indicated above.

The problem under investigation is therefore the link between budgetary operations of the government, money supply and inflation in Tanzania for the period 1970-1987.

1.3   Purpose of the Study

This study investigates the relationship between money supply growth and price developments in Tanzania. As Rwegasira (1976a) pointed out, monetary factors are important in the understanding of inflationary pressures in the economy in addition to structural factors. The study goes further by trying to investigate one of the forces behind the expansion of money supply, namely inflationary finance arising from government budgetary operations.

Most literature on inflationary financing and growth maintains that government expenditure can have substantial real

effects (Aghevli (1977), Mundell (1971)). In Tanzania like many other developing countries a good fraction of investment expenditure with highest marginal social returns is being made by the government and public enterprises. Due to "underdeveloped", "inadequate, or "inelastic" normal channels of taxation, the government has inadequate resources for the investment projects. Through rapid money creation the monetary authorities can make additional resources available for use in the development process as this will provide inflationary tax revenue.

However, the final effect of the inflationary tax depends on the type of expenditure. If the expenditure is on development projects which contribute to real output there will be a positive gain. If on the other side the government uses the tax to subsidize certain inefficient parastatals, the situation may lead to inflationary pressures. Further, it has been pointed out that increase in government expenditure can perpetuate the deficit and the inflationary process since government revenues can fall behind in real terms because of collection lags, the structure of expenditure, government response to inflation and other factors.[8]

There are numerous studies which have empirically demonstrated the relationship between inflationary finance and

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[8]. Studies dealing with the budgetary process and inflation in developing countries include those by Aghevli and Khan (1977, 1978); Goods (1984), Heller (1980).

inflation in develoing countries.[9] Common in these studies is
a framework which links inflation and money supply through the
budgetary process. Lags in revenue collection and expenditure
lags are the main elements that link money supply and inflation
in a two way relationship. In this study, a model by Aghveli
and Khan (1977, 1978) is followed closely and latter we verify
our findings by performing tests of causality developed by
Granger (1969) and Sims (1972). However, our interpretation of
the results differ from those by Granger and Sims in that we
take them as verifying precedence rather than causality.

Using the above quantitative methods, we test our main
hypothesis that in explaning inflation in Tanzania, it is not
adequate to regard money creation as exogenous with respect to
inflation since the government through monetary authorities has
made money creation respond to inflation. This has been a major
cause for the development of inflation. Structural bottlenecks
and high import prices according to this study have had an
impact of increasing the closeness of the relationship between
the budgetary mechanism, money supply and inflation.

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[9]. In addition to those under footnote 8, studies by Mikesell
(1969); Morrison (1982) deal with structural determinants of
budget deficits in developing countries.

1.4 Organization of the Study

The rest of the study is organized in five chapters.
Chapter two gives a background of the Tanzanian economy. It
deals with trends in economic performance, explanatory factors
behind performance, links between the real and monetary sides of
performance and an analysis of the inflationary process.
Chapter three surveys the literature on money and inflation;
deficits and money supply and finally deficits, money supply and
inflation. Chapter four lays the analytical framework which we
employ to test our main hypotheses and other arising issues.
The results of the estimation procedure are discussed in chapter
five where we also compare our results with those of other
studies. The last chapter summarises our findings, draws some
conclusions and gives some policy implications.

CHAPTER 2

MONEY, INCOME AND PRICE TRENDS IN TANZANIA

2.1 General Features of the Economy

In 1964 the People's Republic of Zanzibar merged with the Republic of Tanganyika (refered to as Mainland Tanzania) to form the United Republic of Tanzania. The economy is characterised by a large traditional rural sector and small urbanised sector. The rural sector is concerned with the growing of food and cash crops while the urban sector is concerned with manufacturing and service activities. In addition to export crops, the agricultural sector produces a bulk of raw materials for domestic industry. Industry is a source of supplies of some inputs for agriculture as well as consumer goods for the rural population.

The openness of the economy is greatly reflected by the fact that most economic activities, cash crop farming, manufacturing, mining, transportation and construction activities rely heavily on imported inputs. At the same time foreign exchange earnings depend on the export performance of a small group of primary commodities. Such developments like slumps in commodity prices and steady deterioration of terms of trade have very negative repercussions on the economy. Currently Agriculture contributes more than 40 per cent to GDP and 83 per cent of agricultural production is carried out by small

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farmers on privately owned plots averaging less than 2.2 hectares and relying mainly on manual labour and hand implements.[1] Major food crops include maize, rice, wheat, cassava, millet, beans, sorghum, bananas, a variety of vegetables, fruits potatoes and other root plants. Export crops comprise coffee, cotton, sisal, tobacco, tea, cashewnut and pyrethrum which together account for more than 75 per cent of total foreign exchange earnings. Low level of technology, insufficient supply of inputs and tools and poor agricultural infrastructure make the large potential for expanding crop production remain unexploited.

The mining sector, mainly diamonds, contribute 0.5 per cent to GDP and 7 per cent of foreign exchange earnings. The share of manufacturing activities in GDP has declined from about 12 per cent in the late 1970s to less than 5 per cent in 1984. Consumer goods industries; food, beverages, tobacco, textiles, garments and shoes account for about 10.0 per cent of industrial value added. Due to high import content and foreign exchange shortages most industrial plants do operate well below capacity for lack of needed raw materials. Those industries based largely on local raw materials have also suffered from shortages of intermediate inputs and spare parts.

Development expenditure has a high foreign content, despite government efforts to reduce it by trying to mobilize domestic savings through the financial system. The financial system consists of the Bank of Tanzania as central bank and the

1 See URT (1981)

National Bank of Commerce as the main commercial bank. Other financial institutions exist for more specific services. They include Cooperative and Rural Development Bank, the Tanzania Investment Bank, the Tanzania Housing Bank, the Post Office Savings Bank, the National Insurance Corporation, the National Provident Fund and the Tanganyika Development Finance Co. Ltd.

The Bank of Tanzania has the sole right to issue the only legal tender, bank notes and coins; it is banker to the government in that it receives and effects payments on its behalf and may make direct advances to it and purchase Government Treasury Bills or Securities within limits specified in the Act. It also acts as banker to banks and to other financial institutions. It has control over banks and financial institutions which include the power to regulate rates of interest on deposits and the volume, allocation and terms and conditions of credit extended by banks and financial institutions. The bank has the responsibility to maintain external monetary stability and an adequate level of reserves and external assets. Laws related to controls on imports, exports and foreign exchange transactions are administered by the Central Bank.

The bank has also a positive promotional and developmental role. The bank is required to engage in the promotion of rural development, industrial and agricultural production through the provision of financial facilities to banks and designated financial institutions; the guaranteeing of

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loans made by the financial institutions; the provision of training facilities; and the supervision and inspection of banks and financial institutions.

2.2 Trends in Economic Performance

2.2.1 The Real sector

Since the mid seventies the economic performance of Tanzania has declined steadily. This is indicated by declining real GDP, large fiscal deficits, balance of payment deficits, rapid monetary expansion beyond planned levels, declining real per capita income and high rates of inflation. Terms of trade have been deteriorating coupled with severe droughts and as a result export earnings have declined. With her outside dependence, import strangulation hit local industries as most depend on imported raw materials and spare parts. This led to further decline in production and shortages of consumer goods.

During the years 1980/81 and 1982/83 negative real growth rates were experienced for the first time. For the period 1964-70 and 1970-78 average growth rates of 5.38 and 5.41 5.4 per cent were achieved but over the period 1978-86 only 2.00 per cent average growth on real output was achieved.[1]

Agriculture contributing 40 per cent of total GDP experienced decline in some years (1983, 1984) and on average between 1978-1986 there was growth of only 1.66 1.7 per cent. On the crop export side, a decline was experienced in most crops

1 Ndulu (1985)

except coffee and tea. Among the factors pinpointed for poor export crop performance are unfavourable weather; foreign exchange shortages affecting the supply of fertilizers, agro-chemicals, farm equipment and incentive goods and constraining crop processing and transportation; inadequate producer incentives and marketing system; and weakening world commodity markets.

The lag in production behind demand caused by growing population and increased urbanization necessitated the government to import food. In 1985, there was improved weather and marketing and this brought a fall in maize imports and official prices. The government has tried to set prices for major export crops with the aim of giving incentives to producers while for food crops the main aim has been to lower food costs for minimum wage earners. Manufacturing GDP declined for an average of 4 per cent between 1976 and 1986.[1] Capacity utilization in manufacturing has ~~decereased~~ declined continuously since 1978 with most enterprises operating below one third of capacity.[2]

Materials production as a whole consisting agriculture, industry, construction, water and power registered a real decline while there was growth in the service sector. Inflation as measured by the National Consumer Price Index (NCPI) accelerated from an annual average of 11.4 per cent in 1969-70 to 25 per cent between 1978 and 1983. In 1984 the inflation rate was 36 per cent and dropped to 33.3 per cent in 1985 and

1 See URT National Accounts 1976-86
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2. See Mbelle (1987), Wangwe (1985)

down to 30 per cent by 1987. The combination of factors responsible for the upward pressure on prices are output decline during high money supply growth rates; inability to import shortfalls; and imported inflation. Money supply growth has originated mainly from growing budget deficits which have been financed by the banking system particularly the central bank. Over the five fiscal years 1978/79 to 1983/84 budget deficits grew at an average of 13.2 percent per annum. As a percentage of GDP, the budget deficit has been 14 per cent over the period 1978/79 to 1983/84. A slight decrease in this proportion was achieved after 1984 when government introduced strict control of expenditure through economic adjustment programmes namely SAP and ERP.

The budget has been strained since 1979 due to divergence between expenditure commitments and available resources. The government resorted to borrowing from the banking system to finance the budget deficits. This resulted into strong monetary expansion arising from rapid growth of domestic credit. During the period 1978-84 growth of money supply broadly defined to include currency in circulation, demand deposits, and time and savings deposits was 26 per cent per annum. The rate of domestic credit expansion increased from an annual rate of 19 per cent in the late seventies to 34 per cent during 1980-84 period. Both money supply and credit continued to grow at unplanned rates during the period 1984 to 1988, despite efforts by the government to slow down the rates.

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For the year 1988, money supply was estimated to have grown by 32 per cent while the target was 10 per cent. Substantial government borrowing from the banking system and borrowing by non-government institutions particularly marketing boards and cooperative unions were the main cause of rapid increase in money supply. The above developments in money and credit were taking place while the economy was growing ~~very slowly~~ *at a slower rate* and sometimes at negative rates as pointed out above.

The trade balance has also been worsening over the period, reaching crisis proportions between 1978 and 1983. The ability to import declined steadly from 1.03 between 1964 and 1969 to 0.79 in 1970-1973 and 0.73 between 1973 and 1977. It reached a low 0.46 during 1978/1983. By 1989, the balance of payments was still in disequilibrium. Between 1986 and 1988 the official trade deficit grew approximately by 16.1 percent.[10]

Exports have been growing very slowly while imports have grown at a faster rate due to foreign resource inflow cushioning the drop in import capacity. For example between 1976 and 1978, merchandise export increased by 7.0 per cent while imports increased for 13.1 per cent. The ratio of exports to GDP fell drastically from an average of 22 percent between 1974 and 1977 to 11 percent in the 1978-82 period. As a ratio of GDP imports marked a smaller decline from 31 per cent to 25 per cent during the same period. Tanzania had therefore to depend on foreign finance to pay for imports and import strangulation resulted

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[10]. See Ndulu (1985).

into reduced capacity utilization in industry as recurrent
support for utilization of installed production capacity was
reduced.

The above poor performance record of the economy implied
shortages of consumer goods, rapidly escalating cost of living
and reduced quantity and quality of social services.

Table 2.1:   Trends in Some Macro Variables of the Economy

Year	GDP at 1976 Prices (Shs.M)	Money Supply (M^2) (Shs.M)	Inflat-ion $\triangle$NCPI (%)	Import Price Index (1976=100)	Ex-change Rate	Short Term Lending Rate
1967	17165	1539.7	3.0	35.2	7.14	8.25
1968	17930	1498.9	16.0	34.9	7.14	8.50
1969	18117	1879.5	16.4	34.4	7.14	8.25
1970	18987	2306.2	-12.7	37.7	7.14	8.25
1971	19340	2713.4	4.0	42.6	7.14	8.50
1972	20457	3169.4	8.6	46.1	7.14	8.50
1973	19070	3698.6	10.2	56.7	7.02	9.00
1974	19501	4518.1	19.7	98.8	7.14	9.00
1975	20407	5615.3	25.9	106.8	7.14	7.50
1976	21653	6946.8	6.9	100.0	8.38	7.50
1977	21739	8346.7	11.6	111.7	8.29	8.00
1978	22202	9396.3	6.6	127.0	7.71	6.13
1979	22849	13806.6	12.9	148.5	8.22	8.25
1980	23419	17519.8	30.3	174.5	8.20	9.50
1981	23301	20694.7	25.7	181.1	8.28	9.25
1982	23439	24728.7	28.9	170.1	9.20	9.75
1983	22882	29127.4	27.1	161.8	11.14	10.00
1984	23656	30218.1	36.1	161.8	15.29	10.25
1985	24278	38971.0	33.3	159.2	17.47	13.50
1986	25158	50353.4	32.4	162.3	23.70	23.50
1987	26142	66442.9	30.0	171.7	64.26	23.50
1988	27039	—	31.2	—	99.29	23.50

Source: Hyuha and Ndulu (1990).

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2.2.2 The Monetary Sector

2.2.2.1 Trends in the Tanzanian Money Stock and Its Components

A strong monetary and credit expansion is evident from table 2.2 beginning 1966. Money supply broadly defined to include currency in circulation, demand deposits, savings deposits and time deposits grew at an average of 18.75% per year

Table 2.2: Monetary Survey

Period	(1) Foreign Assets of the Banking System	(2) Net Claims on Gvt.	(3) Lending to other Domestic Sectors	(4) Other Items Net	(5) Total Money Supply	Money Supply Growth	1 as % of 5	2 as % of 5	3 as % of 5
1966	594	-1160	782.0	-145.0	1118.0		53.1	-10.4	70.2
1967	593	- 10.0	786.0	- 46.0	1293.0	15.6	45.9	- 0.8	59.4
1968	692.9	- 19.9	898.0	- 72.1	1498.9	15.9	46.2	- 1.3	59.9
1969	818.9	166.9	1089.3	-195.6	1879.5	25.4	43.6	- 8.9	57.9
1970	763.4	285.1	1344.3	-173.2	2219.6	18.1	34.4	-12.8	60.6
1971	902.0	491.7	1502.1	-271.4	2624.4	18.2	34.4	-18.7	57.2
1972	1377.5	5221.1	1547.0	-356.9	3029.7	17.7	44.6	-16.9	50.0
1973	1613.0	612.4	1819.5	-391.9	3653.0	18.2	44.1	-16.8	49.8
1974	913.4	1448.5	2897.5	-797.4	4462.0	22.1	20.5	-32.5	64.8
1975	963.0	2210.2	3349.6	-970.1	5552.7	24.4	17.3	-39.8	60.2
1976	1368.8	3223.9	3672.3	-1318.2	6946.0	25.1	19.7	-46.4	62.9
1977	2390.2	2886.8	4391.7	-1322.1	8346.7	20.1	34.8	-34.6	52.6
1978	223.8	4605.0	6051.4	-1483.9	9396.3	12.6	2.4	49.0	64.4
1979	921.1	1963.5	6732.0	-1774.0	1774.0	46.9	6.4	57.7	48.7
1980	1200.2	10899.5	7342.5	-1925.7	17519.9	26.9	6.8	62.2	41.9
1981	853.1	13844.1	8482.3	-2485.0	20694.7	18.0	4.1	66.3	40.9
1982	761.7	17537.0	9537.3	-3107.4	24773.6	19.4	3.0	70.9	38.5
1983	- 1879.9	20659.1	10642.8	-4054.5	29078.3	17.5	6.4	71.0	36.6
1984	- 7592.5	24459.0	12922.2	-1429.4	30218.1	11.0	0.64	74.4	36.3
1985	-10789.3	32278.9	17673.8	- 197.4	38971.0	29.0	27.7	82.8	45.4
1986	-12881.9	32555.8	27735.1	+2949.4	50353.4	29.2	25.6	64.7	55.1
1987	-22908.4	33454.5	55042.5	+ 854.3	66442.9	32.0	34.4	50.3	82.8

Source: Bank of Tanzania Economic and Operations Report 1985-1988

between 1965 and 1970. Between 1971/1975 the average annual growth rate was 20% and between 1976 - 1980 it was 26.3% annually. The record highest rate was 1978/79 reaching 46.9%. For the ten year period of 1971 - 1980, the average annual rate of growth of money supply was 25%.

This observed monetary developments were in most cases above the rates envisaged in the Finance and Credit plan. It has been shown that the discrepancy between the planned and actual rates has been between 13% and 37.1% during 1972/73 - By 1988 the discrepancy reached 129% [1]. 1980/81. (see Kilindo 1982)

The inability of the government to stick to plans of money growth was caused by both exogenous and endogenous factors. During 1974/75, Tanzania was hit by a serious drought which reduced agricultural output and thus exports fell curtailing the capacity to import, this widened the deficit. Another factor was her engagement in the war against Amin; which increased capital formation outlays and the government financed deficits by money creation. This was during 1978/79 and the burst in money supply growth of 46.9% evidences this.

It should be noted that these monetary expansionary developments were taking place when the economy was growing at a low rate or even negative rates as table 2.1 above indicates. Therefore it can not be ruled out that these development contributed to the inflationary pressures prevailing in the economy.

1. See Kilindo (1982) and Table 2.4 below.

Commercial bank lending to the non government sector has however been declining for the period 1966 - 1984. It was 70.2% of the money supply in 1966, declining to 60.2% in 1980 and 36.3 per cent in 1984. During the period 1984 - 1988 a substantial lending was directed to Cooperative Unions; raising credit expansion to more than 40%.

While the two components of money supply i.e. claims on the government and domestic lending to non government sector have claimed a large proportion, the third component, net foreign assets' proportion has drastically decreased from 53.1 per cent in 1966 to 0.64 per cent in 1984. The share of net foreign assets in total money supply started a drastic fall in 1973 to 1974 from 44.1 per cent to 20.5 per cent. During 1977/78, the fall was sharpest, from 28.6 per cent to 2.4 per cent.

The trend of the Net Foreign Assests is likely caused by the drought conditions prevalent in the country, and the external sector of the economy. Output for export declined as a result of the drought, while at the same time increasing the need for imports of food and other items. The oil crisis accompanied the drought and this resulted into a depletion of the foreign exchange reserves.

Table 2-3: <u>Domestic Credit by Banks, Mill. Shs.</u>

Year	To Government	To other Sectors	Total	Govt. % of Total	Growth of Other %
1970	285.1	1344.3	1629.4	17.4	
1971	491.7	1502.1	1993.8	24.6	11.7
1972	522.1	1547.0	2069.1	25.2	2.9
1973	621.4	1819.5	2431.9	25.2	17.6
1974	1448.5	2887.5	4346.0	33.3	59.2
1975	2210.2	3349.6	5559.8	39.8	15.6
1976	3223.9	3672.3	6896	46.7	9.6
1977	2886.8	4391.7	7278.5	40.0	9.6
1978	4605.5	6051.4	10656.9	43.2	19.5
1979	7963.5	6732.0	14695.5	54.2	37.8
1980	10899.5	7346.4	18245.9	59.7	11.2
1981	13844.1	8482.3	22326.4	62.0	9.2
1982	17537.0	9537.3	27074.3	64.7	15.4
1983	20659.1	10642.8	31301.9	66.0	12.0
1984	24459.0	12922.2	37381.2	65.8	11.6
1985	32278.9	17678.8	49957.7	64.6	36.8
1986	32555.8	27735.1	60290.9	54.0	56.9
1987	33454.5	55042.5	88497.0	37.8 *	98.5
1988	36342.5	65121.2	101463.7	35.8 *	18.3

*Govt Resorted to Capral External loans & Grants, rather than improvement in budget

<u>Source</u>: BOT Economic & Operation Report 1984, 1988

2.3 Explanatory Factors Behind Performance

The economy's vulnerability to both external and internal shocks has been pointed as being the centre of the crisis. Terms of trade deterioration in the late seventies and early eighties, poor export performance and the government

inflexibility in reducing spending during downward economic swings have been the major of causes the crisis.[11] Balance of payments problems caused large deficits, inflation and low levels of capacity utilization.

The major external shocks which have a major economic consequence to Tanzania are the first oil shock of 1973, and 1978/79 war against Idi Amin which cost Tanzania about 13 per cent of GDP.[12]

The increase of oil prices by 80 per cent between 1978 and 1986[13] and the world recession of the late 1970s and early 1980s had the impact of weakening primary commodity markets and deterioration of terms of trade. The terms of trade for Tanzania declined by 12.3 per cent over the period.[14] The oil import bill rose from 26.5 per cent of total export earnings in 1978 to 56 per cent in 1982.[15] A substantial part of the cost of the war with Idi Amin was in foreign exchange. This event which coincided with the external shock increased the balance of payments crisis and widened the government budget deficit and thus increased inflationary pressures.

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[11]. See Ndulu (1985).

[12]. Ndulu Op. cit.

[13]. World Bank (1989).

[14]. See ILO (1982).

[15]. URT, (1981).

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Decline in export volume has been a major factor behind the balance of payments crisis of the last five years. The six most important agricultural export crops contributing on average 60 per cent to total export earnings started declining in volume in 1973/74. For the period 1974/75 and 1982/84 coffee production grew at an average annual rate of 0.4 per cent, sisal declined at an annual rate of 10.0 per cent between 1974/75 and 1984/85. Tobacco grew at an annual rate of 4.1 per cent; cashewnut declined at an annual rate of 10.4 per cent, and tea registered a 1.1 per cent increase during 1974/75 and 1983/84. Cotton registered an annual decline of 5.2 per cent on the average between 1974/75 and 1983/84.[16]

Frank Ellis[17] analysed the agricultural pricing policy in Tanzania and pointed out that the policy generated a fall in real prices paid to producers and particularly relative price of export crops (to food crops) and as a result farmers substituted crop production away from export crops that were crutial for narrowing the balance of payments deficits. Over the period 1969-78, the produce share of export price declined from 70 to 55 per cent in case of cashew, from 70 to 45 per cent in the case of cotton, from 61 to 48 per cent in the case of tobacco, and from 81 to 45 per cent in the case of coffee.

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[16]. URT (1985).

[17]. This is according to Elis (1985).

While the economy was experiencing the above trend the government pursued an expansionary policy, increasing recurrent expenditure by 49 per cent between 1978 and 1979. This resulted in a movement from a budgetary surplus of 518.8 million shillings in 1977/78 to a budget deficit of Shs. 1,483 million in 1978/79. To cover this deficit and the development budget, the government resorted to borrowing from the banking system. Government bank borrowing rose from at 232.3 million shillings in 1977/78 to 5,200 million shillings in 1984/85. By 1988/89 bank borrowing was cut down to 2583 million shillings following expenditure restraints by Government and for more reliance on foreign loans and grants.

