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## BUDGETARY TRADE-OFFS IN ETHIOPIA, 1965 - 1993

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**Abstract:** *This paper surveys the pattern of Ethiopian public finance in the period 1965/66-1992/93 with special emphasis on the government expenditures. The trends of security, education, and health expenditures as well as spending on economic services are examined. Then simple correlation, linear regression, and estimation of vulnerability indices and expenditure elasticities are used to test for the existence of budgetary trade-offs between the various expenditure categories. The results suggest that some trade-offs existed in the period studied, particularly the trade-off between security spending and human capital formation (using the spending on health and education as proxies). This crowding-out of human resource development by security spending was more obvious during the Derg regime (1974/75-1990/91).*

### 1. INTRODUCTION

In the last two decades, the Ethiopian economy has witnessed major transformations. On the one hand, the long Imperial feudal economy came to an end in 1974. Since then the economy was put under the control of the state with considerable socialist transformations. The development of the embryonic private sector was curtailed and the whole production and distribution processes were mainly carried out by the public sector. With the downfall of the Derg regime in May 1991, however, the newly established Transitional Government of Ethiopia reversed the economic policy in the country. It has envisaged the market-led forces to be the determinants of economic activity with the private sector as the engine of growth and development. On the other hand, the long-lived civil war in Ethiopia also came to an end in 1991 with the independence of Eritrea.

These transformations had an obvious impact on the process of socio-economic development in Ethiopia. The three Ethiopian regimes have had different visions for the process of development and particularly on the development of human resources. This was

reflected in the governments' commitment to human capital formation which can be seen from the budgetary allocations of these governments. In particular, the spending on health and education is considered by many development economists as good proxy for the development of human resources and governments' commitment to human capital formation.

The main aim of this study is to examine the trade-offs between various budgetary allocations in the period 1965-1993, with particular emphasis on the commitment of the three regimes to human resource development by examining budgetary allocations and the existence and extent of budgetary trade-offs. Such kind of studies will help to judge the declared objectives of governments against their actual commitments to the development of particular economic and social sectors.

The study is organized as follows. First the next section surveys the literature on the existence of budgetary trade-offs in LDCs. The patterns of Ethiopian public finance in the period 1965-1993 will be examined with the aim of distinguishing particular patterns for the three Ethiopian governments. Then special emphasis is given to the trends of security expenditure and spending on health and education as proxies for the governments' commitment to the development of human resources in the country. The paper lays down different tests for the existence of budgetary trade-offs and applies them to the Ethiopian budget figures for the period between 1965/66 and 1992/93, and finally the study summarizes its findings and conclusions are drawn.

## **2. PREVIOUS STUDIES ON BUDGETARY TRADE-OFFS**

There is a vast literature on budgetary trade-offs in LDCs. The growth of interest in this subject did not see the development of any consensus, however. Different countries at different stages of development have different experiences. Moreover, a considerable number of studies have focused on one or more items of the budget according to the aims of the research. This is particularly true in most of the studies which tried to investigate the trade-offs between the development of human resources and military spending. For example, some studies concluded that there exists a negative trade-off between education and military

spending in LDCs (e.g., [3, pp. 37-48] and [7, pp. 161-164]). Other studies concluded that military spending did not bear negative consequences on education spending (e.g., Verner's [16, pp. 77-92] study of Latin American countries over 1948-79 period).<sup>1</sup>

Harris et. al., [6, pp. 165-177] used several complementary methods to test for the existence and strength of military-education/health trade-offs in a large number of LDCs. Cross-sectional analysis of government expenditure did not confirm that countries which were low military spenders were high spenders on education/health; and that military expenditures were no less vulnerable to overall budget cuts, nor more likely to gain from budget increases than education and health.<sup>2</sup> Finally, their longitudinal regressions for twelve Asian countries over the 1967-83 period revealed that trade-offs between military expenditure and education/health were rare. Indeed, the discrepancies among these studies reflect the differences in their data bases, country samples and research designs or methods. Most of the tests that Harris et. al. [6, pp. 165-177] developed were again used by Mohammed [8] to verify for the existence of such trade-offs in the Sudan. His results suggest that during the period 1963-1987 military spending crowded-out spending on health and education.

Apart from the studies which focused mainly on budgetary trade-offs, many studies examined these trade-offs in a wider framework. The emphasis of these studies was on the economic impact of military spending on the economies of LDCs. The crowding out of spending on human resources was envisaged as one of the main indirect conduits through which military spending affects economic growth and development. Deger [3, pp. 37-48], Mohammed [8], and Mohammed [9, pp. 95-99] are examples of these studies.<sup>3</sup> Deger [3, pp. 37-48] examined the interactions among defence, savings, human resources and growth in a framework of an interdependent model. She examined the possible trade-offs between defence and education spending as public goods. She asserted that public education spending as a proportion of national product is a crucial determinant of human capital formation. Moreover, Deger claimed that a proper evaluation of this nexus can only be understood in a simultaneous-equations model that takes into account these interdependencies. Then, she estimated a four-equation model, with one equation for each of growth, savings, military spending and the ratio of public education spending to GDP, for the previous sample and time period. The results confirmed the negative impact of defence expenditure on public

education spending and that its human-resource costs were exceptionally high.<sup>4</sup> Similar findings were reached by Mohammed [8] for a sample of thirteen Sub-Sahara African countries (see also [2]).