The government has increasingly faced the major task of promoting economic and social development in all aspects of the economy. Hence through development plans the government has directed its expenditure to the immediate improvement of the people's welfare. It has tried to improve their standard of living by increasing their consumption and provide the necessary social and economic infrastructure as a basis for the long term development. The government has gone further to play the role of entrepreneur and to participate directly in production. It has therefore continued to implement development projects and thus increasing development expenditure. From 1977/78 to 1984/85 development expenditure increased from 3,308 million shillings to 6,560.5 million shillings. This resulted in an expanded public sector and the governments administrative

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machinery leading to increase of recurrent expenditure from 4,702.5 million shillings in 1976/77 to 18,119.7 million shillings in 1984/85, an almost 400 per cent increase. Most of this was directed towards supporting social services, education and health, debt servicing and parastatal subsidies.

While expenditure has been growing at a fast rate, the growth of revenue has been slow. The decline in imports has caused the share of customs and excise duty to decline. This being the major contributor to tax revenues, it had an impact on total revenues. Tax revenue slowed down due to the decline in domestic production also. The importance of tax revenue follows from the fact that on the average it contributes over 80 per cent to recurrent revenue. Sales tax contributes over 30 per cent to total tax revenue.

The movements in revenue and expenditure meant the government had to run budget deficits, which had to be financed by domestic or foreign sources. Most of the domestic borrowing is from the banking system. Borrowing from the banking system has been financing between 49.0 per cent to 54.0 per cent of the total recurrent deficit and capital expenditure requirements between 1978/79 and 1988/89. The mechanism is that the government hands over its securities to the central bank on the backing of which the central bank issues paper money. This has had the impact of inducing a high average growth rate of money supply. This combined with reduced commodity supply fuelled the inflation rate. Money supply growth has been 25 per cent per annum

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on average for the period 1978-84 and inflation has stood at an average of 28.4 per cent over the period.

The government has an annual finance and credit plan where it sets among other targets, the annual money supply growth rate. There have however been problems of adhering to the projected levels of money supply growth. Among the causes of the failures in the finance and credit plan is the lack of coordination between financial planning with physical planning, which would ensure that monetary variables grow at the rate comparable with other macro economic variables. The actual rates of money supply growth has therefore exceeded the planned rates, in most of the years since financial planning started. (see Table 2.4)

There were statutory limits of government borrowing from banks (before they were repealed in 1978) as set in the Bank of Tanzania Act but these were surpassed in most cases as the bank is owned by the central government, and thus limiting its powers. The government has failed to control the principal instruments of fiscal policy i.e. government revenue and expenditure despite its recognition of the importance of budgetary policy in controlling money supply.

	Growth in Money Supply			Recurrent Revenue			Recurrent Expenditure			Govt. Non-Bank Borrowing			Bank Borrowing			External Sources		
	P	A	(D)	P	A	(D)	P	A	(D)	P	A	(D)	P	A	(D)	P	A	(D)
1973/74	12	23.0	91.7	-	3023	-	-	2785	-	175	196	(12)	275	521	(89)	6868	481	-45
1974/75	8	25.0	212.5	3661	3945	(8)	3461	3961	(15)	245	362	(48)	300	834	(178)	1198	2225	(+86)
1975/76	10	28.3	183	3830	3918	(2)	3630	3715	(2)	400	336	(-20)	150	570	(280)	1430	1031	(-28)
1976/77	-	18.5	-	4563	6129	(34)	4183	4702	(12)	360	307	(-15)	500	-	-	1802	1402	(-22)
1977/78	20	13.7	-37.5	5696	6082	(7)	5461	5563	(2)	438	563	(29)	700	323	(-67)	2222	1369	(-39)
1978/79	14	37.7	97.9	6967	6812	(2)	6719	8295	(24)	440	454	(3)	711	3057	(330)	3583	2427	(-32)
1979/80	20	31.6	108	7788	7157	(8)	7469	9229	(24)	493	671	(36)	1667	2804	(68)	4219	2320	(45)
1980/81	18.5	22.0	18.9	8992	8872	(-1.3)	9342	10136	(8.5)	551	756	(36)	1900	2916	(535)	4050	1872	(-54)
1981/82	20.5	21.8	6.3	10081	10960	(9)	11605	13215	(-2)	800	783	(-2)	2850	3278	(15)	3992	1755	(-54)
1982/83	23.3	25.4	4.5	11800	13645	(17)	14144	14872	(5)	900	814	(-10)	3223	4206	(31)	2584	1852	(-28)
1983/84	22.7	25.3	11.5	12500	15467	(24)	15620	18182	(16)	1000	788	(-21)	5200	4699	(-10)	2750	1242	(-55)
1987/88	10.5	24.0	128.5	4600	47479	(1.8)	60071	59263	(1.3)	2000	2354 7	(1.8)	236.0	2582.9	(994)	-	-	-

Notes: P = Planned, A = Actual, D = Divergence (%).

Source: Rutasitara (1985) and BOT Economic and Operations Report.

The above outcomes could be caused by an accomodative monetary policy resulting in a self generating inflationary mechanism. Growing money supply generate inflation which the authorities seeing a rising cost of government services, finance by further creation of money. This follows from the

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fact that government revenue and expenditure are themselves affected by the on-going inflation. Inflation raises the cost of government services and investments and increases the budgetary demands for distributionary transfers while simultaneously increasing the amount of revenues collected. Expenditure however adjusts more rapidly than revenue to a change in the price level. A budgetary deficit emerges which if financed by central bank borrowing leads to more money creation. This process links money supply and inflation in a two way relationship. Cagan (1956), Sargent and Wallace (1973) and Aghevli and Khan (1978) recognized the importance of the feedback from inflation to the expansion in money supply and argued that the government's resorting to money creation in order to finance its expenditure might be the cause of the feedback.

In Tanzania capital markets are narrow with the number of potential transactions and the volume of securities very small. The government securities are mainly left to the banking system, which takes over 60 per cent of the open market operations. With the persistent deficits in the budget, the government has resorted in most cases to money creation in order to finance its expenditure. It can therefore not be ruled out that the budgetary mechanism has subsequently contributed to high money supply growth unaccompanied with output growth and thus exerting inflationary pressures.

2.4. Inflation in Tanzania

2.4.1 <u>A Survey of Trends and Causes</u>

Between 1964 and 1965 Tanzania experienced a price stability as the two indicators of inflation at the national level - the NCPI and the National Food Price Index - experienced marginal changes rising at average annual percentage rates of 0.3% and 3.2% respectively (Table 2.5).

Towards the end of the First Five Year Plan (FFYP) 1968-69, inflationary pressures seem to have built up as is indicated by consumer prices. The inflationary pressures accelerated into relatively high inflation levels in the first half of the Second Five Year Plan (1968-71). This period had began with the devaluation of the Tanzanian shilling parallel to the US Dollar coupled with the country experiencing a pronounced agrarian and foreign exchange crisis. Food and non food prices rose quite substantially. Imported items prices increased sharply at the beginning of the period particularly fuel and other manufactured imports.

Between 1972 and 1975 the NCPI rose by an average of 16.1% p.a. with highest levels recorded in 1974 and 1975 at 19.7% and 25.9% respectively. The severe food supply problems prevailing during the second half of the period is reflected in the higher rate of increase in the National Food Price Index which was 21.8% reaching a high 35.0% and 30.6% in 1974 and 1975 respectively. Other inflation indicators, the Retail Price Index, Cost of Living Index, Food Price Index for Dar es Salaam

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also indicated prevalence of high inflationary pressures in the country during the period.

Table 2.5:   Some Indicators of Inflation 1964-1988 in Annual
             Percentage Changes

	1964-1968	1968-1971	1972-1975	1976-1978	1978-1980	1981-1984	1985-1988
1. General Price Index (NCPI)	0.3	3.7	16.1	10.7	22.0	29.5	31.7
2. National Food Price (Dar es Salaam) Index	3.2	4.9	21.8	9.8	19.8	30.3	22.5
3. Retail Price Index° (Dar es Salaam)	4.6	6.5	25.1	18.4	17.3	21.0**	38.0**
4. Food Price Index° (Dar es Salaam)	3.5	7.5	28.3	19.1	17.3	18.9**	37.0**
5. Cost of Living* Index (Dar es Salaam)	4.2	3.1	24.4	14.1	22.0	25.7**	34.5**
6. Cost of Living Index (18 towns 1969=100)	n.a	4.1	15.7	10.2	12.9	n.a	n.a

Note: n.a = not available
         °   = Dar es Salaam minimum wage earners for 1964-1980 and middle
                grade civil servants for 1981-88.
         *   = Dar es Salaam middle grade civil servants
         * * = Dar es Salaam middle grade civil servants up to 1987

Source: Ndyeshobola (1983) for 1964 - 1980;

         BoT Economic and Operations Report (1988) for the
         rest.

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The period 1976-78 was the economic revival period in which agricultural production and particularly food production increased substantially. This was reflected in the moderate inflationary pressures with most of the indicators substantially falling below the previous period levels. The rate of growth of food price slowed faster than other commodities and slowed down the NCPI. These deflationary pressures were however short lived as inflationary pressures picked up towards the end of the seventies. This period's rate of inflation was higher than the mid seventies. The second round of fuel price increases and a second round of pronounced balance of payments crisis accompanied this period.

After 1981, the average rise in the NCPI was 29.5% between 1981 and 1984 and 31.7% between 1985 and 1988. However the rate of inflation was declining after 1985 when it reached 36.1%. The national food price index marked a decline after 1984 and hence pulling down the NCPI.

The recorded official price changes are however, done in the advent of the government supervised price control system.

Starting as early as the 1970s and running through the colonial period price control did not become effective on a national level until 1973 when the National Price Commission was established formally. During the first round of high inflationary movements in the country (1974) a total of 1064 groups of commodities of which 602 were domestically produced

and 462 imported were already on the list of price controlled items.

One of the main objectives of the National Price Commission was to determine the reasonable price structures on a national basis and to provide for their orderly variation when necessary. Among the factors to be taken into account in determining the price structures were:

(a) the necessity of the commodity to the community;

(b) protection of incomes of peasants and workers from the effects of unnecessary and unjustified price increases;

(c) to ensure the continued ability of the government to finance development programmes and recurrent expenditures; and

(d) to provide circumstances under which local manufacturing, processing and service industries are able to maintain efficiency and expand their business. (URT 1973).

Despite the good objectives, price control has faced many problems, among which include dependence of the economy on imported inputs which are outside the commission's control; severe shortages of the consumer goods; conflicting objectives which may lead to resource misallocation; and the fact that the number of controlled items is limited and thus does not cover the whole range of consumer goods. The last problem has

increased as the list of items have decreased in recent years.

As inflation became more and more serious, government attention has been drawn to it, designing policy packages after price control could not solve the problem. Policy packages like the National Economic Survival Programme (NESP I and NESP II); the Structural Adjustment Programme (SAP); and the Economic Recovery Programme (ERP) have partly addressed themselves to this problem of inflation. This is because the inflation has had a perverse impact on output and productivity in general. It has eroded the purchasing power of wages as real wages have been on the decline. It has also had adverse impacts on the balance of payments, on real interest rates and on government budget deficits. All these adverse effects have contributed considerably to the worsening of the economic crisis in Tanzania.

Various studies have discussed causes of inflation, some stressing structural factors, others emphasizing monetary or demand-side factors and others examining both supply and demand sides of the phenomenon [see for example Rwegasira (1974, 1976a, 1976b), Ndulu (1975), Kuuya (1975), Rwegasira and Kanneworf (1980), Hyuha and Osoro (1982), Kilindo (1982), Ndulu and Hyuha (1990).

The variety of factors which have been pointed out as being the causes of inflation in Tanzania are given in Rwegasira and Kanneworf (1980) and include the following:

(a) Structural dependence of the Tanzanian economy on foreign economic systems. The open dependence is complicated by asymmetry in national production and consumption patterns in as much as the economy "generally producing what we do not consume and consuming what we do not produce". One consequence of the above is "imported inflation".

(b) Rising costs of imported inputs and finished goods, especially fuel prices;

(c) Poor performance of foreign trade leading to balance of payments problems and inability to import for domestic production and supplement consumption;

(d) Declining productivity and efficiency in the economy, leading to rising costs with effects transmitted through cost accomodating pricing methods;

(e) Poor performance of agriculture leading to demand pressure on available agricultural products and foreign exchange problems;

(f) Population growth and consequent pressure on available resources;

(g) Unfettered government spending leading to heavy government bank borrowing; and

(h) Excessive money supply in the economy.

Studies on inflation have tried to touch on one or two of the above mentioned causes on inflationary pressures in Tanzania[18].

2.4.2 An analysis of the Relationship between the Budget Deficit and Inflation in Tanzania

Since the relationship between the Budget Deficit and inflation is due to the money supply process, it would be worthwhile to have a short description of the process, which we give below.

2.4.2.1 Money Supply Determination

We have shown above that a chain of events occur from for example an external event as oil price increases, import price increases to balance of payments disequilibrium to domestic budget deficits and consequently money supply. We shall now try to show that this chain of effects is a result of the flow of money supply determination.

The general practice in monetary theory has been to treat the quantity of money as determined directly by the monetary authority. However, the minimum required reserve ratio on time deposits and the ratio between currency and deposits held by the public are important in determining money supply.

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[18]. For a survey of the literature on inflation in Tanzania see chapter 3.

A less mechanical theory of central bank control is evolved when these ratios are treated as behavioural relationships reflecting asset choices rather than exogenous variables and thus including the part played by other financial intermediaries.

With an extention to allow for the different reserve requirements against time and demand deposits and the demand for money by financial intermediaries, the mechanical money multiplier approach is still used. Where money supply (M) is the product of the money multiplier (m) and the monetary base (B) or high powered money; M = mB.

Changes in the monetary base (B) can be brought about by changes in lending to non-government domestic sector, net claims on government by the banks and net foreign assets of the banking system.

The money multiplier (m) depends on the public's cash ratio (a) and on the actual banks' cash reserve ratio (b), which are calculated on the basis of currency in circulation outside banks, cash reserves and total private deposits. Banks's borrowing requirements depend on the level of the excess reserves (E), on interest rates on loans (RI), and government securities (Rs) and on the discount rate (Rd).

The banking systems net foreign assets depend on the components of the balance of payments i.e. balance of transfers (BT), balance of services (BS), Balance of Capital Account (BC) and the Trade Balance (TB). The government's demand for loans

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from banks is a function of government revenue (G Rd + GRC) and expenditure (GEx), the later being a function of gross domestic product (GDP) and government investment (Ig).

The excess reserves depend on the demand for loans (Ld), the rate of interest on government securities (Rg) and Banks cash reserves (Cb). Total deposits supply depends on the rate of interest on deposits, on the monetary income (Ym) and extension of bank facilities. The public's demand for currency is determined by real income (Yr) and the rate of interest (Rs).

The above process can be summarized by a balance sheet approach[19]. The central bank and commercial banks are taken to be the determinants of money supply.

The Central Bank's balance sheet shows that its liabilities consist of currency held by the public, Cu, and Commercial bank reserves, RR. The funds so obtained are used to hold net foreign assets, NFA, and to extend credit to the government NCG. The Central banks net worth is the balancing item (NW).

The Central Banks Balance Sheet

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     ----------------------
     Assets      Liabilities
     ----------------------

      NCG        NW

      NFA        CU

                 RR
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[19]. See Anand and Wijnbergen (1989).

Base money comprises of currency on the hands of the public and required reserves held by commercial banks at the central bank.

The Commercial banks hold reserves RR, and make loans Ld. On their liabilities side they accept from the public demand deposits, DD, and time deposits TD. The balance sheet of commercial banks would therefore be:

Commercial banks

Assets	Liabilities
RR	DD
LD	TD

The Integrated banking system's balance sheet can be written as:

Integrated banking system

Assets	Liabilities
NFA	NW
NCG	CU
Ld	DD
	TD

The balance sheet of the integrated banking system can be rewritten using standard definitions of the various concepts of money supply as follows:

Integrated banking system

Assets	Liabilities
M	M_2
Ld	

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The above balance sheets summarise the sources and flow money supply in Tanzania - the main components being bank lending to non-government domestic sector (Ld); net claims on government (NCg) or government borrowing from the banking system and net foreign assets of the banking system (NFA). In the above framework, fiscal operations of the government would affect money supply in that the 'NCG' item on the assets side of the integrated banking system balance sheet is raised, and this is balanced, in most times, by currency issue (CU) on the right hand side of the balance sheet. This therefore increases money supply.

2.4.2.2   The Budget Deficit-Inflation Relationship

Two monetarist tenets have been the basis of past analysis of the relationship between government budget deficit and inflation. These are (i) the Cagan Model[20] which emphasizes a one track relationship between inflation and government deficit in a way that the latter causes the former; and (ii) the Aghevli and Khan two-track model[21] introducing a feedback between inflationary developments and government budget deficits. In the former tenet government deficits would result from exogenously determined government expenditure increases (a policy variable) and revenue collection lags. In the second

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[20]. See Cagan (1975), in Friedman ed. (1975).

[21]. See Aghevli and Khan (1978).

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tenet, however in addition to the above factors, government budget deficit would also be a result of domestic inflation. The argument here is essentially that inflation leads to widening of fiscal deficits financed through the banking system (in particular the Central Bank) leading to further increases in the money supply and further increases in prices.

The identification of this two-way relationship between inflation and government budget deficit in the Aghevli and Khan model is quite important in our case, for it takes into consideration the plausible reasons for expecting government expenditures in developing countries to adjust to nominal income increases arising from inflation.[22] Reasons behind that may include the absence of built-in stabilizers in the government budget, as they are clearly pointed out in Sharpley.[23] This would also mean that even if the government fully recognizes the need to restrain expenditures during periods of inflation, it may still find it difficult to reduce its past commitments in real terms. This tenet identifies an important element of the inflationary consequences on the economy.

However, a complete analysis of the basic mechanism between inflationary developments and government deficits in an underdeveloped country requires a look into the effect of inflation on revenue developments.

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[22]. See Sharpley (1981) and Ndyeshobola (1983) for the case of Tanzania.

[23]. See Sharpley op. cit.

Thus as identified by Ndyeshobola (1983), that the inflationary mechanisms undermining the fiscal balance operate via:

(a) expenditure increases in which

    (i) nominal expenditures adjust to inflation in an attempt to maintain real expenditures;

    (ii) inflation, via its effect on the balance in domestic output and the balance of payments, generates pressures on the part of the government expenditures to maintain either

       - the level of output by subsidizing high cost (and probably ailing) production units, and/ or

       - the level of real consumption by subsidizing prices of high - cost and/or basic consumer and producer inputs; and

    (iii) Cost of servicing government's use of total credit facilities (domestic and external, and short and long-term) to bridge the gap between resource availability and demand planced upon it; and

(b) undermining government revenue base in the sense that inflation would:

    (i) tend, via its effect on the balance of payments, to reduce the amount of revenue from

       - import taxes as resource constraints work against importation of highly taxable consumer goods, and

       - sales and excise duties as resource constraints also undermine the supply of taxable industrial output in the economy,

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(ii)   the emerging relation between the investment budget and aid
       resources (as own resource availability tightens around
       recurrent spending) implies a further narrowing of the taxbase,
       for aid resources would most of finance developmental imports
       that command low tax rates; and

(iii) the emergence of parallel markets and the expansion of informal
       sector would also tend to undermine the government tax base, for
       incomes generated in this sector and in these markets tend to
       fall outside government tax-ability.

Therefore as inflation rises government budget deficit
would tend to increase via the above mechanisms. Given the
large size of the state sector the above process will be more
pronounced. In the section below we shall try to look at the
empirical basis of the mechanism in the case of Tanzania.

2.5   Analysis of Government Finances

Tanzania, like most developing countries is faced with the
major task of promoting economic and social development in all
aspects of the economy. Through development plans the
government directed its expenditure to the immediate improvement
of the people's welfare. It has to increase their consumption
and provide the necessary social and economic infrastructure as
a basis for the long term development. Going further than that

the government plays the role of enterpreneur and participates directly in production. This has resulted into rapid expansion of the public sector which has meant more expenditure on the part of the government.

Table 2.6 Trends in Government Finances. Mill T(shs)

	Development expenditure		Recurrent Expenditure		Total Expenditure		Mill. TShs. NCPI 1970 = 100
	Nominal	Real	Nominal	Real	Nominal	Real	
1970/71	829.0	829.0	1631.4	1631.4	2460.4	2460.4	100
1971/72	738.6	710.2	1780.4	1711.9	2579.0	2422.1	104.0
1972/73	744.1	658.5	2225.9	1971.6	2270.0	2630.1	112.9
1973/74	1642.0	1318.9	2785.8	2339.6	4427.8	3558.5	124.9
1974/75	2225.0	1493.3	3961.1	2457.1	6186.1	3950.4	149.0
1975/76	2253.0	1198.4	3715.6	1980.6	5968.5	3179.0	187.6
1976/77	3244.3	1618.1	4702.5	2345.4	7946.8	3964.5	200.5
1977/78	3303.6	1651.8	5563.3	2485.8	8866.9	4137.6	223.8
1978/79	4740.0	2117.9	8295.0	3303.5	13035.0	5421.4	251.1
1989/80	5430	1915.3	9442.0	2560.2	14872.0	4475.5	283.5
1980/81	5600	1519.7	10230	2776.1	15830.0	4295.8	360.5
1981/82	5185.4	1118.5	13214.0	2850.3	18399.4	3968.8	463.6
1982/83	4404.0	736.9	14871.5	2488.5	19275.5	2565.4	597.6
1983/84	5047.0	1664.5	18182.0	1759.0	23229	2423.5	759.5
1984/85	6560.5	634.7	18119.7	1752.0	24680.2	2386.7	1033.6
1985/86	5817.4	422.2	24402.3	1988.8	33219.7	2411.0	1377.8
1986/87	15091.1	827.3	40390.1	2214.1	55481.0	3041.4	1824.2
1987/88	17255.0	733.8	60071.0	2554.8	77326.0	3288.5	2351.3

SOURCE: BOT: Twenty Years of Independence;   URT Economic Survey 1988; TET Vol. 1; No. 4.

2.5.1   Government Expenditure

Government expenditure as a percent of GDP has grown from 29% in 1970/71 to 39% in 1987/88, after having registered two peaks of 43 and 47% in the fiscal years 1974/75 and 1979/80, respectively (see Table 2.7). The high ratio of expenditure in 1974/75 was a result of the first oil shock and draught of 1974 requiring the government to import large quantities of food grain at steeply rising international prices. High expenditures in 1979/80 was caused by three major events. First, in 1978 international oil prices abruptly increased. Second, the breakup of the East African Community in 1977 forced Tanzania to create national facilities to replace common services of the community. Services disrupted by the break-up were: customs; -income tax; telecommunications; rail, water, and air transport. Third, in 1978, Kagera region was invaded by Idi Amin. The government's response was rapid build up in defence expenditures, which grew from shs. 629 million in 1977/78 to shs 1288 million in 1980/81 or from 18.9% to 22.8%, respectively of total recurrent expenditure. In a nutshell these events led to fast growth in government expenditures as will be demonstrated shortly.