Mohammed [10] studied the relationship between military spending and education spending in Ethiopia for the period 1967-1985. This was examined by a five-equation simultaneous model (one each for growth, education spending, investment, balance of payments and military spending). The multiplier of military spending/education spending (both as ratios of GDP) was not statistically significant, although the growth/military spending and balance of payments/military spending multipliers were both negative and statistically significant. The limitations of that study were the application of the model to a short time period (19 years), the exclusion of health spending, the use of military spending (not total security spending), and the employment of regression as the sole technique to test for trade-offs. These limitations are cared for in this study with the objective of better understanding of the budgetary trade-offs in Ethiopia.

### 3. PATTERNS OF PUBLIC FINANCE IN ETHIOPIA

Total government revenue in Ethiopia (both in current and constant prices) fluctuated during the period 1965/66-1992/93. In money terms revenues increased from ETB 473.3 million in 1965/66 to ETB 5,446.8 million in 1988/89 and then started to decline until they reached ETB 2,640.9 million in 1991/92. The trend was reversed in 1992/93 when total government revenues jumped to ETB 4,199.6 million (see Table 2 below). The rate of increase in constant 1987 prices was lower because of the rising trend of the deflator. For the period between 1965/66 and 1992/93 total revenues, in real terms, increased from ETB 1,637.7 million to ETB 2,315.1 million; an increase of about only 41.4% for the whole period.

The composition of revenue exhibits a heavy reliance on non-tax revenues with the major contribution of taxes (both direct and indirect). The average share of direct tax in total government revenue was about 24.3% in the period 1965/66-1992/93; while the average

percentage share of indirect taxes was about 21% in the same period. For thirteen years in the period 1965/66-1992/93 the contribution of non-tax revenues was above 50% of total government revenues, and slightly less than 50% for the rest of the years. The reduction in tax yields in the recent years resulted mainly from the erosion of tax base and deterioration in the system of tax administration (see Table 1).<sup>5</sup>

Table 1. The Growth of Tax Revenue, 1950-1991

Period	Average Annual Rate of Growth of Real Tax Revenue	Tax Revenue/ GDP at Current Factor Cost	Tax Revenue/ Total Expenditures
1950-1960	8.45	5.91	86.46
1961-1974	7.52	8.73	66.84
1975-1989	7.22	18.19	52.83
1975-1990	5.96	18.06	51.72
1975-1991	4.90	17.25	50.68

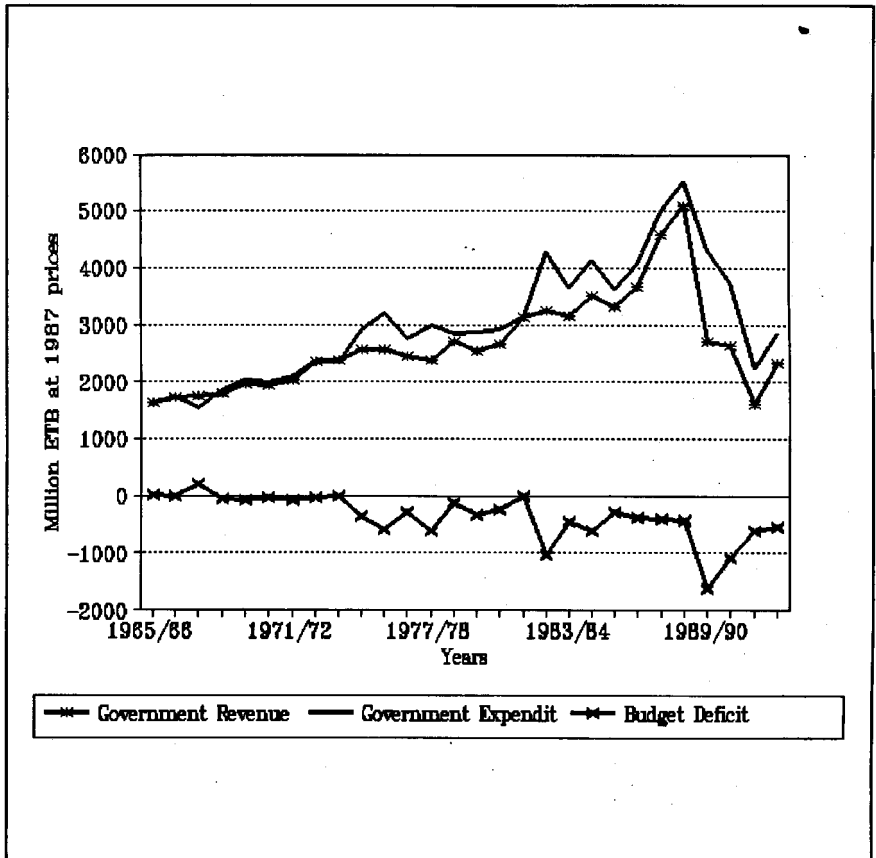
SOURCES: [13, pp. 73-100], Table 7, and own calculations.