Table 2.7: Recurrent Revenue, Recurrent Expenditure, Development Expenditure, ~~Total~~ Expenditure, and Overall Deficit as percent of GDP 1970/71 ~~Total Expenditure, and Overall Deficit as percent of GDR 1970/71~~ 1987/88

Year	Recurrent ~~Expenditure~~ Revenue	% Change	Recurrent Expenditure	% Change	Development Expenditure	% Change	Total Expenditure	% Change	Government Deficit	% Change
1970/71	20.5	-	20.9	-	10.1	-	29.2	-	0.3	-
1971/72	21.0	2.6	21.2	1.8	8.7	-13.3	28.9	-1.1	0.8	-393.0
1972/73	22.9	8.8	23.2	9.3	9.4	8.2	31.5	8.7	0.6	-200.0
1973/74	26.1	14.2	21.9	-5.6	14.3	51.0	35.1	11.8	-0.2	-129.0
1974/75	28.1	7.7	23.8	28.9	15.9	11.1	43.4	23.4	-0.1	-1.8
1975/76	23.9	-15.0	22.4	-20.6	12.9	-18.9	32.6	-24.8	-0.1	-1.8
1976/77	22.8	-4.7	23.2	3.3	12.7	-0.9	33.0	1.2	-8.0	13250.0
1977/78	25.8	13.2	22.4	-3.3	15.1	18.3	35.2	6.8	-5.3	-33.2
1978/79	22.5	-12.6	26.7	19.2	16.6	10.3	42.9	21.8	19.2	259.8
1979/80	23.7	5.4	27.8	4.1	15.3	-8.0	47.2	10.0	-19.5	1.2
1980/81	22.9	-3.7	27.8	0.0	11.5	-24.6	39.4	-16.6	-16.5	-15.2
1981/82	21.4	-6.5	29.4	5.6	10.2	-11.6	39.6	0.5	-18.2	10.1
1982/83	23.9	11.8	27.8	-5.6	8.4	-17.9	36.0	-9.0	-12.2	-32.9
1983/84	21.6	-9.9	25.5	-8.2	7.1	-14.9	32.6	-9.5	-11.0	-9.7
1984/85	23.8	10.6	27.6	8.2	8.9	-24.9	36.5	11.9	-12.6	-14.6
1985/86	20.4	-14.5	22.1	-19.9	7.2	-18.6	29.3	-19.6	-8.9	-29.1
1986/87	20.8	2.2	24.5	11.0	4.4	-39.0	34.0	15.9	-13.2	47.1
1987/88	24.6	18.3	29.1	18.8	4.8	9.5	39.1	14.9	-14.9	9.6

Source: URT Economic Surveys

During the 1970/71 – 1977/78 government expenditure grew at an average annual rate of 24.7% compared to a rate of 25 between 1978/79 and 1987/88. Following deliberate expenditure cutting

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measures undertaken by the government during the Structural Adjustment Programme (SAP), a significant decline in expenditure was achieved between 1983/84 and 1984/88 period, government expenditure rose from shs 2404 million in 1970/71 to shs 75297 million in 1987/88, or increased thirty - fold (see table 2.8). In the period under review government expenditure grew at an average rate of about 25% per annum, in nominal terms (see Table 2.8) compared to only 6% in real terms (table 2.9).

2.5.2   Recurrent Expenditure

The ratio of recurrent expenditure to GDP rose from 20% in 1970/71 to 29% 1987/88 (Table 2.7). The trend of the ratio of recurrent expenditure to GDP has significantly fluctuated between 20 and 29%, with the highest ratios: 28.3; 29.4; and 29.1% recorded in the fiscal years 1974/75, 1981/82, and 1987/88, respectively. The share of recurrent expenditure to total expenditure has ranged from 59 and 78% (Table 2.10). After 1980/81, the shares have exceeded those that existed in the 1970's.

Table 2.8:   Recurrent Expenditure, Development Expenditure, Total Expenditure, and Overall Deficit (In Shs Million)

Year	Recur-rent of Real.	% Change	Recurrent Expenditure	% Change	Development Expenditure	% Change	Total Expenditure	Government Deficit	% Change	GDP at Current Prices	GDP at Current Prices / Recurrent as % of Total Expenditure
1970/71	1609.2	-	1717.6	-	829.2	-	2420.5	-	22.9	-	8222
1971/72	1959.2	10.5	1880.6	9.5	772.8	6.8	2559.5	6.4	-72.2	415.2	8846
1972/73	2294.9	23.4	2331.6	24.0	948.7	22.5	3156.6	22.3	56.9	76.8	10932
1973/74	3002.4	30.8	2520.4	8.1	1642.0	73.1	4040.3	28.0	19.8	134.8	11490
1974/75	3942.3	31.3	3961.1	57.2	2225.0	35.5	6079.5	50.5	-23.7	19.7	14010
1975/76	4062.0	30.4	3812.0	-3.8	2188.0	-1.7	5542.0	8.8	10.8	45.6	16988
1976/77	4933.7	21.4	5022.0	31.7	2763.6	26.3	7148.5	29.0	-1734.4	15959.2	21653
1977/78	6629.3	34.4	5762.2	14.7	3877.4	40.3	9081.1	26.7	-1374.7	-40.7	25698
1978/79	6441.4	-2.8	7640.3	32.6	4756.8	22.7	12273.6	35.4	-5501.5	300.2	28582
1979/80	7679.6	19.2	8996.0	17.7	4947.0	4.0	15259.4	24.3	-6296.1	14.4	32317
1980/81	8571.4	11.6	10427.4	15.9	4327.0	12.5	14755.2	-3.3	-6183.8	1.8	37454
1981/82	9406.0	9.7	12903.0	23.7	4484.0	3.6	17387.0	17.8	-7981.0	29.1	43906
1982/83	12581.0	33.7	14589.0	13.1	4404.9	-1.8	18993.6	8.9	-6412.0	-19.6	52546
1983/84	13506.0	7.3	15944.0	4.3	4465.9	1.4	20409.0	7.8	-6903.0	7.6	62608
1984/85	18638.0	38.0	21542.8	35.1	6966.3	55.9	28509.1	39.7	-9871.1	43.0	78143
1985/86	22031.5	18.2	23871.4	10.8	7838.6	12.5	31710.0	11.2	-9678.5	1.9	108083
1986/87	29321.0	33.1	34531.5	44.6	6228.0	-20.5	47870.4	50.9	-18549.4	91.6	140793
1987/88	47479.4	61.9	56151.2	62.6	9325.7	49.7	75296.9	57.3	-272817.5	50.0	192696

Source: URT Economic Surveys, Various years.

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Recurrent expenditure increased at an average annual rate of 20% between 1970/71-1977/78 compared to about 36% in the 1978/79-1987/88 period (Table 2.7). A higher growth rate in expenditure after 1977/78 was attributable to expansion of the public sector, expansion in public administration expenditure, provision of social services (education particularly Universal Primary Education (UPE), health and water), to mention but a few. During the 1970/71-1987/88 period recurrent expenditure grew at an average annual rate of 25% in nominal terms compared to only about 5% in real terms (see Tables 2.8 and 2.9).

2.5.3   Development expenditure

The ratio of development expenditure to GDP declined from 10% in 1970/71 to about 5%, having recorded about 17% in 1978/88, after which a continous decline was experienced (Table 2.7). Despite the proportion of expenditure allocated to development projects being below 50% over the period under review, development expenditure grew at an average rate of about 29% per annum compared to that of recurrent expenditure of 20% in the 1970/71-1977/78 period. However, this trend changed significantly with development expenditure recording an average annual growth rate of 11%, while recurrent expenditure recording 29% in the 1978/79-1987/88 period (table 2.8). Such a drastic decline in growth in development expenditure after 1977/78, as explained earlier, was caused partly by shelving of some projects under SAP. In addition, there was an acute shortage

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of foreign exchange necessary for the continuing projects in the
1980's. For the entire period, development expenditure grew at
an average annual rate of 19% in nominal terms and at only 1.5%
in real terms (see tables 2.8 and 2.9, respectively).

Table 2.9:   Trends in Real (handwritten) Recurrent Revenue, Recurrent Expenditure, Development Expenditure, Expenditure, and Overall Deficit, as percent of GDP 1970/71 Total Expenditure, and Overall Deficit as percent of GDR 1970/71=1987/88

Year	Recur- rent Revenue	% Change	Recur- rent Expen- diture (Real)	% Change	Real Develop- ment Expen- diture	% Chang e	Real Total Expen- diture	% Change	Real Govern- ment Deficit	% Change
1970/71	2959.9	-	3020.7	-	1458.3	-	4228.8	-	40.3	-
1971/72	3214.9	8.6	3251.9	7.6	1336.3	-8.3	4425.9	4.7	124.8	309.7
1972/73	3721.9	15.8	3781.4	16.3	1538.6	15.1	5119.4	15.7	92.3	173.9
1973/74	4281.2	15.0	3595.9	-4.9	2341.4	52.2	5761.2	12.5	-28.2	130.5
1974/75	4718.5	10.2	4740.9	31.9	2663.1	13.7	43.4	23.4	-0.1	-1.8
1975/76	4317.1	-8.5	4051.4	-14.5	2325.4	-12.7	5890.1	-19.0	-11.5	-59.5
1976/77	4933.7	14.3	5022.0	24.0	2763.6	18.8	7148.5	21.4	-1734.4	15021.2
1977/78	5763.6	16.8	5009.7	-0.2	3371.1	22.0	7877.8	10.2	-1195.2	-31.1
1978/79	5169.7	10.3	6131.9	22.4	3817.6	13.2	9850.4	25.0	-4415.3	269.4
1979/80	5532.0	7.0	6480.7	5.7	3563.6	-6.6	10992.2	11.6	-4535.4	2.7
1980/81	5365.8	-3.0	6527.7	0.2	2709.3	-24.0	9237.0	-16.0	-3871.2	-14.6
1981/82	4994.2	-6.9	6850.9	4.9	2380.8	-12.1	9231.7	-0.1	-4237.5	9.5
1982/83	5703.6	14.2	6613.9	-3.4	1996.9	-16.1	8583.3	-7.0	-2906.9	-31.4
1983/84	5196.6	-8.9	6134.7	-7.2	1718.3	-13.9	7852.6	-8.5	-2656.0	-8.6
1984/85	5895.7	13.4	6814.5	11.1	2203.6	2842.9	9018.1	14.8	-3122.5	17.6
1985/86	5296.4	-10.2	5738.7	-15.8	1884.4	-14.5	7623.1	-15.5	-2326.7	-25.5
1986/87	5208.1	-1.7	6133.6	6.9	1106.2	-41.3	8502.9	11.5	-3294.9	41.6
1987/88	6332.3	21.6	7488.8	22.1	1243.7	12.4	10042.3	18.1	-3709.9	12.6

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2.5.4   Government revenue

Government expenditure requirements are financed through taxation and other sources like domestic bororrowing (bank borrowing and non-bank borrowing) and external loans and grants. Of these sources the most reliable and convenient one is taxation. In recent years taxes account over 90% of recurrent revenue (see Table 2.10) During the 1970/71-1987/88 the share of taxes in recurrent revenue has averaged around 84%. The ratio of tax to GDP has averaged around 19% over the period under consideration (Table 2.10). The major sources of tax revenue include import duty, sales taxes, income taxes, while non-tax revenue sources comprise mainly parastal dividends.

(a)   Recurrent revenue

The ratio of recurrent revenue to GDP rose from 20.5% in 1970/71 to 24.6% having hit a peak of 28% and 26% in the fiscal years 1974/75 and 1977/78 respectively (See Table 2.7). The high ratio in 1977/78 seems to have be attributable to the coffee boom of 1977. Recurrent revenue grew at an average annual rate of 26% during 1970/71-1977/78 compared to a rate of 23% during 1978/79-1987/88 period (See Table 2.8). Factors which seem to have been responsible for a slower growth of recurrent revenue after 1977/78 are: the decrease in imports caused by falling import capacity thereby reducing import duty, sales tax on imports revenues; a decline in income leading to low income tax revenues; poor export performance causing reduction in

export taxes revenue[24]; and poor performance of public enterprises resulting in low profits and hence reducing company

Table 2.10:   Composition of Recurrent Revenue 1970-87

	Recurrent Revenue (Shs.Mill)	Tax Revenue (Shs.Mill)	Growth in Tax Revenue (%)	Non-Tax Revenue (Shs.Mill)	Tax Revenue As Percentage of Recurrent* (%)	Recurrent Expenditure as Percentage Total Expenditure
1970/71	1683.0	1209.2	-	473.0	71.8	14.7
1971/72	1859.2	1307.8	8.1	551.4	70.3	14.7
1972/73	2294.9	1541.1	17.8	753.8	67.1	15.4
1973/74	3002.4	2255.4	46.3	747.0	75.1	19.6
1974/75	3942.3	2974.4	31.9	967.9	75.4	21.2
1975/76	4062.0	3129.0	5.2	933.0	77.0	18.4
1976/77	4933.7	3440.0	9.9	1493.7	69.7	15.9
1977/78	6629.3	5333.6	55.0	1295.7	80.4	20.7
1978/79	6441.4	5261.1	-1.3	1180.0	81.7	18.4
1979/80	7679.6	6147.9	16.8	1531.7	80.0	19.0
1980/81	8571.4	7908.4	28.6	663.0	92.3	21.1
1981/82	9406.0	8508.0	7.5	904.0	90.4	19.4
1982/83	12581.0	12529.3	47.4	51.7	99.6	23.8
1983/84	13506.0	13397.9	6.9	108.1	99.2	21.4
1984/85	18638.0	18482.5	37.9	155.5	99.2	23.6
1985/86	22031.5	21781.8	17.8	249.7	98.9	20.1
1986/87	29321.0	27406.6	25.8	1914.4	93.5	19.5
1987/88	47479.4	42556.7	55.3	4922.7	89.6	22.1

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[24]. Export taxes were abolished in 1981.

taxes and parastatal dividends. Apart from these reasons, tax revenues have not been adequate due to narrow tax base, poor (inefficient) tax administration and high tax rates both of which are argued to have caused tax evasion and less compliance (See Osoro 1990). During the period under review recurrent revenue increased from shs 1,683 million in 1970/71 to Shs 47,479 million in 1987/88, an increase of 28 times (Table 2.8). Recurrent revenue grew at an average annual rate of 24% in nominal terms and at only 6% in real terms over the same period (see Table 2.8 and 2.9).

2.5.5   Government deficit

It has been clearly demonstrated that the events that occured towards the end of the 1970s were responsible for rapid growth in government expenditure. Meanwhile the recurrent revenue sources did not perform well, particularly after 1978. Before 1978, the recurrent budget generated surplus which was used to finance part of the development budget, except in 1974/75 when a deficit was recorded due to both oil shock and draught of 1974 (Osoro 1989).

Since 1978, due to the events noted earlier and other factors, the recurrent budget has increasingly recorded huge deficits. Both the rapid growth of expenditures on one hand, and poor performance of recurrent revenue on the other hand, have led to growing huge overall government deficits (See Tables 2.8 and 2.9). In the entire period (1970/71-1987/88) under

Table 2.11:   Budget Deficit and Government Borrowing (1970-87.)

	Recurrent Budget Surplus (-Deficit) (Shs.Mill)	Overall Deficit (Shs.Mill)	Domestic Bowworing by Government (Shs.Mill)	Bank Borrowing (Shs.Mill)	Non-Bank Borrowing (Shs.Mill)	Bank Borrowing as % of Total Domestic Borrowing
1970/71	51.6	22.9	457.0	31.4	143.0	63.7
1971/72	78.6	72.2	289.0	174.0	110.0	60.2
1972/73	181.1	56.9	186.0	6.0	180.0	3.2
1973/74	237.9	-19.8	717.0	521.0	196.0	72.7
1974/75	-15.2	-23.7	1196.0	834.0	362.0	69.7
1975/76	202.9	-10.7	906.0	570.0	336.0	62.9
1976/77	1426.5	-1734.4	308.0	-	308.5	-
1977/78	518.8	-1374.7	950.2	23253.7	717.9	24.4
1978/79	-1483.0	-5501.5	3510.7	3056.7	454.0	87.1
1979/80	-1471.1	-6296.1	3075.0	2804.0	671.0	91.2
1980/81	-1264.0	-6183.8	3667.0	2916.0	751.0	79.5
1981/82	-2254.1	-7981.0	4061.4	3278.0	783.4	80.7
1982/83	-1726.5	-6412.0	4278.5	3464.5	814.0	80.9
1983/84	-2715.3	-6903.0	4797.3	4008.9	788.4	83.6
1984/85	-2193.5	-9871.1	4435.4	3310.4	1125.0	74.6
1985/86	-5081.3	-9678.5	6231.0	4925.0	1306.0	79.0
1986/87	-5891.0	-18549.4	4513.8	1656.3	2857.5	36.7
1987/88	-4621.9	-27817.7	2236.0	236.0	2000.0	10.5

SOURCE: URT, Hali ya Uchumi 1984 and 1988 and TET Vol.1, No.4.

review, the government budget registered deficits in all fiscal years except in 1970/71 and 1972/73. From 1973/74 the deficit grew from about shs 20 million to shs 27,817 million in 1987/88.

This is equivalent to an average annual rate of growth of ~~1093%~~ 168.6%.
The trend of deficits in the period under review has been
erratic though.   There was virtually a stagnation in growth of
deficits between 1976/77 and 1977/78 most likely due to the
coffee boom of 1976/77.   Overall deficit as a percent of GDP
grew from 0.2% in 1973/74 to 14% in 1987/88 having reached a
maximum of around 19% in the fiscal years 1978/79 and 1979/80
(Table 2.7).   The failure of the recurrent budget to generate
adequate surplus after 1978/79 led to government resorting to
bank borrowing as the last resort.   Government borrowing from
the banking system is inflationary as will be discussed ~~later.~~ below.

2.6   Implications of the Trends of Government Finances

It has been observed that the growth in expenditure
surpassed that of revenue.   Further, the expected surplus from
the recurrent budget was not forthcoming. The recurrent deficit
grew in nominal terms from shs 2,240 in 1974/75 to shs. 8672 in
1987/88, or an increase of about three-fold.   ~~It was estimated
that a deficit of shs. 20,382 million was reached by June 1989~~.

The financing of government deficits by bank borrowing is
inevitable.   Given the underdeveloped nature of the financial
market in Tanzania, the government could not undertake open
market operations to finance the deficits.   The government
resorted to bank borrowing to fill the gap between revenues and

expenditures. Government borrowing from the banking system has been a significant source of deficit financing, particularly during the 1978/79 - 1985/86 period. Thereafter it declined substantially. Over the same period (1978/79 - 1985/86), the share of bank borrowing in domestic borrowing was over 74% (See Table 2.11).

Since 1985/86, bank borrowing as a source of deficit financing declined substantially (See Table 2.11). This has been due to government recent measures aimed at reducing its bank borrowing, in order to check money supply and hence inflation. The success of these measures has not been achieved mainly because anticipated reduction in money supply through restricted credit to government has been offset by rapid increases in credit allocation to the Marketing boards and Cooperative Unions during ERPI (See TET vol. No. 4 pp 59).

Further, while government borrowing from the banking system has been arrested in the ERPI period, Import Support revenue has increasingly featured as a significant source of finance for financing government deficit. Import Support as a percent of development expenditure declined between 1981/82 and 1983/84 probably because negotiation between the government and the IMF was not achieved. Thereafter the ratio picked up and grew rapidly, particularly during ERPI. During the first two years of ERPI: 1986/87 and 1987/88, the ratio recorded 60 and 67%, respectively. Import Support as percent of government deficit behaved in similar fashion. In the years 1986/87 and 1987/88

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Import Support financed 43 and 46% of government deficit. In view of the demonstrated role played by Import Support in the government budget, one wonders what would happen to the economy if import support was terminated sudenly! Thus there is need to reverse the situation. Government dependence on foreign finance in financing its deficit ought to be discouraged.

(a)   External Debt

Given the inadequacy of normal revenue sources, the government's indebtedness has increased over the years. The outstanding debt has multiplied from US $ 250 mill in 1970 US $ to 4068 mill in 1987. As a result the debt service has risen from US$ 17 million in 1970 to US $. 83 million in 1985. As a percentage of GDP the debt outstanding has drastically risen from 19.5% in 1970 to 41% in 1977. This proportion marked a slight decline during the period between 1977 and 1982. By the year 1983 debt service was 44.9% of GDP and in 1986 it almost doubled to 81.5%. The highest proportion of the outstanding debt was reached in 1986 when it was more than the GDP (143.7%).

The above developments in the national debt had implications on government expenditure. While between 1970 and 1979 it was below 10% of government expenditure, (except 1972) thereafter it was between 10% and 18.5%. The last three years between 1984 and 1987 marked the greater proportion of the outstanding debt to expenditure. This could be explained by the increased dependence on external loans during these three years.

The increased dependence on external borrowing decreased domestic bank borrowing by the government. This however should not be relied upon as external resource inflows cannot offer a long-term solution to the basic problem of budgetary controls as the inflows will eventually dwindle or come to a trickle as is usually the case[25]. More than that external borrowing involves payment of interest in foreign currency. This component has increased from 2.2% of export earnings in 1970 to 8.2% in 1987. When the country's capacity to export is not doing well, these proportions claim a significant share of export earnings. There is therefore need to link foreign borrowing with the ability to export.

2.7 Explanations Behind Poor Tax Performance

In an economy in which the rate of inflation is low and overvaluation of the domestic currency is non existent, overall macroeconomic stability is expected to prevail. That is, both external and internal balance can be achieved. Nonetheless, in practice, very few developing countries, for example, Botswana and a few others enjoy low rates of inflation and have no foreign exchange rate problems. Otherwise, most developing

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[25]. This is as was correctly pointed out by Hyuha and Ndulu in their paper titled "Inflation and Economic recovery in Tanzania: Further Empirical Evidence", which was presented at the 6th Economic Policy workshop, 1990.

countries of today, Tanzania being one of them have suffered from high rate of inflation and overvalued domestic currencies leading to fiscal deficits and balance of payments problems.

Until the 1970s, inflation was considered to be essentially caused by the expansion of money supply without no feedback. Money supply was therefore treated strictly as exogeneous. It was later, however, recognized in both theoretical and empirical studies that the expansion of money supply may not be independent of inflation. They have explicitly introduced the double causation between inflation and money supply. This is the idea that inflation results in a widening fiscal deficits financed through the banking system (in particular, by the central bank), leading to further increase in money supply. This self perpatuating process was first formalized by Olivera (1967) and was later applied empirically by Dutton (1971) and Aghevli and Khan (1977) in order to explain the episodes of high inflation experienced by Argentina and Indonesia, reopectively. As already noted, Aghevli and Khan (1978) shows empirically in their study of four developing countires (Brazil, Columbia, Dominican republic and Thailand) that the double causation between money supply and inflation exist. Our finding in case of Tanzania turns out to be fairly identical with their thesis (See Kilindo 1982).

When the government contributes to inflation by financing part of the overall expenditure through money creation, it affects tax revenue in different ways. In developing countries

where progressive income taxes from pay-as you-earn (PAYE) system are not important source of tax revenue, where spicific taxes are important, and where collection lags are significant, inflation is likely to have a negative impact on real tax revenue (Tanzi 1977). In these countries there is little scope for "fiscal drags" such that the effect of inflation on tax revenue is unambiguously negative. What emerges here is that on one hand inflation will increase government deficit which is financed by credit creation, fueling further inflation. On the other hand, inflation will decrease tax revenue leading to fiscal deficits assuming government expenditure is constant.

Apart from affecting tax revenues, inflation often brings about an appreciation of the foreign exchange rate as the later is not adjusted in line with the change in prices (Tanzi 1988). In addition, the official rate of inflation may lag behind the actual or real rate if the government is regulating prices or if the price index is not fully representative.

Those who monitor the economic policies of developing countries must have noticed the prevalence of negative relationship between a county's tax revenue and the real level of its official exchange rate. Other things remaining the same, devaluation means a decrease in tax to GDP ratio. A much overvalued currency implies a much lower tax ratio than would have existed otherwise[y]. There are several seasons behind this conclusion: some are related to direct effects of exchange rate appreciation and some are related to indirect effects.

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(a) <u>Direct effects of overvaluation</u>

(i) Effect on import duties

The most direct link between the real value of the exchange rate and the level of taxation is the relationship between the level of the real exchange rate and <u>the base</u> on which import duties are calculated. In Tanzania, import duties are levied with ad valoren rates and their tax base is determined by the official domestic value of the imported products. Thus given the volume of imports coming through official channels, the real value of imports, measured in domestic prices, falls as the exchange rate appreciates. The negative revenue effect of the overvaluation may only be offset, if a country has plenty of foreign exchange and/or unlimited access to foreign loans. This may arise because the fall in the domestic prices of the imported products associated with the overvaluation of domestic currency might lead to a higher import volume which, if the price elasticity of imports is greater than one.

(ii) Effect on sales and excise taxes

In developing countries a large share of general sales taxes is collected from imports since in many of these countries, for various reasons, much of the domestic production escapes taxation or is taxed at lower rates. For several countries for which this information is on hand, the share of total general sales tax revenue collected from imports often exceeds 50% for example, in Pakistan more than 70% of sales tax is collected at customs. In Tanzania it was only 11.5% in

1987/88. However sales tax on imports has been growing rapidly since import/trade liberalization of 1984. Excise taxes are also often collected mostly from imported products (cars, spirits, wines petroleum oil, textiles, spin driers, dish-washing machines, etc).

Domestic taxes on goods and services (including general sales taxes and excises) account for about 28% of the developing countries total tax revenue (Tanzi 1988). In Tanzania they account for over 50%. Changes in real exchange rate affects their revenues as well. As the real exchange rate is allowed to appreciate, tax collection from general sales taxes and from excises is likely to fall in real terms.

Developing countries rely heavily on taxes on "tradable goods". A high exchange rate lowers the value of these goods. It can therefore be concluded that the direct effect of the appreciation of exchange rate on import duties, export taxes, and "domestic" taxes on goods and services is likely to be important since these taxes account for over 60 percent of total tax revenue in Tanzania.

(b) <u>Indirect effects of overvaluation</u>

The relationship we have discussed between the exchange rate and tax revenue is a direct one. Nevertheless, an overvalued exchange rate impacts also on revenue though several direct channels, some of which may be important.

First, the overvaluation of the domestic currency reduces incentive to produce export goods and to export. The volume of

export falls leading to decline in the country's availability of foreign exchange. With shortage of foreign exchange, imports must be reduced. Consequently, revenue from export taxes, import duties, and domestic sales and excise taxes fall. Since incomes are partly tied to exports, revenue from income taxes, particularly company taxes will also fall. Even if incomes are not directly tied to exports, the scarcity of foreign exchange will reduce domestic activities by reducing imports of raw materials and other inputs. As a result, domestic income tax bases will be affected in the modern and, thus, the more easily taxable sector.

Second, overvaluation increases the probability of large future devaluations. Individuals' response to this is two fold. The first action is to take their capital out of the country (capital flight). Another is to store the financial assets into dollar bills held within the country (currency substitution). Both capital flight and currency substitution (out of the reduced export earnings) will reduce even more the foreign exchange available for inputs of goods and services. Therefore, these actions will reduce the tax base, particularly reducing income tax base directly.

Third, the overvaluation of the domestic currency will often bring about restriction on the movement of goods and capital of none existed; or will lead to further restrictions if they were already there. Such restrictions are inevitably associated with black markets for both foreign exchange and

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goods.   These black markets reduce the level of official

transactions and thus the tax base.   Goods will be smuggled into

the country (sometimes with the collaboration of the customs

agents) and will be sold in the black market where they will

fetch high prices but will pay no taxes.   As a consequence, both

import duties, sales taxes, and even income taxes will be lost.

If the disparity between official and black market exchange

rates becomes large, and if, as is generally the case in these

circumstances exporters are requested to (yield) surrender to

the government at official rate the foreign exchange proceeds

that they earn, an incentive will be created for them to reduce

production and/or to smuggle their export goods out of the

country.   Producers will often simply cross the frontiers with

their goods and sell them in neighbouring countries so that they

can change in black market the foreign exchange that they earn.

Thus, they can evade the export taxes (if applicable) and

"implicit" taxes on their foreign currency earnings.

Assume that devaluation leads to inflation.   In such case

the positive effects of devaluation on tax revenue that have

often been argued may to some extent be neutralized by the

negative effect of inflation on tax revenue.   The President of

Tanzania formed a Presidential Commission for Public Revenues

and taxation to comprehensively evaluate the public revenue and

tax system and to recomend reforms of the system.   However, it

should be noted that good tax reform cannot be made if

macroeconomic situtation is not taken fully into account.

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The next section deals with handling of government borrowing by the banking system, as this may have an influence on money supply.

We have seen in the above sections that fiscal operations of the government are linked in a two way relationship with price developments. Further, the faster growth of expenditure more than revenue has been a major factor which creates a budgetary gap that given the low development of the financial market, is met by bank borrowing. In the following sections we try to look into the handling of government finances so as to determine whether expenditure control is effective or can be improved so that this component of the budget can be used as a policy variable in attaining fiscal equilibrium and price stability.

2.8 Handling of Government Borrowing by the Banking System

2.8.1 Public Debt Management

Handling of government borrowing involves the management of public debt by the Bank of Tanzania (BOT). To have a good grasp of the problem of public debt management in Tanzania it is necessary to have a general understanding of the government security "market", which differs significantly from those that exist in countries with well developed financial markets.

Table 2.12 shows the holders of marketable government securities. Over 99% of these securities are held by public

institutions (the central bank, the commercial banks and the financial institutions). The private sector holds less than 1%. Public institutions held over 71% of outstanding securities except in 1970. With respect to floating debt (short-term debt of the government) the central bank and the commercial banks alone held an average 83% during the 1970/71-1987/88 period (Table 2.12). 1987/88 recorded the highest ratio of 99.5%.

Table 2.12: Holders of Government stocks and Bonds (Percentage shares in selected Years)

	1970	1973	1977	1980	1983	1985	1987
1. Outstanding stocks & Bonds by value (In shs million)	865.4	1846.0	4491.0	10629.5	17359.2	21142.2	40495.5
2. Held by (as % of Total value)							
2.1 Bank of Tanzania	1.2	8.3	4.7	41.2	48.5	55.4	60.4
2.2 National Bank of Commerce	17.6	25.5	41.5	18.9	19.6	15.4	8.6
2.3 National Provident Fund	32.5	28.1	24.2	15.9	-	0.8	0.7
2.4 National Insurance Corporation	4.2	4.2	7.7	10.5	-	0.1	0.6
2.5 Post Office Savings Bank	4.5	3.3	2.4	2.1	-	0.5	0.3
2.6 Other Public Institutions	39.6	26.4	13.3	9.4	-	30.2	28.6
TOTAL PUBLIC SECTOR	99.6	95.8	93.8	98.0	-	99.9	99.2
2.7 Private Sector	0.4	4.2	6.2	2.0		0.1	0.8

Source: Calculated from the Bank of Tanzania: Economic and Operations Report, Various issues

Neither the banks nor the other public institutions take position. However, for most part they purchase the newly issued debt according to the financial plan (each of the potential holder is allocated by a given share of government security issues in the context of financial planning) with the objective of holding it to maturity.

The return on the securities are not attractive enough to induce potential non-public investors to hold them. For example, until 1985, the highest rate on government stocks was 8.5%. This rate was however, raised to 27.5% in 1987, which is still negative in real terms. The public institutions do not have much choice though they are assigned by the BOT to purchase these securities according to the set limit. The assignment is either influenced by consideration pertaining to their liquidity requirements, or by the government directives spelt out in the Finance and Credit Plan. The BOT can determine how much fund is likely to be generated from purchase of these securities by the public institutions. However, for the past 2 years the public institutions have been facing liquidity problems and have thus failed to buy the securities as planned by the BOT. This has resulted in the government experiencing shortfalls in its budget. Since the shortfall has to be financed anyway, the government has resorted to short term loans particularly advances. This is what the BOT does as the lender of last resort. Nevertheless, the BOT has never exceeded the limit although it has often come close to it (see Table 2.14).

In a nutshell, the structure of the government security market is that characterized by the absence of a secondary market for government securities. Public debt management by the BOT has mainly been limited to issuing and allocating security to various institutions, monitoring their purchase, servicing and redeeming them at maturity. Table 2.13 presents the size and the structure of the Tanzania's public debt.

Table 2.13: Public debt: Composition and annual changes 1970-87 (End of December positions, shs million).

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
A. Floating Debt (Treasury Bills and Advances	279.8	407.1	382.7	419.4	817.3	1526.8	2040.8	530.0	1383.2	3063.9	5830.5	5954.3	7762.8	9390.7	10783.1	14591.5	9273.1	8987.8
change (%)	42.0	45.5	6.0	9.6	94.9	86.8	33.7	74.0	161.0	121.5	90.3	21.2	30.4	21.0	14.8	35.3	36.4	3.1
of which held by:																		
central bank	190.0	336.7	235.5	211.6	399.0	576.0	668.4	259.5	1019.2	1182.0	2351.6	1220.4	483.0	782.3	3.0	7.1	8947.3	8947.3
Bank of Commerce	-	15.0	99.0	143.0	371.0	801.0	1256.0	-	70.0	1375.0	2850.0	4170.0	6630.0	8050.0	9050.0	5050.0	-	-
Total Banking System	190.0	351.7	334.5	354.6	770.0	1377.0	1924.4	259.5	1089.2	2557.0	5201.6	5390.4	7113.0	8832.3	9053.0	5057.1	8947.3	8947.3
Proportion of the floating debt held by the Banking System	67.9	86.4	87.4	84.5	92.4	90.2	94.3	49.0	78.7	83.5	89.2	90.5	91.6	94.1	83.9	34.7	96.5	99.5
B. National Debt	2151.1	3541.0	4189.5	5150.4	6622.2	8675.3	13059.1	16455.1	17244.1	22165.1	27384.2	30410.5	38076.4	47383.1	60833.0	74548.1	153279.3	301904.7
Change %	-	64.5	18.3	22.9	28.6	31.0	50.5	26.0	4.8	28.5	23.5	4.8	28.5	23.5	11.0	25.2	26.0	22.5
of which:																		
Internal	365.4	1348.1	1532.3	1846.0	2120.0	2618.5	3138.0	4491.0	5133.5	7971.4	10629.5	12111.7	15758.1	17359.2	19381.8	21142.2	34222.4	40490.5
External	1785.7	2192.9	2657.2	3304.4	4502.2	6056.8	9921.1	11964.2	12110.6	14193.7	16754.7	18298.8	22318.4	30623.9	41451.2	53405.8	119056.9	261140.7
of which held by:																		
Central Bank	10.2	30.1	118.2	152.5	181.1	174.1	214.5	210.2	1005.9	3151.6	4397.5	5522.3	7617.5	8426.5	10556.0	11706.8	22449.2	24452.5
Bank of Commerce	152.4	279.6	360.2	470.0	530.0	709.5	901.5	1862.8	1851.6	1961.6	2011.7	2394.0	2701.2	3400.0	2745.4	3251.9	3601.9	3489.8
Total Banking System	162.6	309.7	478.4	622.5	711.1	883.6	1116.0	2073.0	2857.5	5013.2	6409.2	7916.3	10318.7	11826.5	13301.4	14958.7	26051.1	27942.3
% of National Debt held by Banking System	7.5	8.7	11.4	12.1	10.7	10.2	8.5	12.6	16.6	22.6	23.4	26.0	27.1	24.6	21.9	20.1	17.0	9.2
C. Total Public Debt (A+C)	2430.9	3948.1	4572.2	5569.8	7439.5	10202.1	15099.9	16985.2	18627.3	25229.0	33214.7	36364.8	45839.2	57373.8	71616.1	89139.5	152552.4	310892.5
change %	-	62.4	15.8	21.8	35.6	37.1	48.0	12.5	9.7	35.4	31.6	9.5	26.0	25.6	24.8	24.5	82.3	91.3
As % of GDP	29.6	44.6	45.6	48.5	53.1	60.0	69.7	66.1	65.2	73.1	88.7	82.8	87.4	91.9	91.6	82.5	15.4	61.3
% of floating Debt in Total Public Debt	11.5	10.3	8.4	7.5	11.0	15.0	13.5	3.1	7.4	12.1	17.5	16.4	16.9	16.4	15.0	16.4	5.7	2.9

Source: Bank of Tanzania Economic and Operations report, various issues;
URT: Economic Survey, various issues.

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It can be noted from Table 2.13 that the magnitude of Tanzania's public debt increased rapidly during 1970-87. This is reflected in its ratio to GDP increase from about 30% in 1970 to 61% in 1987, after reaching a peak of 91.6% in the years 1983 and 1984. This rise was more pronounced after 1978 onwards mainly because of increased government deficits discussed earlier.

The public debt comprise two components namely; the floating debt and the national debt.

The floating Debt is the short-term debt of the government. It includes advances and treasury bills with maturities not exceeding 12 months. Article 39 of the Bank of Tanzania Act (1978 Ammendment) imposes a maximum limit of one-sixth of the annual budgeted revenue of the government, beyond which the Bank of Tanzania cannot further accomodate the government on short-term basis. The maximum limit as a percent of average ordinary revenues (recurrent revenues) of the government, imposed by the original BOT Act, 1965, where direct advances maturing within 300 days equals 20%.

Table 2.14:   BOT Actual Lending Versus Statutory Limits (S.L.), 1966- 1980
               (End of Year Figures, value is shs million)

Year	Estimated Government Budgeted Revenue (GBR)* (S.L.)	Outstan- ding Ad- vances as % of GBR (S.L=20%)	Outstanding Treasury Bills + long-term securities (S.L=25%)	Outstanding long-term Securities as % of GBR (S.L=10%)	Outstanding Treasury Bills (S.L= 20)
1970	1683.0	12.8	11.9	0.6	11.3
1971	1859.2	14.7	19.7	1.6	18.1
1972	2294.9	8.8	15.5	5.2	10.3
1973	3002.4	4.5	12.1	5.1	7.0
1974	3942.3	12.2	14.6	4.6	10.1
1975	4062.0	15.2	18.5	4.3	14.2
1976	4933.7	14.7	17.7	4.3	13.4
1977	6629.3	12.7	7.1	3.2	3.9
1978	6441.1	14.1	30.7	15.6	15.1
1979	7679.6	10.0	56.2	41.0	15.2
1980	8571.4	13.0	63.0	49.0	14.0
1981	9406.0	11.8	73.1	60.3	12.8
1982	12581.0	12.3	63.4	60.0	3.4
1983	13506.0	7.1	68.2	62.4	5.8
1984	18638.0	11.0	56.6	56.6	0.0
1985	22031.5	19.9	91.5	91.5	0.0
1986	29321.0	-	106.3	76.1	30.2
1987	47479.4	1.1	69.9	51.2	

Notes   *   The annual government revenue is equated to the government's
             recurrent revenue
             S.L. stands for statutory limit

Source: Bank of Tanzania, economic and Operations Report, various issues

Consequently, the government demanded increased support from the commercial banks when its borrowing from BOT approached the limits — especially in the second half of the 1970s, when the government ran large deficits. In practice, the central bank has tended to lend money to the commercial banks for onward lending to the government, witness the concidence of the periods when the commercial banks lent relatively large sums to the government in the form of treasury bills purchases within periods when the BOT lending to the commercial banks was at the peak level (see Tables 2.12 and 2.13). Accordingly, the inflationary implications of the government borrowing from the commercial banks are expected not to have differed from borrowing from the BOT.

It can further be noted from Table 2.13 that the proportion of the government floating debt increased faster than the long-term debt component. This is a reflection of the emergence of large recurrent budget deficits since the second half of the 1970s. Thus, the floating debt was already accounting for 17.5% in 1980 compared to 11.5% in 1970.

The National Debt is the long-term debt of the public sector consisting of government bonds and stocks outstanding and long-term loans to the public sector from external sources.

While the floating debt grew at an average annual rate of 38% nominally during the 1970-87 period, the national debt grew at an average rate of 36% per annum over the same period (Table 2.13). Between 1985 and 1987 floating debt registered a

significant decline compared to the national debt which recorded a drastic growth (see Table 2.13). This trend is a reflection of a substantial share of external debt in national debt particularly after 1985, which seems to be attributable to increase in capital inflow during the Economic Recovery period. Considering the average inflation rate of 20% per year over the period under review, it is evident that the national debt grew much faster in real terms, and the short term debt even faster.

The proportion of the national debt held by the banking system (central bank plus commercial banks), increased considerably from only 7.5% in 1970 to 27% in 1982, thereafter declining continuously to 9% in 1987. The declining trend after 1982 seems to be explained by the government move to reduce its borrowing from the banking system to arrest inflation. This has been successful to some extent as the rate of inflation declined from 36.1% in 84 to 30% in 1987. Inflation was not reduced by a large magnitude because borrowing by the Marketing Bards and Coperative Unions from the commercial banks offset the impact of reduced government borrowing from banks to arrest the rate of inflation.

During the period up to 1978, the central bank was restricted to holding a maximum of government bonds and stocks equivalent to 10% of the annual budgeted revenue (Article 40 of the BOT Act, 1965), and the tendency was for the government to rely more on the commercial banks for accomodation. As a result, the commercial banks accounted for an average of 80.5%

of the total outstanding long-term claims of the banking system against the public sector during the 1970-78 period. However, immediately after the amendment of the BOT Act in 1978, allowing the BOT to hold government long-term securities within "the relevant limits set forth in the annual Finance and Credit Plan" (see Article 40 of the Amendment Act, 1978), the BOT started to take lion's share relative to the commercial banks. Thus by 1979, a year following the amendment, the BOT was already holding about 63% of the total government stocks outstanding with the banking system, against the average of about 20% held during 1970-80. By 1987 BOT holding of the total governments stock outstanding had reached about 88%.

2.8.2   The BOT's Lending to the Government

From its inception, the BOT continued with the East African Currency Board's (EACB) policy of supporting the treasury bills market through insulating it from external shocks and committing itself to discount bills held by the commercial banks. After all, the BOT functioned prior to 1969 under the so called 'money-employed scheme'. This scheme was meant to provide commercial banks with the incentive to retain their excess balances within the country, and meanwhile provide funds for investment in treasury bills. According to the scheme, commercial banks could deposit their excess cash with the BOT, and earn interest rate equivalent to that on treasury bills for cash reserves over and above the required minimum of 20%.

Table 2.15 provides the growth rates of treasury bill issues. Before 1978, treasury bill issues grew at 23% and 35% in the 1970-73 and 1974-77 periods, respectively. This seems to have been caused by strict limits imposed by the BOT Act, 1965 on the Bank's holding of treasury bills. The BOT could hold a maximum amount of treasury bills equivalent to 20% of the annual budgeted (recurrent) revenue of the government (and 25% when other long-term public sector securities were included). This fixed ratio meant relatively show growth in the acquisition of treasury bills by the BOT when the government budget was growing modestly.

Nonetheless, following the amendment of the BOT Act in 1978 to lift the limits on both short and long-term lending to the public sector by the BOT, the growth rate of treasury bill issues became substantially high relative to proceeding period. During the 1978-81 period treasury bill issues grew at an average rate of 98% per annum. Thereaffter the rate declined drastically, and between 1986 and 1987 a negative average growth rate of 20% was registed. All in all, it is noteworthy pointing out that the BOT managed to observe its legal limits regarding lending to government up to 1978, when the situation demanded their review (See Table 2.12).

According to Table 2.14 what one observes immediately is that the BOT was not even close to the statutory limits for advances and long term bond prior to 1978, irrespective of the heavy pressure imposed by large government deficits towards the

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end of the 1970s. As already noted, during the period, this commercial bank accommodated the government at times when the BOT approached its lending limits to the government. The years when the ratios of the various groups of government paper, by nominal value to the government annual budgeted revenue were relatively high are associated with those when commercial bank holdings of the corresponding groups of securities were at peaks (see Tables 2.13 and 2.14). The years 1971 and 1974-76 are the case in point. This is further evidenced by table 12, which shows that during the 1974-81, the proportion of the floating debt that was held by the banking system in Tanzania remained rather constant. It was only the distribution of this debt between the BOT and the commercial banks which varied. However, for the remaining period the proprtion fluctuated.

Consequent to the ammendment of the Act in 1978, immediately the relaxation of the limits led to the previously existing limits overshooting. The lifting of the 10% limit on the holding of long term securities permitted the BOT to acquire more government debt leading to the corresponding ratio raising from 15.6% in 1978 to 91% in 1985 and thereafter declining rapidly to 51% in 1987. The decline after 1985 was due to government effort aimed at reducing its borrowing from the banking system. Similarly the 25% limit on the holdings of treasury bills, and long term securities was overshot to 31% (i.e. immediately after the lifting of the limit on the amounts of securities), and to 106% in 1986.

Table 2.15: Average Annual Growth Rates of Treasury Bill Issues
(Nominal) Percentages

	1970-73	1974-77	1978-81	1982-85	1986-87
Growth Rate of Treasury Bill Issues per Annual	22.8	35.4	98.4	25.4	-19.7

Source: Computed from Table 2.13

Table 2.16: Proportion of Floating debt held by the banking
system and its Distribution between the BOT and
the NBC (in %)

	1970-73	1974-77	1978-81	1982-85	1986-87
Proportion of the Floating Debt held by Banking system of which	82.7	88.1	87.7	70.7	98.0
BOT	65.4	38.7	35.6	3.0	98.0
NBC	17.3	49.4	52.1	67.7	-

Source: Computed from Table 2.13.

The impact of the relaxing the lending limits to government by the ammendment of the BOT Act in 1978 is also reflected in the rapid increase of the ratio of BOT government lending to GDP, from 8% in 1970 to in 26% in 1987 after reaching a peak of 44% in 1980 (See Table 2.17).

Table 2.17: BOT Lending to the Government as ratio of GDP Selected Years (value in shs million, ratio in %)

	1970	1972	1974	1976	1978	1980	1982	1984	1987
1. Short-term lenging by Treasury Bills + advances	3.4	3.8	7.1	9.4	4.8	15.6	14.8	13.8	4.7
2. Long-term lending by issue of stocks and bonds	4.4	15.3	15.1	14.5	18.0	28.4	30.0	24.8	21.0
3. Total lending									
4. Total lending as % of GDP	7.8	19.1	22.2	23.9	28.8	44.0	34.8	38.6	25.7

Sources: Lending Figures are from Table 2.13, while GDP figures are from URT, Economic Survey, various years.

The foregoing discussion explains the observed high rate of monetary expansion in the period after 1978, during which the BOT has had very few legal limits vis a vis its activities with

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the government. The 1978 amendment of the original Act relaxed the government borrowing restrictions from the Bank. Consequently, the central bank has been forced to accomodate the government subject to discretion of the planners. The final result has been the loss of its autonomy with respect to the government.

2.9 Summary

We have evidenced in this chapter that statistical evidence shows that there is a link between government budgetary operations and money supply. This occurs because the growing expenditure requirements of the government has not been financed by normal tax revenues. Reasons behind this include slow growth of revenue, and the poor performance of the economy in general. As a result the government had to borrow both domestically and externally. The domestic borrowing involved more money creation as the central bank was the main financier of deficits. These events led us to follow the two track models of Cagan (1956) in analysing the relationship between deficits and inflation in Tanzania. Before laying the framework of analysis in chapter four the following chapter reviews literature on money supply and inflation.

CHAPTER 3

LITERATURE REVIEW

Section one of this chapter presents the monetarist theory of inflation, and the second section deals with deficits and inflation and the last evidence.

3.1 Monetarism and Inflation

Modern monetarism is still a development of the quantity theory of money of Irving Fisher (1911). According to this approach the rate of inflation was determined by the rate of growth of money. The quantity theory view has based on the proposition that the demand for money is a stable function of relatively a small number of variables; that monetary factors have only short run impact on real income and that the supply of money can be controlled independently of the demand for money.

In terms of rates of change, the quantity theory would be:

$$DM + DV = DP + DY \quad \text{or}$$

$$DP = DM + DV - DY$$

When Δ is a change operator,

where M is the quantity of money, P is the price level, V is velocity and Y is real income. If velocity V is constant and real income constant, and factors determing demand and supply of money are independent from each other, then

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factors determining changes in money supply will be the causes in price changes[26].

Meiselman and Friedman (1964) empirically investigated the stability of the demand for money. They arrived at the conclusion that the velocity of money was stable. While Keynesians on the other side assign the variations of autonomous expenditure such as government investment as the major source of levels of total expenditure in general and consumer expenditure in particular, monetarists main hypothesis is that variations in consumer expenditure are more adequately explained by variations in the money stock. The same study cited above of Meiselman and Friedman supported the monetarist hypothesis.

The main ground for Keynes to argue that the demand for money function could be highly unstable was high 'speculative motive for holding money'. Friedman (1956) in his restatement of the quantity theory brought the idea that people will allocate their wealth between different assets in such a way that utility is maximized. He asserted that assets can yield pecuniary returns such as interest on dividens or non-pecuniary returns such as the services provided by household durable goods. Convenience and security was what Friedman called the non-pecuniary services money could yield. The implication of Friedman's approach was that money was regarded as a substitute not only for bonds but for equities, physical capital and

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[26]. It follows that if for example, deficits influence monetary growth, then they are inflationary.

durable goods. Therefore while Keynesians limited the asset choice between money and bonds, monetarists' range of assets is larger. Inflationary expectations would, according to monetarists, affect the proportion of their wealth people choose to hold in the form of durable goods and physical assets, and money. The faster the expected rate of inflation, the higher the proportion of their wealth will people choose to hold in the form of durable goods and physical assets. Expected inflation is therefore an important determinant of demand for money.

The quantity theorists hold that an increase in the quantity of money would lead to an increase in the price level. But prices of goods are determined by supply and demand, and supply and demand depend on real factors such as technology, and preferences, how does then an increase in the quantity of money have effect on the prices of individual goods and the general price level? The answer to this was given by Patinkin (1965) in his Money, Interest and Prices.

The demand for money balances is proportional to the general price level and thus inversely proportional to the 'value of money'.

Figure 3.1:
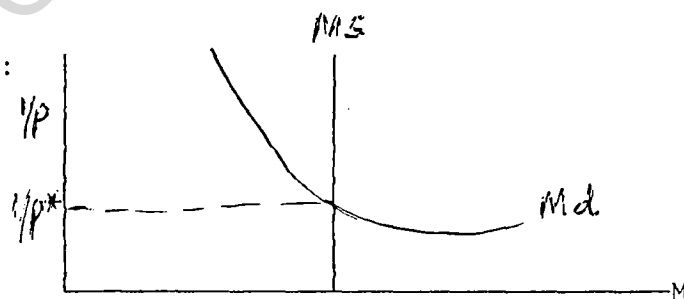
In the figure vertical line Ms is the exogenously determined supply of money. The value of P at p* is determined by the intersection of the demand for money Md and the vertical supply function. Desired real cash balances (Md/P) can be brought into line with actual real cash balances (MS/P) only by variations in the price level. If the actual real cash balances are less than desired, the price level will have to fall, and if they are greater, the price level will have to rise.

A disequilibrium in the money market (Md/P) $\neq$ (MS/P) generates price changes because if everyone gets more real balances, they would want to finance extra purchases of goods by running down their holdings of money balances. At the aggregate level, this can not take place. An increase in money supply in an economy means the public have to hold more money volume. An attempt by everyone to purchase more goods pushes up prices. The output of goods is determined by real forces, therefore a sudden increase is not possible. Higher prices of goods make people require more nominal money balances to finance their transactions and prices continue to rise until all the increased money supply is absorbed into higher transactions balances.[27] This is one of the mechanisms whereby a monetary disequilibrium affects the demand for goods and if not met, prices increase.

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[27]. See Marshal (1923).

Alfred Marshal's interest rate mechanism is the other mechanism whereby changes in money supply are brought about by government open market operations. According to this mechanism, an increase in the nominal supply of money reduces the interest rate. Under the assumption of full employment output level, greater planned investment and consumption would only result in higher wages and prices.[28] Figure 3.2 illustrates Marshal's interest rate mechanism.

Figure 3.2:
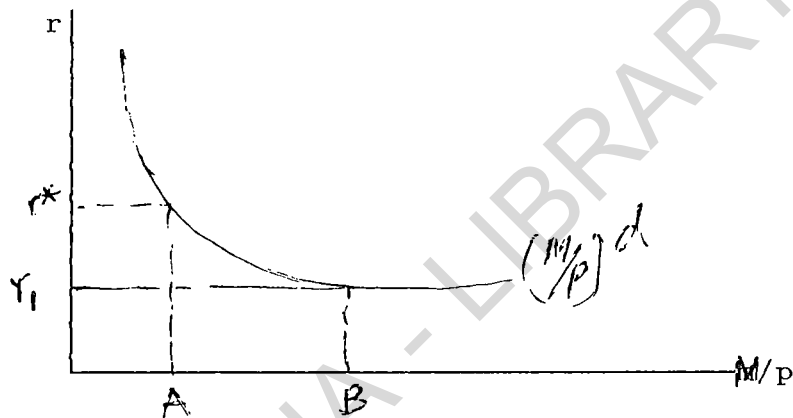
The interest rate 'r' is measured vertically and the demand for and supply of real cash balances is measured on the horizontal axis. (Md/P) is the demand for cash balances curve. In equilibrium the supply of real balances is OA. The market interest rate is decreased from r* to r1 by an increase in the real money supply from OA to OB. Being a cost of borrowing, the

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[28]. On traditional neoclassical grounds it was thought that such a decline in the rate of interest would stimulate desired investment.

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reduction in interest rate will raise investment level. This will lead to higher prices as the demand for factors of production will increase. This will continue until the real money supply has been reduced back to the initial level and the market interest rate to OA.[29] Controversy however exists between Keynesians and moretarists on the formers stress that investment would be most sensitive to interest sensitive rather than on monetary aggregates. Survey studies have however not supported the Keynesian approach.[30] The Keynesian arguments would be disastrous in inflation experiencing countries. Inflation accompanied by controlled interest rate would lead to distortion of the equuilibrium interest rate. Extreme cases where real interest rates are turned into negative values exist.[31] This shows a false sense of cheapness of capital funds created by inflation and interest rate controls. Wasteful and relatively unproductive uses of the available scarce supply of capital may be the outcome. Turning back to the demand for money, the idea that money as an asset could be regarded as a substitute not only for bonds but also for real assets meant that the opportunity cost of holding money would depend on both real income produced by such asset and expected inflation. Let iK be

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[29]. The mechanism would work only under the assumption that expenditure responds to changes in the interest rate.

[30]. See for example Savage (1978).

[31] See Nyagetera (1985) for the case of Tanzania.

the monetary return on real capital, R* the real rate of
return and PE the expected rate of inflation, then iK = R*
+ PE.

Demand for Money will be:

$$M^D = PYi - r \qquad (1)$$

and in terms of time derivatives it becomes

$$DM^d = DP + DY - r \frac{i}{i} \frac{di}{dt} \qquad (3)$$

and substituting (1) into (3) we get:

$$\frac{di}{dt} = \frac{dR^*}{dt} + \frac{dDPE}{dt} = \frac{d.PE}{dt} \qquad (4)$$

Under the assumption of adaptive expectations (4) can be
written as:

$$\frac{dPE}{dt} = \beta(DP - PE) \qquad (5)$$

where β is the adjustment coefficient by which people adjust
their expectations. It is the extent to which the actual
inflation rate differs from their expectations. Substituting
(5) into (3) gives:

$$\Delta M^D = DP + DY - \alpha 1/i \ \beta(DP - PE) \qquad (6)$$

If we hold the assumption that real income is constant (DY = 0)
and expected inflation and real inflation are equal, it then
follows that the demand for money grows at the same rate as the
inflation rate (M^D = DP).

Supposing an equilibrium in the money market i.e. money demand is equal to money supply (Md = Ms) then the rate at which money grows in such an economy will equal the rate of inflation.

The stability of the demand for money function can be explained from the above formulations. An increase of inflation increases demand for money through the effect of higher prices (DP in eq. 5); the higher inflation leads to higher expectations of inflation thus increasing the opportunity cost of holding money. This leads to reduction in the demand for money. Cagan (1956) was the first to evidence the stability of the demand for money in the face of hyper-inflations by an explosive growth in the quantity of money. His study encompased seven hyperinflation cases and the stability condition held in all cases, and the hyperinflation were fuelled by an accelerating growth in the money supply.

While stability of the demand for money function strengthened monetarist contention that changes in norminal income are determined largely by changes in the stock of money, there still remained the question of splitting up changes in norminal income between changes in prices and changes in real income.

Friedman (1970) argued that the IS-LM framework of determination of aggregate demand is commonly true for both monetarists and Keynesians but they only differ on flexibility of prices. Prices are assumed perfectly flexible by monetarist while Keynesians assume price rigidity. Flexibility implies

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that fluctuations in demand does not affect output while rigidity implies the reverse. The "missing equation" is what Friedman used to describe how changes in nominal income are divided between price changes and output changes.

Let,

Y be nominal income

y* full employment real income and 'E' supercrips

indicate expected values. According to Friedman

DP = PE + a (DY - YE) + a(log y - log y*) (7) and

Dy = Dy* + (1 - a) (Dy - YE) - a(log y - log y*) (8)

He added expectations as an argument and placed the deviation of real output from its full employment level to the Phillips curve.[32] In summary, the monetarist position is that variations in aggregate demand are largely attributable to variations in the money stocks and such variations in demand affect output primarily in the short run, but in the longer run work through prices with no ultimate effect on output, via the expectations argumented Phillips curve. The "missing equation" is essentially similar with the well known Phillips curve but differs in the measures of pressure on demand. Pressure of demand is measured by deviations of employment from its natural rate by Keynesians, while monetarists measure this by deviations of output from its full employment level.[33]

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[32]. See Friedman op. cit.

[33]. This difference was identified by Tobin (1972).

In recent years there has come an important innovation in macro-economics. This is the theory of 'rational' expectations. An illustrative example is:

$$y = y* + \frac{1}{a} (DP - PE) \qquad (9)$$

This is essentially equation (8) but it assumes that a = 0. This is equivalent to saying that output deviates from its "full employment" equilibrium level only if there is a difference between the actual and expected rates of inflation. Take equation (7) and assume people do not form expectations perfectly (DP = PE). If expectations are adaptive, an increase in money supply growth, the actual rate of inflation rises slightly above the expected rate and output rises above its equilibrium level. This will work on the assumption that by alterning the stock of money, the authorities can 'fool' people in making incorrect inflation forecasts, and hence supply more labour and affect real output. The 'rational expectations' approach assumes otherwise. People are assumed to learn from their mistakes. The rate of monetary growth will be among the basis on which the forecasts of inflation will be made apart from past rates of inflation. According to this theory, expectations are 'rational' if they are based on the best available model of the economy. It assumes that people can make mistakes in their forecasts of inflation but not repeatedly. The major implications are that attempts by the authorities to

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vary monetary growth for the purpose of economic stabilization will not be successful but will instead fuel inflation[34].

3.2   Deficits, Money and Inflation

While monetarist explanations of inflation surveyed in the above section point that changes in money supply are the major causes of price inflation in the spirit of Friedman and Cagan, there later mushroomed studies which have argued that in some cases, it is more proper to view the causation as running from inflation to prices also. Empirical studies taking the new approach are such as those by Sargent and Wallace (1973), Frenkel (1977), Jacobs (1977) and Aghveli and Khan (1978).

In the later studies, governments' fiscal operations have been pinpointed as major cause of the response of money supply to inflation. When the government resorts to money creation to finance its expenditure, increases in the nominal stock of money increase the demand for goods and services. If output cannot be increased to meet this increase in demand, a pressure on prices will result. Inflation results in increased government deficits which is financed by further money creation.

Many governments with inadequate tax programs to raise the required revenue or with inefficient administration pursue the policy of financing government expenditure by the creation of money i.e. inflationary finance. The actions are taken due to economic literature pointing to the possibility that

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[34]. This difference was identified by Tobin (1972).

inflation tax can be used as an instrument to finance investment in developing countries.

The argument runs as follows[35]:

Let the government issue additional high powered money H in order to make investment G1. Then this will have the effect of increasing real capital

$$\frac{dH}{dt} \cdot \frac{1}{P} = \frac{dK}{dt} \; ; \qquad\qquad (10)$$

Where K is real capital.

Assuming real output is the product of the capital output ratio k and real capital K

$$y = k \, K \qquad\qquad (11)$$

then growth of real output over time will be determined by inflationary finance i.e.

$$\frac{dy}{dt} = \frac{k \cdot dK}{dt} = \frac{(dH/dt)k}{P} \qquad\qquad (12)$$

Taking rates of change; y *(dy/dt) (1/y) we arrive at
$$Dy = (dH/dt) = \frac{(DH. \, H)k}{Py} \qquad\qquad (13)$$

where DH is the rate of change of high powered money.

Assuming income velocity of money V as constant. Note that by the quantity theory approach in equilibrium DM = DP + Dy. A government which highly depends on inflationary finance,

[35]. This section follows Johnson (1984).

DM will approximately equal DH. In equilibrium therefore:

$$Dy = [1/V] \quad [k \quad (DP + Dy)] \tag{14}$$

or

$$Dy = DP \quad \frac{(k)}{V-k} \tag{15}$$

What equation (15) shows is that the rate of growth of GDP varies directly with the inflation rate. The above analysis assumes that the government invests the proceeds of the real high-powered money it creates, and real savings (and investment) increase by the amount of the real high powered money; leading to an increased savings-income ratio.[36] Johnston (1984) further points that it is important that for the case of inflation tax to bring growth, the following conditions have to hod:

    (i) government expenditure ratio to GDP increases with inflation;

    (ii) that government capital expenditure increases relative to total government expenditure when the latter increases relative to GDP;

    (iii) that government investment does not crowd out private investment;

    (iv) that the productivity of government expenditure is such that growth can be increased by increasing government investment relative to government expenditure. These requirements can

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[36]. Johnson p. 655.

be tested quantitatively by the equations:

$$I = f_o(DP); \quad CAP = f_2(DP); \quad G/GDP = f_3(DP); \quad I/GDP = f_4(CAP);$$
$$\overline{GDP}$$

and test for $f_o > 0$, $f_2 > 0$, $f_3 > 0$ and $f_4 > 0$

Where I = investment, CAP = capital exp./GDD; G = Government expenditure. The exchange rate requirement can be tested with Johnston's equation i.e. $\delta RER/\delta DP = 0$, where δRER is the change of the real effective exchange rate. It is doubtful if in developing countries these conditions hold given the purpose for which deficits are run i.e. to finance recurrent expenditure.

3.2.1 Deficits and Money Supply

The government pays for most of its spending with checks drawn on the central bank. Like an individual the government must have funds in the accounts it holds at the central bank on which it writes its checks. The treasury being the agency of the government, collects government receipts and makes payments for the government taxes[37].

When its tax receipts are insufficient to cover its expenditure a budget deficit appears. Deficits are a difference between the expenditures and receipts of the government:

$$Gt + rt-1 \ Bt-1 - Tt - TCt = DBt \qquad (16)$$

where Gt is nominal government spending in period t, rt is the nominal interest rate on government debt, Bt is the

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[37]. For an excellent exposition of this se Dwyer (1985) and Dornbursh et al (1982) which we follow closely.

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nominal par value of debt held by the central bank and the public, Tt is tax revenue from the public, and TC is the transfer received from the monetary authority. Regarding real terms and ignoring the subscript t, equation (16) can be written as (17) which is a cash flow equation of the government

$$g + \frac{r - 1}{1 + DP} b - 1 - S - S^c = \frac{DB}{P} \qquad (17)$$

where $g = G/P$, $b - 1 = B-1/P$; DP is the inflation rate, $S = T/P$, and $S^c = TC/P$.

For the monetary authority, a similar equation as (17) would be:

$$S^c + g^c = \frac{r - 1}{1 + DP} b^c - 1 \qquad (18)$$

where g^c is real expenditure by the monetary authority

and $b^c - 1 = B^c - 1/P-1$ \hfill (18)

Here assets of the monetary authority are taken to be only the claims on government, and their liability the high powered money, H. Equation (18) then is the cash flow equation of the monetary authority. The assets of the monetary authority will change at the rate of change of level of the national debt

$$\frac{DBc}{P} = \frac{DH}{P} \qquad (19)$$

Government debt is however held by both the monetary authorities and the public. To include this, (17) becomes:

$$g + g^c + rb^p - 1 - S = Db^p + \frac{DH}{P} \qquad (20)$$

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where b^p is the real debt held by the public; r* is the real interest rate.

The government therefore can borrow from either its central bank or from the public. When the deficit is financed by borrowing from the private sector it is engaged in debt financing. Treasury bonds or bills are sold to the private or public sector including commercial banks who pay with checks. Money financed debts are those which the government finance by borrowing from the central bank (B in above equations). The central bank purchases some of the debt of the treasury.

It is the difference between the impact of government borrowing from banks and from public on money supply that will determine whether deficits are inflationary or not. When the central bank buys securities, it pays for them by giving the government paper money, thus money supply increases. When the government borrows from the public it receives and spends high powered money, thus leaving the amount of high-powered money in the hands of the public unchanged - except for a brief transitory period between the sale of securities and expenditures by the government.

The Treasury sales of securities to the central bank is refered to as 'monetizing' the debt, meaning that the central bank creates money to finance the debt purchase. One can also look at the difference between sales of security to the central bank (borrowing from the cental bank) and sales of security to the public to see the net effect of the private sector's

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portfolio. In the case of borrowing from the public, the public holds more debt, having bought the treasury offering, and holds an unchanged quantity of high-powered money since the treasury spends the money it obtains from the debt sales to cover its deficit. When the deficit is financed by sale of debt to the central bank, private sector's holding of debt is unchanged, while its holding of high-powered money is increased. The reason is government expenditures were financed by the creation of high-powered money by the central bank. Equation (20) then can be re-writen as a government budget constraint as:

$$\frac{BD}{P} = Db^c - Db^p = DH + Db^p \qquad (21)$$

where BD/P = the budget deficit measured in real terms. The change in the central bank's holding of treasury debts causes a corresponding change in high-powered money (DH), so that the budget deficit is financed either by selling debt to the public or by increasing the stock of high-powered money - i.e. inflationary finance. What equation (21) says is that the sum of changes in the stock of debt and changes in high-powered money is approximately equal to the budget deficit. This will however occur if a large proportion of the deficit is financed by the central bank.

3.2.2 Deficits and Inflation

To link deficits and inflation, the basis of the discussion is that inflation in the long run, is determined by

the rate of money growth. If the budget deficit does not affect long-run money growth, then there will be no inflationary impact.[38] If the method of financing the deficit does lead to higher money growth in the long run, it also leads to higher inflation. The mechanism then would be the same as those exposed in the first section i.e. (3.1) under inflation and monetarism.

Demand-pull and cost push theories of inflation have dominated the analysis of inflation in both developed and developing countries. The demand-pull theory is the traditional one saying that inflationary rises in prices are brought about mainly by ever expanding monetary demand for goods, faster than can be matched by the growth of the supply of goods. Continuous expansion of the money supply is the chief reason for the ever expanding monetary demand for goods. Cost-push theory, however says that the active cause of inflation is autonomous rises in the costs of production, due to, say, autonomous increases in wages or prices of important raw materials, which then force the producers to raise the prices of their finished products. Inflation is a continuous rise is prices and this can be accounted for by a process of upward pushes of costs if cost-push is to explain inflation. Upward pushes on costs are actually occassional and isolated. To answer this, cost-puch theorists give the explanation that when costs and prices rise

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[38]. See Dornburch *et al*(1982) ~~op. cit.~~

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for some exogenous reasons in the first instance, the monetary authorities, committed to the maintenance of a targeted high level of employment, are obliged to create more money supply in order to 'accommodate' the needs of business transactions. This accommodating expansion of money supply then induces the second round of rises in costs and prices and so on.

In most developing countries there is generally no strong organisation on the side of the labour force, and it is unlikely that wages in those countries can provide the continuous upward push for a long period of inflation. Items of costs are likely to provide occassional and discontinous disturbances. Money supply has therefore a greater role in inflation process in developing countries. This is because of a greater tendency of the countries to create money supply.

Three major common causes induced creation of money supply.[39]

> (1) the government's reliance on money creation to finance its budget deficits;

> (2) the banking system's reliance on money creation to finance their credits to industries. An increase in the high powered money by method (1) increases the total of currency outside banks plus bank reserves. The increase in reserves causes the actual reserves to deposit

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[39]. These factors were drawn from a study of several underdeveloped countries by Tsiang (1983).

ratio to rise above the desired reserves to deposits ratio of banks operating in a fractional reserve system. Banks will respond by creating new demand deposits to equate the actual to the desired reserves to deposit ratio. This causes the money supply to increase. This however takes time, it is not instantaneous.

The third cause of creation of money is the banking system's reliance upon money creation to purchase and accumulate foreign exchange.

The method of creating money supply as an alternative to taxation to obtain command over resources of the economy is more apt to occur in developing countries than in developed countries. This is because developing countries have low incomes implying a low tax base, even when the tax base is adequate, the tax- collecting machinery may be inefficient. Another common drawback is an inelastic tax system with respect to income. Lags in tax collection are another hindrance to reliance on normal tax receipts. By the time the government realizes the taxes, inflation has depreciated their real value.[40]

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[40]. A more comprehensive exposition on collection lags and tax revenue is given in Tanzi (1977).

Central banks are the principal financiers of the government budget shortfalls of revenue. This can be measured by the size of the claims on government by the central bank or the banking system as a whole. Contribution of bank credit to industries expansion to inflation can be measured by the increase in the total domestic credit of the domestic banking, systemn; as Harberger (1981) did. This measure should however exclude savings and time deposits as these are not inflationary. The third cause i.e. purchase of foreign assets would be a serious problem only in a fixed exchange rate and foreign transactions are uncontrolled in the country. The inflationary component is those foreign assets which are newly purchased. Increases in foreign assets due to capital gains and accumulation of interest and dividends earned on the net foreign assets already in possession of domestic banks do not usually involve any increase in the domestic money supply.

3.4 Existing Evidence

The monetarist approach that monetary growth causes inflation can be tested by observing the correlation between the rate of inflation and the rate of monetary growth. Causality can be determined by statistical analysis and institutional evidence. The direction of causality can be detected by examining the timing of the relationship between changes in monetary growth and changes in inflation.

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By plotting the monetary growth rate and inflation against time on a graph one can observe whether the turning points in the monetary growth precede, follow or are contempraneous with turning points in inflation.

Sims (1972) applied statistical techniques for 'causality tesing' by first separating the variations in money and money income into the part that can be predicted from the past values of that variable, and the remainder which cannot. Using USA data Sims reached the conclusion that causality is unindirectional from money to income; rejecting the hypothesis that the causality is from income to money. This was supported later by Brillembourg & Khan (1979), although Edgar & Pierce (1976) found contrary evidence.

Goodhart and Gowland (1976) applied similar procedures by Sims to U.K. data. They found the evidence indicating the direction of causality between money and income in the U.K. much less clear-cut than that which Sims found in his examination of U.S. data. While Sims found evidence of unidirectional causality running from money to nominal income, especially from money to real income, Goodhart and Gowland found for the U.K. some evidence of unidirectional causality running from nominal incomes to money and also some evidence of unidirectional causality running from money to prices.

Another causality study was undertaken by Sargent and Wallace (1973), investigating the direction of causality between money and prices during periods of hyperinflations, for certain

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European countries using an approach similar to Sims. They show that there is evidence to suggest that the causality is from prices to money.

The institutional evidence on causality is done by observing the change in the growth rate of money supply at a particular point in time, and examining the historical circumstances of the period and decide whether that change in monetary growth is attributable to some change initiated by monetary authorities or whether the money stock responded passively to some other economic change. Milton Friedman and Schwartz (1963) studied the monetary history of the United States and believe that the evidence indicates that more often than not monetary changes are autonomous; in the sense of being initiated by policy changes by the monetary authorities or by other monetary developments. Another sighted example is the U.K. Following changes in methods in regulating the banking system, and floating of the exchange rate, the money stock started to grow very rapidly followed by an accelerated inflation reaching a peak of over 25 per cent in 1975. Taking the world as a whole, monetarists explanation of inflation are similar to domestic inflation. The world as a whole is regarded as a closed economy and therefore the world rate of inflation will be determined in the simplest case by the rate of growth of the "world money supply".[41] Following this, the world

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[41]. For the Monetary Theory of Balance of Payments see Johnson (1972) and Frenkel and Johnson (1976).

inflation rate of 1955-71 has been explained by the world rate of growth of money relative to growth of world output. The stability of the world demand for money function a mechanism inflation to excess demand and exogenous money supply process has sparse evidence.

Country wise empirical evidence include that by Komiya and Suzuki (1977) in a study of Japan. After an easy money period during 1971-73, prices shot up. This easy money period was accompanied by high levels of government expenditure thus aggravating the problem.

In Britain Laidler (1976) gave a time series behaviour of inflation, unemployment and two measures of the rate of monetary expansion over the period 1953-75. His conclusions were that marked changes in the monetary expansion rate have a discernible impact on the inflation rate with about a two year time lag. The transmission mechanism between monetary expansion and the inflation rate that underlies his interpretation of the evidence involves the initial impact of monetary changes falling on real aggregate demand and hence influencing the inflation rate.

Covering several European countries and the U.S. Brunner and Meltzer (1979) tried to make a comparison of the relative importance of the various impulses in the generation of inflation. The relative change of the money stock preasuring the monetary impulses, was significant in all cases in explaining inflation. Bhalla (1981) carried causality tests on

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Indian data following Sims and Granger (1969) procedures. His causality tests indicated that there was a weak causal relationship between money and prices, and argued that it is proper to assume that money supply growth is exogenous in equations like the monetarist models of inflation in section 3.1 above. He did not find even weak support for a systematic influence of price changes on money supply.

Causality tests have also been carried on deficits and government expenditure. This was by Shibata and Kimura (1986) on Japanese and U.S. data. They used both Granger's and Sims methods to test the hypothesis that budget deficits are the cause of growth in government expenditure. Their evidence was that government deficits were not the cause of the growth in government expenditure in both the U.S. and Japan.

A cross country study by Bhalla (1981) covering thirty developing countries indicated that the monetarist model of inflation in the countries examined evidenced that the money changes had a strong and systematic effect on the price level. Structural factors such as food bottlenecks and particularly changes in import prices were also significant. This study found that one of the important domestic causes of money supply was government budget deficits.

Another cross country study of inflation was undertaken by Tsiang (1983). His purpose was to arcertain the relative importance of the three sources of inflation i.e. government borrowing from the banking system; excess expansion of credit

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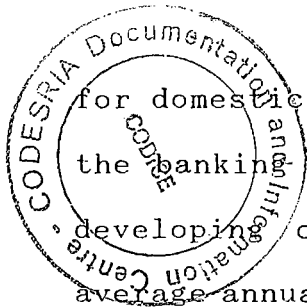
for domestic industries; and increase in net foreign assets of the banking system in the actual experiences of twenty seven developing countries. Using annual data he estimated the average annual percentage contributions from the three different sources during the decades 1971/70 and 1971-80. For the decade 1961-70, in 10 countries government borrowing from the banking system was the primary source of the increase in their money supplies (defined as M1). In 8 additional countries, this was the second most important source. Seven countries had the excess expansion of credit for domestic industries as the most important source, while another eleven had this as their second most important source. Tsiang's study confirmed further that for the decade 1971-80, 11 countries had government borrowing from the banking system as the primary source of money supply growth. Another 8 had it as a second most important source. Excess credit expansion for industries appeared as the most important source of money supply growth in 10 countries and appeared as a second most important in 12 countries. Increase in foreign assets appeared as an important source in only 7 countries while another five had it as the second most important.

Tsiang went further to test the monetarist equation of inflation. The average rates of increase of money supply were correlated with the corresponding annual rates of price inflation. A very high cross correlation between the variables existed for both decades. This was further confirmed by

regression results. Money supply was significant at the 99% level.

The question whether developing countries can trade-off domestic price stability for a higher growth rate in real income has also been investigated. Tun Wai (1959) in a study of 31 developing and industrial countries over the period 1938-54 found that for developing countries the data was inconclusive; for most of a small number of countries, for which available statistics covered periods in which the rates of price increase differed significantly, however, the evidence indicated that the rate of growth was higher when the rate of inflation was lower.

Dorrance (1966) studied 48 countries, also both developing and industrial over the period 1953-61 and found that his data supported the argument for mild inflation except for the low-income countries. He found that declining prices tended to be associated with low rates of growth. Once inflation exceeded a certain level, however, Dorrance found that rising prices tended to discourage economic development.

Wallich (1969) studying 43 countries (18 industrial and 25 developing) found that the effect of (current) inflation on growth was significantly negative. Thirlwall and Banton (1971) in a study of 51 countries (17 of which had annual per capita incomes in excess of US $800 in 1963, and the rest below that) over the period 1958-67, concluded that, in general, the argument for a mild inflation had evidence. Dividing their sample between countries with less than 10 per cent inflation

and those with more, they found that for the first subgroup no particular relation was discernible, but that for the second subgroup a significant negative association was discernible. They concluded that once the rate of inflation exceeds 10 per cent per annum the negative aspects of the effects of inflation on growth tend to come to the force.

Thirlwal (1974) in a later study of countries in Latin America concluded that it provided evidence that inflation is detrimental to growth. IMF (1982) in a study by its staff of 112 'non oil' developing countries over the period 1969-81 concluded that, for the most part, "relatively low inflation rates have been associated with relatively high growth rates and that reductions, or at least relative reductions, in inflation have been associated with an improvement, or relative improvement, in growth rates".

Thirwall and Barton (1971) in a study of 51 countries (17 of which had annual per capita incomes in excess of US $800 in 1963, and the rest below that) over the period 1958-67, concluded that in general, the argument for a mild inflation had evidence. Dividing their sample between countries with less than 10 per cent inflation and those with more, they found that for the first subgroup no particular relation was discernible, but that for the second dubgroup a significant negative association was discernible. The concluded that once the rate of inflation exceeds 10 per cent per annum the negative aspects of the effects of inflation on growth tend to come to the fore.

The evidence on developing countries supports the argument that governments should not depend on expansionary monetary developments to induce growth. They will be retarding growth while at the same time reducing the welfare of the public by the deterioration of real balances by the induced inflation. Evidence on inflationary impact of deficits through their impact on money supply growth include those by for example Dutton (1971) in the case of Argentina, Aghevli and Khan (1977, 1978) for the case of Columbia, Indonesia, Dominican Republic, Brazil and Thailand.

Even in developed countries, there is some evidence that budget deficits have caused monetary growth. In the U.S. for example Hamburger and Zwick (1981), Levy (1981) and Allen and Smith (1983) all report a positive relationship between federal deficits and the growth of M1, although Barro (1977), Niskamen (1978) and Dwyer (1983) using similar data and sample periods get opposite results. The differing results have been explained by only statistical procedure problems. The argument therefore has supportive evidence. The importance of the fact that whether deficits result into monetary growth or not is further stressed by Hamburger and Zwick "... we find that deficits have had a significant impact on the growth of the U.S. money supply throughout most of the period since 1961. Such relationship need not always hold. It depends on whether the government deficits place upward pressure on interest rates and whether the

central bank monetizes the debt in an effort to stabilize interest rates" (pg. 141).

Studies on inflation in Tanzania are numerous. A variety of factors have been pinpointed as the cause of inflation in Tanzania. The range of factors as given in Rwegasira and Kanneworff (1980) include:

Structural outside dependence on the Tanzanian economy resulting into imported inflation. These results from rising costs of imported inputs and finished goods especially fuel prices. The oil shock of 1978 which increased oil prices by 80 per cent between 1978 and 1980 was of a bad economic consequence to Tanzania, resulting into spending 60 per cent of her export earnings to import oil.

Another factor is poor performance of foreign trade leading to balance of payments problems and inability to import for domestic production and supplement consumption. Primary commodity markets were weakned by the world recession of the late 1970s and early 1980s leading to a deterioration of the terms of trade. On the export side there has been a continued decline in export volume of the major agricultural crops.

Productivity and efficiency decline in the economy is another contributing factor. This has lead to rising costs with effects transmitted through cost-plus pricing methods, Poor performance of agriculture has also exerted demand pressure on food and related items. A major factor pointed out being the cause of poor performance of agriculture is the producer pricing

policy which generated a fall in real prices paid to producers as mentioned above.

Population growth, which surpases the growth of GDP has meant pressure on available resources. Recent figures show a population growth rate of 3.3 per cent per annum while GDP has grown at an annual percentage lower than that or even negative.

Uneffected government spending, leading to heavy government borrowing using methods that lead to excessive money supply growth in the economy is another major factor. Studies on inflation have tried to touch on one or two of the above mentioned causes of inflation in Tanzania.

Rwegasira (1974) in a study which linked deficits with rising prices concluded that government expansionary finance which characterized the economy from 1963-1972 had been one source of rising prices. He however pointed that other important sources like inelasticities in agriculture and falling import capacity joined deficit financing in causing upward pressure on the general price level. A point he stressed is that the price pressure originating from government expansionary financing was reinforced by the type of the excess spending which was characterized by a bias in favour in infrastructure, unplanned and unaccompanied by appropriate compensation policies.

Later in a quantitative study, Rwegasira (1976a) related money supply to the inflationary pressures that were building up towards the end of the First Five Plan. The empirical evidence

showed that before 1969, changes in income velocity were quite strong in explaining changes in the price level and the balance of payments, but after 1969, there was noticeable co-movement of money supply and the price level partly associated with enlarged and continued deficit financing. In his econometric study he reached at the conclusion that money supply variables remained weakly related to inflation leading him to a structural explanation of inflation.[42] However, a study by Hyuha and Osoro (1982) carried a more analytical interpretation of Rwegasira's results and used a larger sample and arrived at the conclusion that excessive money supply growth has contributed to the price changes in Tanzania.

Another study stressing the structuralist approach was by Curry (1978) who used the general problems of underdevelopment as a basic explanation for inflation. A combination of declining productivity, declining production and inefficiency accompanied by excessive money supply in the economy seem to be important in the process of inflation according to Malima (1980), suggesting an increase in the rate of growth of output and reduction in the rate of money supply growth as the solution.

Loxley (1972) focused on the dependence on foreign sources of finance for the Development Plans as a source of unplanned government bank borrowing. This arises when the

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[42]. See his Inflation and the Structure of the Tanzania Economy. Rwegasira (1976b).

foreign funds are not delivered as expected and the government having already committed itsself to some projects is forced to resort to borrowing from the banking system. This has effect on money supply and the general price level.

Ndulu (1975) pinpoints on population presure and food supply deficiencies; industrial consumer goods demand pressure and supply inadequacies; imports inability to make up for the insufficiency of the essentials and budget deficits predominant in the economy as the causes of inflation in Tanzania.

A predominantly structuralist point of view was taken by Ndyeshobola, (1980) when he indicated how the opennes and structural dependence of the economy, population growth, declining productivity and inefficiency in agriculture and industry and poor performance in the foreign sector are related to each other and to inflation in the economy.

Kuuya (1975) divided the causes as endogenous and exogenous. Exogeneously inflation is caused by the import substitution type of industrialization, the colonial type of economy inherited and shortcomings as an underdeveloped economy. Domestic causes include deliberate and genuine desire on the part of the government to pursue revolutionary development policies. Because of the desire to pursue rapid development policies, expenditures have been growing very fast. Envisaged sources of this development expenditure were surplus from the recurrent budget and foreign sources. Since revenue has not been growing at the same pace as expenditure (as evidenced

above) and foreign sources have not been coming forward as expected the government resorted to domestic borrowing mainly from the banking system.

The above studies on inflation in Tanzania point to it that both structuralist and monetary explanations of inflation are relevant in Tanzania. A chain of events is responsible for the inflationary experience Tanzania is having.

These events include oil price increases, increased prices of imported goods, worldwide recession leading to a decline in the prices of our exports, persistent deterioration in the terms of trade and stagnant or even decline in agricultural production. These have had the combined effect of emergence of deficits in the Balance of Payments. A chain of adverse effects in the economy was started again. Imports had to be slashed drastically, affecting industrial production. Manufacturing industries are operating at less than 50 per cent of their installed capacity or even at 25 per cent. Agriculturural production has suffered from inadequacy of inputs as well as somewhat unfavourable seasons.

The decline in agricultural and industrial production affected government revenues from sales tax and customs duties necessitating deficit financing from the banking system much beyond planned levels as was evidenced above. (Table 2.4)

↑ see Table

3.5   Summary

In this chapter we have tried to pinpoint the inflationary mechanism as explained by monetary expansion. We showed that money and inflation relationship stems back from lving Fisher's equation of exchange. The basic assumption for the theory to work is a stable demand for money function which ample evidence exists to support. Another proposition is that the supply of money can be controlled independently of the demand for money and third is that while monetary factors may have a short-run impact on the level of real income, in the longer run real income is determined by real factors, such as population growth, capital accumulation and technical progress. Since money growth causes price growth, any factor that affects monetary growth would possible have impact on prices. In developing countries, it was shown that due to inadequate tax receipts, governments resort to deficit financing involving increases in money supply. While Keynesians have argued that this could be one way of generating investment funds for growth, evidence indicates that conditions in developing countries do not permit such procedure. There is ample evidence that price stability cannot be traded-off with growth in developing countries. We also surveyed selected empirical studies on money and income, money and prices, deficits and money and the money inflation relationship. Our next chapter will present the method of analysis which we employ to test empirically some of the theoretical issues using Tanzanian data.

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CHAPTER FOUR

THE FRAME WORK OF ANALYSIS

4.1 Introduction

Our main concern in this chapter is to lay a framework of analysis which we shall employ to link money supply, inflationary finance and inflation in Tanzania. The second item, i.e. inflationary finance is a result of the government fiscal deficits. Reactions of the government deficits to inflation is the major cause of the link between money supply and inflation.

A model that estimates lags in government expenditures and revenues was developed by Aghveli and Khan (1977, 1978). The model was applied to developing countries with high and moderate rates of inflation. This type of model has special relevance to Tanzania because it is a two track model which introduces a feed back between inflationary developments and government budget deficits. In this kind of framework government deficits result from both exogenously determined government expenditure increases and revenue collection lags, and inflation. The main argument is that inflation leads to widening of fiscal deficits financed through the banking system leading to further increases in the money supply and consequently prices.

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After formulating the model, we shall then examine the nature and extent of the relationship between the rate of growth of money supply particularly inflationary finance and changes in the price level. In order to examine the relationship between the three variables more rigorously, we shall subject them to the formal tests of causality in order to test for precedence. Here we shall apply methods developed by Pierce (1977) and Pierce and Haugh (1977). These tests are however applied in our study as a measure of precedence rather than causality. From our knowledge recent literature has shown that what such tests indicate is precedence of a certain series to the other rather than causality.

4.2   A Self Generating Inflation Model[1]

The basic model involves five equations. These are the price equation, government expenditure and revenue equations and the supply of money. A definitional equation dealing with the formation of expectations regarding inflation is the fifth.

Prices

Demand for money function is central to the monetarists theory of inflation. Infact their price equation is just an inverse of the demand for real balance equation. The model therefore starts by a specification is of demand for real

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1 The model is due to Aghevli and Khan (1977, 1978).

balances as:

$$\log (M/P) = a_0 + a1 \log yt - a2\pi t \quad \ldots\ldots\ldots\ldots\ldots (1)$$

$$a1, a2 > 0$$

where   M = Stock of nominal money balances

P = Price level

y = Level of real income

πt = expected rate of inflation.

Assuming that prices adjust to the excess demand for money, adjustment of actual stock of real balances is specified as:

$$D\log (M/P)t = \lambda \log \{(M/P\}t - \log (M/P)t-1 \quad \ldots\ldots\ldots\ldots (2)$$

where $1 > \lambda > 0$ is the adjustment coefficient.

Expected rate of inflation is generated following adaptive expectations method formulated by Cagan (1956), as follows:-

$$\pi t = \beta DPt + (1 - \beta) \pi t-1 \quad \ldots\ldots\ldots\ldots\ldots\ldots (3)$$

where ß denotes the coefficients of expectations and

DPt denotes the current rate of inflation.

The level of real money balances can be solved by substituting (1) into (2) to get

$$\log (M/P)t = \lambda ao + \lambda a1 \log yt - \lambda a2\pi t + (1 - \lambda)\log (M/P>t-1$$

$$\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (4)$$

The equation for the price level is then obtained by inverting equation (3) to arrive at

$$\log Pt = -\lambda ao - \lambda a1 Yt + \lambda 2\pi t - (1 - \lambda) \log (M/P)>t - 1 +$$

$$\log mt \quad \ldots \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (5)$$

Desired real government expenditure, is a function of income.

$$\log (G/P)t = go + g1\log Yt \quad \dots\dots\dots\dots\dots\dots\dots\dots (6)$$

$$g1 > 0.$$

The adjustment of expenditure to the difference between desired level and actual real expenditure in the previous period is specified as:

$$Dlog (G/P)t = \gamma\log [(G/P)t - (G/P)t - 1]]$$

$$1 > \gamma > 0 \quad \dots\dots\dots\dots\dots\dots\dots (7)$$

The real expenditure equation is obtained by substituting equation (5) into equation (6) to get:

$$\log (G/P)t = \gamma go + \gamma g1 Yt + (1-\gamma) \log (G/P)t-1 \dots\dots (8)$$

Our main interest here is the mean average lag in the adjustment of real government expenditures which is defined as $(1 - \gamma) / \gamma$. In nominal terms equation (7) becomes.

$$\log Gt = \gamma go + \gamma q1 \log Yt + (1 - \gamma) \log (G/P)t + \log Pt \dots (9)$$

Government Revenue (Rt) is specified as a function of nominal income (Y).

$$\Delta\log Rt = to + t1 (\log Yt + \log Pt) \quad \dots\dots\dots\dots\dots (10)$$

$$t1 > 0.$$

The difference between desired revenue and the actual revenue obtained in the previous period is the determinant of the adjustment of revenue.

$$Dlog Rt = r [\log Rt - \log Rt - 1] \quad \dots\dots\dots\dots\dots (11)$$

Where r is the coefficient of adjustment.

$$1 > r > 0.$$

Our main interest is an equation for nominal revenues which we can obtain by substituting equation (10) into (11) to get.

$$\log R_t = r_{t0} + r_{t1} (\log Y_t + \log P_t) + (1-r) \log R_{t-1} \ldots \ldots (12)$$

Coefficients of most interest here are r, γ , t1 and g1. In this framework, even if at the beginning the budget is balanced, as nominal income rises, an increasing divergence between expenditure and revenue will be innevitable if the former adjusts faster than the latter.[43]

According to Aghevli and Khan (1978), the nominal deficit will be a function of the increase in the price level provided r is less than γ even though t1 = g1.

There are plausible reasons for expecting government expenditures in a developing country like Tanzania to adjust faster than revenues to nominal income increases arising from inflation. The tax system has a low elasticity and collect lags are long, more than that, the country has an inefficient tax administrative system.

On the other side the government finds it difficult to reduce its commitments in real terms and therefore runs deficits.

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[43]. See Aghevli and Khan op. cit.

Money Supply

The money multiplier principle of money supply determination is applied by linking the money stock (M) with high powered money (H) through the multiplier (m).

$$M_t = mH \quad \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (13)$$

Changes in high powered money can occur through changes in net foreign assets (NFA), changes in banking system's claims on government (NCG) and claims by the commercial banks on the public sector and private sector (LD).

$$DH_t = DNCG + DNFA + DLD \quad \dots\dots\dots\dots (14)$$

Since deficits are mostly financed by the Central Bank, NCG will have a substantial impact on money supply. Net Foreign Assets have not been significant in monetary expansion for most of the period of study.[44] We can therefore formulate the money supply equation (13) as

$$M_t = m_t (G_t - R_t + E_t) \quad \dots\dots\dots\dots\dots\dots (15)$$

Where E_t is a combination of net foreign assets and domestic lending to non government sector.

For purposes of estimation convenience equation (15) is linearized about sample means.[45] The resulting equation which we shall use in estimation is

$$\log M_t = \log m_t + k_0 + k_1 \log G_t - k_2 \log R_t + k_3 \log E_t \quad ..(16)$$

Where the parameters k_0, k_1, k_2 and k_3 are all functions of the

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[44]. See Kimei (1986).

[45]. See Wyner (1976) as quoted in Aghveli and Khan (1978).

sample means of log G, log R, and log E.

The complete model then will comprise equations 3, 5, 9, 12 and

16 and as presented below:

(1) log Pt = - λao - λa1 log Yt + 2πt - (1-λ) log

(M/P)t-1 + log mt

(2) log Gt = γgo + γg1logYt + (1- γ) log (G/P)t-1 + logPt

(3)   log Rt = rt0 + rt1 (log Yt + log Pt) + (1-r) log Rt-1

(4)   log Mt = log mt + k0 + k1 + logGt - k2 log Rt + k3 log E

(5). πt = ßDlog Pt + (1 - ß)πt - 1

From the results of the above system of equations we shall be

able to compute the average time lags as follows:

Average time lags for

Money demand = (1 - λ) /λ

Government expenditure = (1 -γ)/γ

Government revenue = (1 - r)/r

Expected inflation = (1 - ß)/ß

The lags in government expenditures and revenues are the main

links which relate increases in the money supply and inflation

in two ways through reactions of the fiscal deficit to

inflation.

4.3 Tests of Precedence

Having established that mean time lags in government

expenditure are larger than revenue, we further examine the

nature and extent of the relationship between the rate of growth

of the money supply particularly inflationary finance and changes in the price level. This can be done by a casual comparison of the average of the annual rates of inflation and growth in money supply as a whole and inflationary finance as a component.

A more rigorous examination will then involve formal tests of causality that have been developed by Pierce (1977) and Pierce and Haugh (1977).

The procedure involves cross-correlating the series of money supply and inflationary finance with inflation.

The cross-correlation is performed with both the lagged and future values of the series and by that way some indication of direction of precedence can be obtained. The following formulations are used.

Money and Prices

$\log P_t = a_0 + a_1 \log M_t + a_2 \log M_t + 1 + a_3 \log M_t + 2 + a_4 \log M_t - 1 + a_5 \log M_t - 2$ .... (17)

Where t = 1, ... 2, are the lagged or future values in years or quarters.

In the above equation, a significant value for the correlation coefficient between the current inflation and current money supply growth would lead us to reject the null hypothesis that the two series are independent. If only lagged values of the rate of growth of money supply are significantly correlated with the current inflation rate one could argue that

increases in money supply precede prices. On the other hand if only future values of the rate of growth of money supply were significantly correlated with the current value of inflation one would interpret that to imply that inflation precedes the money supply. Following this reasoning, a significant correlation between current inflation and both the past and future value of the growth of the money supply would imply two-way causality.[46]

Since our main interest is that component of the growth of money supply which is caused by government budgetary operations, we need to test correlation between inflationary finance and prices. But before that a correlation between inflationary finance and money supply growth is performed.

Inflationary Finance and Money Supply[47]

$$\log M_t = b_0 + b_1 NCG + b_2 \log NCG_{t+1} + b_3 \log NCG_{t+1} +$$

$$b_4 \log NCG_{t-1} + b_5 \log NCG_{t-2} \dots \dots \dots \dots (18)$$

Inflationary Finance and Prices

$$\log P_t = C_0 + C_1 \log NCG + C_2 \log NCG_{t+1} + C_3 \log NCG_{t+2} + C_4$$

$$\log NCG_{t-1} + C_5 \log NCG_{t-2} \dots \dots \dots \dots \dots (19)$$

In equation (18) one would expect to get a significant correlation between both lagged values and future values of

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[46]. See Pierce op. cit. and Pierce and Haugh op. cit.

[47]. We regard Net Claims on Government as our proxy for Inflationary Finance.

inflationary finance and money supply growth. This is because

increase in inflationary finance leads to money supply expansion

and money supply expansion could also lead to increase in the

need for inflationary finance because the resulting inflation

makes the authorities finance their expenditure through

borrowing from the banking system especially the central bank.

Equation (19) explaines how inflationary finance causes

price increase. This equation is related to equation (18) in

that infltionary finance influences price rises via its impact

on money supply expansion which is what equation (18) tries to

test.

Money and Prices:

Log Pt = d0 + d1log Mt + d2log Mt+1 + d3log Mt+2 + d4log Pt-1

+ d5log Pt-2 .... (20)

Money and Inflationary Finance

log Mt = e0 + e1 log NCG + e2 log NCG+1 + e3 log Mt-1 + e4

logMt-2 .... (21)

Inflationary Finance and Prices.

log Pt = f0 + f1log NCG + f2log NCGt+1 + f3log Pt-1 + f4logPt-2

....(22)

Although in our self generating model we used annual data due to

unavailability of quarterly data, in the tests of precedence we

employed both annual data and quarterly data. In the case of

quarterly data the series were lagged up to eight past quarters

and future quarters.

CHAPTER FIVE

AN ECONOMETRIC ANALYSIS OF MONEY, INFLATIONARY FINANCE AND INFLATION

In this chapter we present the econometric results of the tests of precedence and the self generating inflation model discussed in chapter 4. The first section discusses the results of our statistical tests while in the second section we compare our main findings with other studies. The last section gives a summary of the chapter.

5.1 Results of the Econometric Estimation

5.1.1 Estimation Problems

In applying tests of precedence we followed both Sims and Granger causality tests. These two tests rest on the derivation of white noise residuals. What most studies have done to achieve these is to apply a filter to the first differenced logarithms of the variables.[48] In most cases this filter did not generate white noise residuals when applied to our data. We therefore followed Sargent and Wallace (1973) procedure whereby the filter was estimated by OLS using the specified equation then the autocorrelation coefficient was

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[48] See for example Sims (1972); Nixon et al (1979); Sargent (1974); and Shibata and Kimura (1986).

picked. This however enabled us to correct autocorrelation of first order only, while that of a higher order might be present. However by testing white noise using Box-Pierce Q statistic before causality tests one is assured of the absence of serial autocorrelation. This however is an approximation, therefore as has been pointed out by several authors, the results should be taken with caution.[49]

The whole exercise again depends very much on accuracy of the data used. Measurement errors in variables tend to reduce the significance of the coefficients and thus less causality might be detected especially in the Sims tests.[50] Multicollinearity is another problem we faced, following the fact that causality tests employ lags of the same variable. Form of the relationship between the variables was arbitrarily assumed to be linear in logarithms. Choice of the lag length was another arbitrary procedure.

Bearing in mind that Sims test may not be able to detect certain types of contemporaneous feedback (Sims p. 542), we tested by Pierce and Haugh's cross-correlation test. This however is just a test of independence. Sims tests is necessary for the direction of causality.

Coming to the self-generating inflation model our main problem was availability of quarterly data for all variables

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[49]. See for example Sims op cit; Pierce and Haugh (1977); Williams et al (1976); Wilson et al (1979).

[50]. Williams et al op cit.

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except money supply and the price level. The authors of the model used quarterly data and their interpretation interms of the length of lags might differ from ours as we used annual data. We therefore had problems of geting the exact size of for example the expenditure lag or revenue lag in terms of certain time period, i.e. months or quarters. However, since our main interest was to know which lags are longer, by looking at the coefficients we could get the right conclusions.

5.1.2   Precedence   between Money and Inflation

Our results of causality between money and prices used quarterly data which were seasonally adjusted. Sims' test did not yield good results. A very low R^2 and hence F was obtained in both tests of money causing prices and prices causing money (tables 5.1 and 5.2). On the causality from money to prices relationship only 8 quarters future money growth is significant at 90%; while none of the coefficients are significant on the relationship to test whether prices cause money. Granger's test on the same variables however yield results pointing that the two variables have a double causal relationship. Although current levels of the two series are not significant, quite a number of lags of each variable is significant at 10% as tables 5.1 and 5.2 indicate. Poor results from the Sims test could be a result of a wrong filter or wrong choice of the lags since as pointed out before, Sims test is highly sensitive on this.

Further proof of dependence between the two series is provided by the Pierce and Haugh cross correlation test. The S-statistic is 55.84 for the case of price causing money and 57.13 for the case of money causing prices. At 17 degrees of freedom the x^2 tabulated value is 33.4 at 1% which makes us reject independence between the two series.[51]

5.1.3 Precedence between Inflation and Inflationary Finance

In tables 5.5, 5.6, 5.11 and 5.12 we present the most striking results as far as our study is concerned. In tables 5.5, although the R^2 shows a great part of unexplained variance, the F Statistic is significant at 90% level. As tables 5.5 and 5.6 show inflationary finance is significant at 99% with one quarter lag and 2 quarters lag, and significant at 95% with 6 quarters lag and 8 quarters lag. At seven quarters it is significant at 90%. Past inflation rates are significant when laged at 5 quarters and 8 quarters in determining current government money creation.

Granger test of causality shows a higher R^2 for the case of money creation causing inflation, and higher F statistic. Inflationary finance lagged 3 quarters is significant at 95% while lags of 4 quarters and 8 quarters are both significant at 90% level. F statistic is significant at 99%. While results of money supply and inflation were not that

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[51]. S* N r^2xy(k) where N = number of observations; k = the extent of the lag, and r^2xy the squared correlation coefficient of filtered values of the variables.

striking, here we see that governments creation of money to finance deficits is relatively more inflationary as a component of money supply. This supports our main hypothesis that the government's resorting to money creation in order to finance its expenditure calls for treatment of money as exogenous with respect to inflation. As the authorities make money respond to inflation, inflation is developed further. This is because money supply growth is increased by deficit financing because the main financier in Tanzania is the central bank. This however follows from the definitional equation, i.e. MN = NCG + LDt NFA. The F statistic is significant at 99% level. Inflationary finance causes money supply with a lag of 1 quarter, 3 quarters and 4 quarters as these are the significant ones according to our results.

5.1.4 The Government Fiscal Operation and Inflation

From the results discussed under sections 5.1.2 to 5.1.3, we now present estimates of the lags in government expenditure and revenue which are assumed to be the main link between prices and money growth. Table 5.11 and 5.12 presents these results. Expenditure adjustment is larger than revenue collection lag (γ > r). According to Aghevli and Khan (1978) in such a situation, the nominal deficit will be a function of the increase in the price level, an observation confirmed by causality tests[52].

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[52]. Here net claims of Government are a proxy for deficits.

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Considering the price equation it is found that increases in real income would lower the price level. Surprisingly expectations of increased inflation would lower the price level.[*] The higher the previous years stock of real money balances, the higher would be the price level. The fit for the price equation is very good with a high r^2 of 0.99.

The effect of income on both government expenditure and revenue are both significant at 1% of confidence level. The coefficient on government expenditure is 1 indicating that the government adjusts expenditure to changes in income automatically. At the other side the coefficient on revenue is only 0.5 meaning a slower adjustment. This is in line with our hypotheses. As expected also, also the average time lag of revenue is longer than the expenditure lag (table 5.13).

The money supply equation has also a good fit. As expected, government expenditures significantly increase money supply growth while revenues would reduce money supply.

Explanations or re generation of expected inflation to be done

Table 5.1: Money Supply Regressed on Inflation

i	Coefficients on future inflation		Coefficients on lags of inflation	
0	0.1604	(0.5769)	X	
1	0.1033	(0.3969)	0.0727	(.26937)
2	0.2190	(0.8244)	0.1276	(0.4622)
3	0.1540	(0.6345)	-0.1511	(-0.5592)
4	0.2007	(0.7890)	0.0293	(0.1133)
5	0.2518	(1.0314)	0.0549	(0.2181)
6	-0.1046	(-0.4434)	0.0539	(0.2181)
7	0.1579	(0.7369)	-0.2090	(-0.9012)
8	0.1853	(0.8687)	0.3885	(1.7140)

Constant = -0.0044   (-0.3429)
    R   =   (-0.1286)
    dw =   2,0068
    F   =   0.4652

T-ratios are in parentheses. Quarterly data for the period 1969:1 to 1988:2
analysed. First-differenced logs of variables filtered by (1-0.8848 B).

Table 5.2:   Inflation Regressed on Money Growth

/ 1 /	Coefficient on Future Money Growth		Coefficient on Past Money Growth	
0	X		-0.1771	(-1.5428)
1	-0.1923	(-2.1046)	0.1773	(1.5243)
2	0.1912	(2.1019)	-0.0146	(-0.1177)
3	-0.1175	(-1.2110)	0.0444	(0.3902)
4	0.0375	(0.3882)	0.0194	(0.1664)
5	0.0163	(0.1726)	0.1497	(1.2791)
6	0.1797	(1.7539)	-0.2063	(-1.7404)
7	-0.2070	(-2.1474)	0.2015	(1.8355)
8	0.2046	(2.1405)	-0.0686	(-0.6559)

Constant = 0.0019 (0.5052)
R^{-2} =   0.1828
d.w.=   2.3428
F,(8,40) 2.3428

T-Ratios are in parentheses. Analysis of quarterly data 1969:1 to 1988:2.
Filter applied is (1-0.8848 B).

Table 5.3: **Inflation Regressed on Inflationary Finance**

/ i /	Coefficients on future inflationary finance growth		Coefficients on lagged inflationary finance growth	
0		X	0.1374	(0.8477)
1	0.2321	(1.5060)	0.3786	(2.2497)
2	0.0862	(0.7816)	0.2118	(2.2497)
3	0.1299	(1.5905)	0.0428	().5404)
4	0.0651	(0.6156)	0.0989	(1.0544)
5	0.3936	(2.7700)	0.0712	(0.6635)
6	0.2424	(1.4814)	0.2254	(1.8881)
7	0.1309	(0.9215)	0.1477	(1.5769)
8	0.2883	(3.0665)	0.0847	(1.9122)

Constant = 0.0054 (1.35006)

$\bar{R}^2$ =   0.4574

d.w. = 2.0305

F   = 2.2052

T-ratios in parentheses. The series were first differenced i.e. (log Pt - lt Pt-1) and log (NCG - log NCG-1) then filtered by the filter $(1 - 1.3 B + 0.6 B^2 - 0.3B^3)$.

Table 5.4: **Inflationary Finance Regressed on Inflation**

/ i /	Coefficients on future Inflation rates		Coefficients on Past Inflation rates	
0		X	0.7733	(1.4834)
1	1.0336	(2.0191)	0.3130	(0.6134)
2	0.5319	(1.0315)	0.3807	(0.7246)
3	0.6155	(1.2726)	0.4265	(0.8353)
4	-0.3281	(-0.0702)	-0.1601	(-0.3355)
5	0.2779	(0.6296)	1.0812	(2.3785)
6	0.3912	(0.8947)	-0.3238	(-0.7150)
7	-0.3461	(-0.8594)	-0.2124	(-0.4866)
8	-0.4879	(-1.2792)	1.0931	(2.7734)

Constant = 0.0026 (-0.6477)

$\bar{R}^2$ =   0.3807

dw   =   2.1793

F   =   1.8083

F(17, 23)   2.1163

T-ratios in parentheses. Variables first differenced then   filtered by $(1-3.3B + 0.6 B^2 - 0.3 B^3)$.

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Table 5.5: Inflation Regressed on Lags of Money and Inflation

i	Coefficients on lags on money growth		Coefficients on lags of Inflation	
0	-0.0010	(-0.0592)	X	
1	-1.8968	(-10.9054)	0.1967	(0.3169)
2	-2.1289	(-5.6694)	0.3449	(0.7787)
3	-1.9455	(-3.6699)	0.3417	(0.6740)
4	-1.5375	(-2.4916)	0.1245	(0.2369)
5	-0.8360	(-1.3497)	-0.02969	(-0.5713)
6	-0.2326	(-0.4509)	-0.5107	(-1.0941)
7	-0.0153	(-0.0439)	-0.7015	(-1.9745)
8	0.0483	(0.3064)	-0.3894	(-2.1176)

Constant = 0.1511 (3.2379)

$\bar{R}^2$ = 0.8800

dw = 1.8358

F = 12.0618

F 17, 30 (0.01)

Estimated t-ratios are in parentheses. Analysis of quarterly data 1969:1 to 1988:2. Logs of variables pre-filtered by $(1.4 B + 0.6 B^2 - 2.3 B^3)$.

Table 5.6: Money Regressed on Lags of Inflation and Money

i	Coefficients on lags of inflation		Coefficients on lags of money growth	
0	-0.1054	(-0.5459)	X	
1	-0.2276	(-0.6195)	-1.5909	(-9.2945)
2	-0.1766	(-0.3939)	-1.3460	(-4.1117)
3	-0.3505	(-0.7152)	-1.0523	(-2.6000)
4	-0.5709	(-1.1749)	-0.9460	(-2.1777)
5	-0.7493	(-1.5736)	-0.5683	(-1.2777)
6	-0.6838	(-1.5043)	-0.2366	(-0.5889)
7	-0.7557	(-1.9884)	-0.1992	(-0.6497)
8	-0.4144	(-2.0-172)	-0.0791	(-0.5172)

Constant = 0.0060 (0.4452)

$\bar{R}^2$ = 0.8448

dw = 1.8400

F = 8.9828

F 17, 31 (0.01) = 2.400

t 31 d.f. 1.3000

Estimated t-ratios in parentheses. Analysis of seasonally adjusted quarterly data, 1969:1 to 1988:2. Logs of variables pre-filtered by $(1.5 B + 0.6 B^2 - 0.3 B^3)$.

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Table 5.7: Broad Money Regressed on Lags of Inflation and Money

-i	Coefficients on lagged broad money growth		Coefficients on lags of inflation	
0	-0.1984	(-0.6229)	X	
1	-0.0438	(-0.1541)	-1.1648	(-6.2386)
2	0.0811	(0.2483)	-0.72672	(-2.6954)
3	-0.0159	(-0.0446)	-0.5856	(-1.9227)
4	-0.1501	(0.4351)	-0.5558	(-1.8122)
5	0.1491	(0.4659)	-0.5289	(-1.7376)
6	0.0563	(0.2144)	-0.5902	(-1.9550)
7	0.1418	(0.7862)	-0.3233	(-1.1086)
8	0.0748	(1.2360)	-0.2056	(-1.0847)

Constant   =   0.0055   (0.7743)

$\overline{R}^2$ =   0.6507

dw   =   1.9481

F   =   6.0428

F 17, 31 (0.01)   =   2.1000

t 31 d.f.   =   1.300

Estimated t-ratios are in parentheses. Analysis of quarterly data, 1969:1 to 1988:2. Logs of variables pre-filtered by $(1.3 B + 0.6 B^2 - 0.3 B^3)$.

Table 5.8:   Inflation Regressed on Lags of Inflation and Broad Money

-i	Coefficients on lags of inflation		Coefficients of lags of broad money growth	
0	-0.1770	(-0.9345)	X	
1	-0.4635	(-1.7403)	-1.1198	(-6.4309)
2	-0.3756	(-1.2726)	-0.8366	(-3.384)
3	-0.4920	(-1.6615)	-0.8243	(2.9054)
4	-0.3663	(1.2139)	0.0134	(0.4821)
5	-0.1096	(-0.3633)	0.0665	(0.3060)
6	-0.1735	(-0.5762)	-0.2114	(-1.1780)
7	-0.2017	(-0.7020)	-0.1981	(-1.8376)
8	-0.1119	(.0.5609)	-0.1770	(-1.3438)

Constant   =   0.0048   (0.7397)

$\overline{R}^2$ =   1.9771   DW   =   1.9671

F   =   39.9986

F 17, 31 (0.01)   =   2.100

Estimated t-ratios are in parentheses. Analysis of seasonably adjusted quarterly data 1969:1 to 1988:2. Filter applied to logs of variables is $(1.3 B + 0.6 B^2 - 0.3 B^3)$.

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Table 5.9: Inflation Regressed on Lags of Inflationary Finance and Inflation

i	Coefficients on laggged growth of inflationary finance		Coefficients on lagged inflation rate	
0	-0.0185	(-0.2535)	X	
1	0.7301	(0.7583)	-1.3974	(-8.1277)
2	0.1142	(1.1817)	-1.1569	(-3.9508)
3	0.1778	(1.8232)	-0.8485	(-2.5728)
4	0.1349	(1.3163)	-0.7791	(-2.2954)
5	0.0580	(0.5552)	-0.7791	(-2.3278)
6	0.0792	(0.7563)	-0.7709	(-2.4197)
7	0.0658	(1.0924)	-0.3874	(-1.2578)
8	0.00658	(1.5427)	-0.1528	(-0.7521)

Constant = 0.0093 (1.1556)
$\bar{R}^2$ = 0.7575
D.W.= 1.9738
F = 5.3857
F 17, 31 (0.01) = 2.1000
t 31 d.f. = 1.300

Estimated t-ratios in parentheses. Analysis of seasonably adjusted quarterly data 1979:1 to 1988:2. Logs of variables filtered by $(1.3 B + 0.6 B^2 - 0.3 B^3)$.

Table 5.10: Inflationary Finance Regressed on Lags on Inflation and Inflationary Finance

i	Coefficients on lagged inflation		Coefficients on lagged inflationary finance growth	
0	-0.0131	(0.0415)	X	
1	0.2256	(0.6714)	-0.0520	(0.3379)
2	0.3997	(1.0450)	-0.3546	(-2.5316)
3	0.6684	(1.8474)	-0.2278	(1.5860)
4	-0.1927	(-0.5242)	-0.1080	(-0.7705)
5	1.3157	(3.4437)	0.0732	(0.5877)
6	0.0557	(0.1380)	-0.5857	(-5.2359)
7	0.5075	(1.3509)	-0.2717	(-2.6398)
8	1.0341	(2.7317)	-0.1023	(-1.1851)

Constant = 0.0042 (-0.64507)
$\bar{R}^2$ = 0.5432
DW = 1.8841
F 17, 31 = 2.4303
T.F. (17, 31) = 2.1000
t 31 d.f. = 1.3000

Estimates of t-ratios in parentheses. Analysis of seasonably adjusted data from 1969:1 to 1988:2. Logs of data filtered by $(1.3 B + 0.6 B - 0.3 B)$.

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Table 5.11:   RESULTS OF THE SELF GENERATING INFLATION MODEL[53]

(1) $\triangle$Log Pt =   5.8591 – 1.8706 log yt – 4.7540 πt +
                    (1.4331)   (3.0444)   (-2.8743)

        1.4771 (M/P)t-1 + log Mt
        (3.0567) R^2 = 0.9862
                                        dw = 1.7493

(2) log Gt = 5.9679 + 1.0549 log Yt + 0.5407 log (G/P) + logPt
                                                    t-1
        (-16.616) (39.3318)   (9.3401)
                                            R^2 = 0.9949
                                            dw = 1.9553

(3) log Rt = -0.9409 + 0.5098 Yt + 0.58981 log R
                                                t-1
        (1.7149) (1.9412)   (2.0156)
                                            R^2 = 0.9835
                                            dw = 1.8163

(4) log MNt= -2.1547 + 0.8619 log Gt- 0.3566 log Rev - 0.0135
    log Lt
            (-2.42621) (6.4412)   (-2.3618)   (0.2244)
                                            R^2 = 0.9562
                                            dw = 1.8651
(5)   πt = 0.5316   log Pt + 0.3718   πt
                                            (t-1)

Table 5.12:   Estimates of Individual Parameters: TANZANIA

λ	Y	r	a0	a1	a2	g0	g1	t0	t1
5.7570	0.4593	0.4012	1.0177	0.3249	0.8262	12.9934	2.1772	5.3363	1.0667

Notes: Computed from equations (1), (3) and 5 of Table 5.12.

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[53] . The resulting value gives the period in which 63 per cent
of the adjustment is completed (Aghevli and Khan (1978) p. 399 (in
our case it is in years between money and prices.   A possible
interpretation is that instead of quarters our values indicate
years or a proportion of a year.

Table 5.13:   Estimates of Lags

Money Demand: $(1 - \lambda)/\lambda$
                  0.8262
Government Expenditure: $(1 - \gamma)/\gamma$
                  ~~0.8002~~ 1.
Government Revenue: $(1 - r)/r$
                  ~~0.492~~ 1.5
Expected Inflation: $(1 - \beta)/\beta$
                  0.8811

5.2   A Comparison with International Evidence

Our results on the self generating inflation model compare well with those by Aghevli and Khans (1977, 1978). Tables 5.14 5,15 and 5.16 present their main findings.

Their findings lead them to the main conclusion that while government expenditures rise concomitantly with inflation, government revenues would tend to fall behind in real terms owing to collection lags. The financing of this inflation-induced deficit would then increase the money supply and generate further inflation. Thus, the increase in the supply of money would both cause inflation and would be the result thereof. Their formal tests of causality between the two variables confirmed this phenomenon. The tests were performed by cross correlating prices and money, with prices as the dependent variable. Table 5.14 below presents their results.

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Table 5.14:   Estimates of Government Expenditure, Government Revenue and Demand for Money Adjustment Coefficients

Parameter	Brazil	Colombia	Dominican Republic	Thailand
		Price Level		
λ_0	0.263	0.448	0.121	0.325
λ_0	-0.293	-6.766	1.512	-0.618
λ_1	0.942	1.082	2.147	1.377
λ_2	1.910	1.399	5.518	1.697
		Government Expenditure		
	0.954	0.950	0.913	0.920
g_0	-1.766	4.917	-1.553	5.271
g_1	0.930	1.342	0.857	1.186
		Government Revenue		
r	0.628	0.640	0.764	0.855
t_0	-2.633	3.998	-2.365	4.973
t_1	1.040	1.128	1.094	0.986
		Money Supply		
k_0	0.115	0.037	0.010	0.097
k_1	0.246	0.331	0.497	0.369
k_2	0.205	0.314	0.419	0.336
k_3	0.952	0.981	0.934	0.961
		Expected Inflation		
ß	0.900	0.850	0.900	0.900

Notes: Sample periods: Brazil   1964:3 - 1974:4
                        Colombia   1961:3 - 1974:4
                        Dominican Republic 1961:3 - 1974:4
                        Thailand   1961:3 - 1974:4

Source: Aghevli and Khan op. cit.

Table 5.15: Average Time Lags (inquarters)

Brazil	Colombia	Dominican Republic	Thailand
		Money demand: $(1-\lambda)/\lambda$	
2.80	1.23	7.26	2.08
		Government Expenditure: $(1-\gamma)/\gamma$	
0.05	0.05	0.10	0.09
		Government Revenue: $(1-r)/r$	
0.59	0.56	0.31	0.17
		Expected Inflation: $(1-\beta)/\beta$	
0.11	0.18	0.11	0.11

Source: Aghevli and Khan op. cit.

Average lags in the adjustment of revenues are longer than the corresponding government expenditure lags, and this is the empirical verification that the main reason for the existence of two-way causality betweeen money and prices hinges crucially on a shorter time lag in the adjustment of nominal (and real) government expenditures than in the adjustment of revenues.

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Table 5.16:   Cross-Correlations Between Prices and Money with Money as the Dependent Variables[1]

Lags/Leads of Money Quarters	Brazil	Colombia	Dominica Republic	Thailand
-8	0.307*	0.251	0.270*	0.037
-7	0.436*	0.095	-0.044	0.274*
-6	0.381*	0.667*	0.372*	0.087
-5	0.467*	0.023*	-0.096	0.314*
-4	0.393*	0.253	0.178	0.213*
-3	0.591*	0.338*	0.033	0.413*
-2	0.559*	0.630*	0.330*	0.311*
-1	0.610*	0.235	0.078	0.449*
0	0.534*	0.284*	0.226	0.334*
1	0.614*	0.366*	0.129	0.494*
2	0.572*	0.668*	0.42	0.235
3	0.599*	0.071	-0.031	0.471
4	0.414*	0.368*	0.286*	0.279*
5	0.463*	0.088	0.067	0.491*
6	0.512*	0.694*	0.184	0.188
7	0.428*	-0.046	-0.079	0.429*
8	0.265	0.207	0.360*	0.120

[1]
An Asterik indicates that the value is greater than twice its standard error.

Source: Aghevli and Khan op. cit.

5.3   Summary

We have empirically shown in this chapter that money supply and inflation are linked in two ways in Tanzania. The budgetary operations of the government which are characterised by deficits which are financed by money creation is the main link. Results support the contention that lags in tax revenue are greater than

expenditure lags resulting in a deficit which is the main mechanism perpetuating inflation in Tanzania. Tests of precedence show that money supply (inflationary finance in particular) precede price rises confirming our results of the self generating inflation model. Finally our results compare well with results using similar procedures in other developing countries.

CHAPTER 6

CONCLUSION

6.1 Summary

According to monetarists inflation is purely a monetary phenomenon. This is in the sense that inflation is and can be generated only by a more rapid increase in the quantity of money than output. In the short run prices may be unaffected by changes in monetary growth, but in the long-run the effect is spilled out as the rate of chance in monetary growth persistently exceeds the rate of growth in real output. In this way inflation is seen as stemming from and primarily sustained by expansionary monetary and fiscal policy. Hence the principal causes of inflation are government spending, expansionary credit policy, and the exchange operations of the central bank. This is also based on the assumptions that, first the private sector has a stable demand for money that responds to income changes. Friedman (1956) calls this relation a technical one in which as money income increases, more money is required to facilitate the transactions that are implied by the higher level of income.

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Secondly, the government is the main instrument behind the exogenous changes in monetary growth. This is particularly evident when government deficit spending is not covered by borrowing from the general public and non-bank financial institutions, but by borrowing from the Central Bank. The third reason is that the government is the one borrower with unlimited borrowing power.

Fourthly pressure is exerted on government finances by state owned enterprises arising from their inefficient operations.

The mechanism propagating the effects of changes in monetary growth of incomes and finally prices works as follows: A change in the monetary growth rate, a result of either one of the above factors or a combination of all, creates a discrepancy between the actual money balances the community holds and the money balances it wants to hold. The community responds by seeking to dispose of the excess balances. This attempt will raise the volume of transactions (expenditure and receipts) leading to a building-up of prices and, perhaps, an increase in output.

The monetarist contention does not, however, deny the possibility of the existence of rigidities in production in the external markets of import requirements, or of exogenously determined wage increases, but maintains that these features

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emanate to a large extent from financial policies and its colloraries - such as import restrictions when inflation has upset the balance of payments, and price controls which seem easier to apply to essential products but aggravating distortions unfavourable to development. Hence, to the monetarists it is not the structure of the economy that is faulty, but the intrinsic policy variables which tend to generate these results (Friedman 1972).

The above discussion brings us to the monetarists[54] conclusion that nothing will produce a sustained inflation unless it produces a more rapid increase in the quantity of money than output, and that nothing will stop inflation unless it causes end to an undully rapid rise in the quantity of money.

Structuralists associate the problem of inflation with the dual objectives of growth and stabilization for the underdeveloped countries[55]. The underlying argument behind this approach is that inflation is fundamentally a result of supply inelasticies and sectoral imbalances (Structural disequilibrium) which are characteristic of underdevelopment; such that the

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[54]. Friedman, M., (1972) Lectures, Praeger, 1972.

[55]. See for example: Griffin K., Underdevelopment in Spanish America; Allen and Unwim, 1969; Kirkpatrick C.H.; Nixon, F.I., The origins of Inflation in Less Developed Countries, A selected Review, Manchester 1974; Seers, D., Inflation: The Latin American Experience, D.P. 168, Sussex 1981]as quoted in Ndyeshobola (1983)

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process of income generation leads to the simultaneous presencee of unemployment and inflation, (Griffin 1969).

The inherent structural distortions create particular supply bottlenecks and savings scarcity, which in turn generate inflation, and inflation creates further problems.

The structuralists tend to associate the origin of these structural bottlenecks to the long run period of export and foreign capital oriented growth. The characteristics arising from this pattern of growth are:[1]

(1) the heavy reliance on primary products for the country's export revenue, and typically on a very small number of products; and

(2) the lack of an internal financial structure. During the period of export-led growth, capital had come from abroad, government revenue had to come from foreign trade taxes and thus providing a weak impetus for developing internal financial institutions or habits of savings;

(3) the development of fairly large urban populations centred on commerce and service activities associated with the export sector;

(4) the infrastructure was principally geared to primary exporting activities rather than to the development of domestic industry;

[1] See also Ndyeshobola (1983),

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(5) the traditional land tenure system characterized on the other hand by landleards who were not interested in land for its direct production potential, and on the other hand by tenants and workers who were not in a position to exploit its potential;

(6) the unequal income distribution resulting from the tenure system and the enclave nature of the export economy, and last;

In Tanzania, several factors have been pinpointed as being the causes of inflation, These include:

(1) Structural dependence of the economy on foreign economic systems. The open dependence is complicated by asymmetry in national production and consumption patterns in as much as the economy "generally producing what we do not consume and consuming what we do not produce" One consequence of the above is "imported inflation".

(2) Rising costs of imported inputs and finished goods, especially fuel prices,

(3) Poor performance of foreign trade leading to balance of payments problems and inability to import for domestic production and supplement consumption;

(4) Declining productivity and efficiency in the conomy, leading to rising costs with effects transmitted through cost accommodating pricing methods;

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(5) Poor performance of agriculture leading to demand pressure on available agricultural products and foreign exchange problems;

(6) Unfetted government spending leading to heavy government bank borrowing; and

(7) excessive money supply in the economy.

In the light of the above factors inflation in Tanzania is caused by both monetary and structural factors.

Like most developing countries, the country has no choice but run budget deficits in order to finance its development expenditure. This arises from several reasons. First the tax base is inadequate. Second tax administration is too inefficient to take advantage of the even small tax base and third political realities do not allow high tax rates. Aggravating the above problems, the domestic capital markets are so underdeveloped that most financing of fiscal deficits is done by the Central Bank. This increases money supply and given the slower growth of real output or even negative growth some years during the period of study, brings us to the monetarist explanation of inflation which was our main purpose of this study.

This study aimed at establishing whether Tanzania being a developing country in pursuit of growth through capital formation can achieve that goal by increasing the supply of

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investible resources even by inflationary expansion of the money supply. In terms of development theory, the advocates of deficit financing belong to those who believe that economic growth can be promoted primarily by increasing the supply of investible resources, differing with those who believe that it can be promoted primarily by raising the productive efficiency of the given resources which will subsequently lead to an expanding supply of investible resources.

This study therefore tested the former approach. The main hypothesis was that inflationary finance is positively linked to inflation rather than output growth in Tanzania. The causal link was assumed to be the financing of deficits by means of credit from the Central Bank. Further it was demonstrated that a reverse link between inflation and inflationary finance exists. This is because inflation leads to a higher government budget deficit which requires more government bank borrowing which leads to monetary expansion and further inflation. The main hinges on the lag in tax revenue collections which are longer than the immediate inflationary impact on expenditure. The mechanisms were indentified to be the effect of inflation on both revenue and expenditure and thus creating pressure on government finances.

This process was assumed to be ~~the main~~ an important element sustaining inflation in Tanzania. Further, tests of precedence were

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undertaken by applying causality tests. It was found that both money and prices precede each other at different time periods.

The lags in government revenue and expenditure, the main elements of the self generating inflation were estimated following Aghevli and Khan (1978). Estimates of the adjustment coefficients of government expenditure to income and prices are larger than adjustment of revenue.

This is in accordance with our hypothesis that nominal government expenditures are adjusted upward almost automatically to keep pace with inflation while revenues adjust at a slower pace. The estimates of the average time lags further verify that expenditure adjusts faster than revenue. In this framework, even if the government succeeds in achieving a balanced budget at a given time, in the long run a deficit will automatically be created due to the lags of the two components of the budget i.e. revenue and expenditure.

6.2 Limitations

Our main limitations were first the non-availability of quarterly data for most variables. This limited our final analysis of the self-generating inflation model in that the original model by Aghevli and Khan used quarterly data and could therefore measure

the lags in revenue and expenditure in months. We used annual data and thus could not interpret the exact time lag. However, an insight on the main hypothesis as the size of the lags could be obtained. Secondly the accuracy of the data used in the analysis could be a problem. As it is known measurement errors in variables tend to reduce the significance of the coefficients. In our tests of precedence, we employed lags of the same variable. This could have brought the problem of multicollinearity. Finally the form of the relationship between variables has arbitrary been assumed as linear in logs. There could be a better relationship than the one we estimated.

6.3 Policy Implications.

Our analysis of the inflationary process have the following policy implications: Firstly, there is need for the adoption of a restrictive monetary policy in which the supply of money must be constrained to grow steadily at the rate of growth of real output[56].

Secondly, the government budget and government intervention in general economic activities should be limited.

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[56]. This is as was ~~writtely~~ rightly pointed by Rwegasira (1974); and Ndyeshobola (1983).

This will do away with the inflationary pressures emanating from the government deficit. This policy should go hand in hand with the elimination of revenue collection lags so that the demand for government expenditure that cannot be met by normal revenue sources of government funds, is reduced. Since the absence of large-scale use of such sources as income or corporation tax for raising revenue tends to tempt the government to resort to the printing press to finance their activities.

However, bearing in mind that the economic conditions in Tanzania require both monetarist and structuralist analysis, the above policies should go hand in hand with such policies as the need to converge domestic resource use and domestic demand.

APPENDIX TABLE 1

TRENDS IN SOME MACRO VARIABLES

	GDP	Government Expenditure	Government Revenue	NCPI	Money Supply (M2)	Interest Rate on Time Deposits
1969	7460	2130	1215	.97	1472	4.5
1970	8215	2460	1470	1.00	1679	4.5
1971	8857	2519	1231	1.05	2058	4.5
1972	10032	3020	2510	1.23	2327	4.5
1973	11490	4428	3161	1.25	2775	4.5
1974	14010	6186	3602	1.45	3456	4.5
1975	16988	5969	4779	1.89	4284	4.5
1976	22620	8187	5343	2.00	5332	4.5
1977	26015	8867	5630	2.24	6383	4.5
1978	28930	13035	6461	2.49	6827	4.5
1979	32452	14872	7085	2.84	10,435	4.5
1980	38657	15830	8454	3.69	13,346	4.5
1981	45193	18400	9995	4.64	15,401	5.0
1982	54845	19276	12110	5.97	18,323	5.5
1983	60702	23279	14200	7.60	20,564	5.5
1984	78143	26728	19,143	10.34	23,395	5.5
1985	108083	33219	22321	13.8	25,270	6.0
1986	143034	55481	34498	18.2	35779	10.0
1987	198101	76856	56529	23.5	47130	18.0
1988	261666	118672	70212	23.8	66,585.1	18.0

GROSS DOMESTIC PRODUCT BY KIND OF ECONOMIC ACTIVITY AT CURRENT
PRICES   Shs. Mill.

ECONOMIC ACITIVITY	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
1. Agriculture, Forestry, Fishing and Hunting	9046	11131	12596	14728	16636	20338	26449	32737	41295	61231	84153	12094	178253
2. Mining and Quarrying	214	243	228	284	329	299	266	249	337	251	474	645	722
3. Manufacturing	2811	3287	3859	3868	4079	4501	4361	4869	5932	6665	8551	9407	11033
4. Electricity and Water	291	254	261	275	424	423	421	514	551	1071	1488	2834	4032
5. Conclusion	884	1111	1052	1229	1498	1614	1863	1252	1661	2061	3131	3467	4550
6. Whole sale and retail trade, Hotels & Restaurants	2839	3407	3889	4344	4713	5479	6814	8148	10447	14195	19476	23961	28674
7. Transport and Communication	1685	1793	1917	2113	3019	3133	3395	3507	4789	7021	7797	14124	13267
8. Finance, Insurance, Real Estate & Business Services	2036	2419	2686	2978	3744	4597	4891	5252	6028	6659	8127	11061	12937
9. Public administration and others	2342	2596	2873	3342	3959	4952	5446	7272	9614	10735	10140	12908	16056
10. Total Industries	2207	26241	29271	33161	38419	45026	53906	63900	79654	109889	143337	199413	274554
11. Imputed bank service charge	-424	-543	-689	-884	-955	-1120	-1360	-1292	-1511	-1806	-2544	-6444	-12898
12. GDP at factor out	21652	25698	28582	32317	37454	43906	52546	62608	78143	108083	140793	192969	261666

APPENDIX TABLE 3

GROSS DOMESTIC PRODUCT BY KIND OF ECONOMIC ACTIVITY AT 1976 PRICES SHS. MILLION.

ECONOMIC ACTICITY	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
1. Agriculture, Forestry, Fishing and Hunting	9046	9150	8998	9066	9418	9511	9639	9914	10312	10931	11537	12066	12609
2. Mining and Quarrying	214	231	189	200	189	193	193	174	186	174	154	149	138
3. Manufacturing	2811	2641	2730	2821	2683	2382	2304	2104	2159	2075	1991	2075	2187
4. Electricity and water	219	244	286	318	400	417	420	413	439	461	482	582	537
5. Construction	884	915	783	879	932	890	930	549	660	601	705	721	757
6. Wholesale and Retail trade, Hotels & Restaurants	2839	2782	2797	2839	2839	2725	2668	2612	2640	2662	2953	3112	3236
7. Transport and Communication	1685	1652	1699	1634	1818	1652	1694	1473	1482	1509	1504	1551	1652
8. Finance, Insurance, Real Estate, & Business Services	2036	2089	2208	2338	2483	2529	2702	2817	2984	3318	3318	3395	3500
9. Public Administration & Other services	2342	2497	2997	3255	3188	3551	3556	3556	3543	3616	3325	3243	3343
10. Total Industries	22076	22201	22687	23350	23950	28850	24106	23598	24411	25075	25894	26834	27959
11. Imputed Bank Service charge	-424	-462	-485	-501	-549	-667	-716	-755	-797	-886	-362	-862	-920
12. Gross Domestic Product at f.c.	21652	21739	22202	22849	23419	23301	23439	22882	23656	24278	25008	25972	27039

APPENDIX TABLE 4

QUARTERLY DATA

		Money Supply Mill TShs	Net Claims on Government Mill TShs	Price Level (NCPI)
1969	1	1720.3	4.7	96.51
	2	1873.9	89.9	96.84
	3	2051.7	155.6	98.97
	4	2193.9	163.6	99.85
1970	1	2061.3	132.8	100
	2	2180.4	75.7	99.92
	3	2442.4	247.7	101.2
	4	2619.9	282.3	103.5
1971	1	2524.3	267.5	
	2	2750.3	352.8	102.4
	3	2951.0	424.5	106.7
	4	3173.6	489.3	106.8
1972	1	3122.7	518.1	111.9
	2	3125.1	516.7	113.7
	3	3422.8	539.6	116.7
	4	3669.4	520.2	114.8
1973	1	3686.3	427.9	121.8
	2	3728.1	412.8	124.6
	3	4993.1	559.7	124.7
	4	4201.4	611.0	126.9
1974	1	4161.4	645.7	128.9
	2	4342.9	828.7	143.1
	3	4820.4	1289.2	145.3
	4	5013.8	1447.3	178.3
1975	1	4511.3	1562.7	184.6
	2	4836.5	1581.5	189.6
	3	5136.2	2432.5	185.6
	4	5552.7	2210.1	191.0
1976	1	5559.0	2435.8	193.3
	2	6152.7	2643.9	200.3
	3	6650.1	2952.9	203.9
	4	6546.8	3223.3	204.8
1977	1	7142.5	2960.3	226.3
	2	7293.3	2620.4	221.6
	3	8144.2	3089.2	218.1
	4	8346.7	2886.8	229.4
1978	1	8046.0	2906.3	236.7
	2	8290.0	3272.4	245.2
	3	9036.3	4062.1	248.6
	4	9396.0	4605.0	268.2

APPENDIX TABLE 4   (Cont'd)

1979	1	10507.3	5588.0	270.8
	2	11413.7	6275.3	274.6
	3	12962.5	7513.9	285.5
	4	13806.6	7963.5	303.7
	2	15030.6	9000.5	351.4
	3	16139.2	9809.5	385.1
	4	17519.9	10899.5	413.0
1981	1	17491.4	11265.2	427.1
	2	18278.9	11750.5	443.7
	3	19817.9	13215.9	478.9
	4	20694.7	13844.1	506.7
1982	1	21001.6	13935.0	524.9
	2	22238.5	14971.2	551.8
	3	23504.9	16948.7	640.8
	4	24728.6	17537.0	640.8
1983	1	25814.0	18300.9	687.4
	2	26344.4	19301.9	740.0
	3	28821.4	20739.2	764.2
	4	29078.3	20659.1	849.5
1984	1	29977.6	21742.8	905.1
	2	32309.8	23719.8	959.9
	3	32400.5	23950.6	1026.5
	4	32510.2	24105.7	1165
1985	1	30689.2	24599.4	1326.5
	2	32962.7	26891.2	1392.5
	3	36428.3	31798.7	1450
	4	38971.0	32278.9	1650
1986	1	39945.3	34021.2	1792.5
	2	39669.5	33017.0	1787.5
	3	47253.3	32408.7	1970.0
	4	50353.4	32535.8	2197.5
1987	1	50036.8	32191.2	2345
	2	49063.8	33907.3	2367
	3	62214.0	39323.2	2322.5
	4	66195.0	33707.7	2835

<u>Source</u>:   BOT, Economic and Operations Reports;   Various Years.

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