Although total government revenues in constant prices experienced a rising trend over the period 1965/66-1992/93, this was not enough to match the rising trend of government expenditure. The government budget recorded surplus during the 1950-1955 period. Then the budget was balanced between 1955 and 1965, and small deficits and surpluses (e.g., 1965/66, 1967/68, and 1973/74) were observed in the period between 1965/66 and 1974/75. Nevertheless, the government budget had consistently been in large deficits since 1975/76 until 1992/93. The main reason was the higher growth of expenditures than revenues (see Figure 1).

In monetary terms, the total government expenditure increased from ETB 470.6 million in 1965/66 to ETB 1,048.9 million in 1974/75 and finally it reached ETB 5,176 million in 1992/93. The sharp increase in the government expenditure in the period 1974-1991 can be explained by the great expansion in the government bureaucracy, the launching of a series of expensive campaigns (e.g., National Development Through Cooperation, Enlightenment and Work), the literacy and villagization campaigns, and most importantly the wars in the Ogaden and Eritrea. During the pre-1975 period the ratio of government

expenditure to GDP was low and did not exceed 20%. Nevertheless, in the post-1975 period the ratio increased remarkably, and reached 45% of GDP in the late 1980s.<sup>6</sup>

Figure 1. Government Finance in Ethiopia, 1965/66-1992/93



SOURCES: Ministry of Finance.

Table 2. Ethiopian Government Finance, 1965/66-1992/93

Year	1	2	3	4	5	6
1965/66	473.3	1637.7	470.6	1628.4	19.1	23.7
1966/67	489.3	1722.9	493.3	1737.0	20.8	24.3
1967/68	499.3	1745.8	542.2	1895.8	20.0	27.0
1968/69	514.2	1797.9	531.6	1858.7	24.1	26.2
1969/70	565.4	1949.7	585.2	2018.0	24.1	27.0
1970/71	620.1	1937.8	631.5	1973.4	26.4	27.4
1971/72	650.1	2031.6	671.7	2099.1	27.1	29.5
1972/73	705.6	2352.0	716.2	2387.3	31.0	33.1
1973/74	778.9	2360.3	777.4	2355.8	24.6	27.2
1974/75	921.9	2560.8	1048.9	2913.6	24.9	27.3
1975/76	980.1	2579.2	1210.5	3185.5	22.3	22.3
1976/77	1198.9	2446.7	1344.4	2743.7	20.7	17.9
1977/78	1348.7	2366.1	1696.5	2976.3	19.0	15.7
1978/79	1761.8	2710.5	1846.0	2840.0	22.8	19.5
1979/80	1907.9	2543.9	2157.9	2877.2	24.3	23.8
1980/81	2092.2	2648.4	2296.3	2906.7	27.9	22.1
1981/82	2633.1	3134.6	2649.7	3154.4	30.1	21.1
1982/83	2877.9	3233.6	3807.8	4278.4	27.8	20.4
1983/84	2785.2	3165.0	3198.1	3634.2	28.6	21.6
1984/85	3331.5	3506.8	3924.6	4131.2	29.6	22.5
1985/86	3794.0	3328.1	4131.1	3623.8	26.4	19.1
1986/87	3741.8	3668.4	4137.1	4056.0	31.0	21.3
1987/88	4576.1	4576.1	4997.5	4997.5	29.8	21.2
1988/89	5446.8	5090.5	5912.3	5525.5	27.2	20.1
1989/90	3104.5	2699.6	4976.3	4327.2	29.4	24.7
1990/91	3179.0	2629.5	4503.2	3724.7	29.2	28.1
1991/92	2640.9	1609.3	3654.5	2227.0	28.7	24.7
1992/93	4199.6	2315.1	5276.4	2853.6	21.8	23.2

1. Total revenues in market prices (in million ETB).
2. Total revenues in constant 1987 prices (in million ETB).
3. Total Expenditure in market prices (in million ETB).
4. Total Expenditure in constant 1987 prices (in million ETB).
5. % share of direct tax in total government revenues.
6. % share of indirect tax in total government revenues.

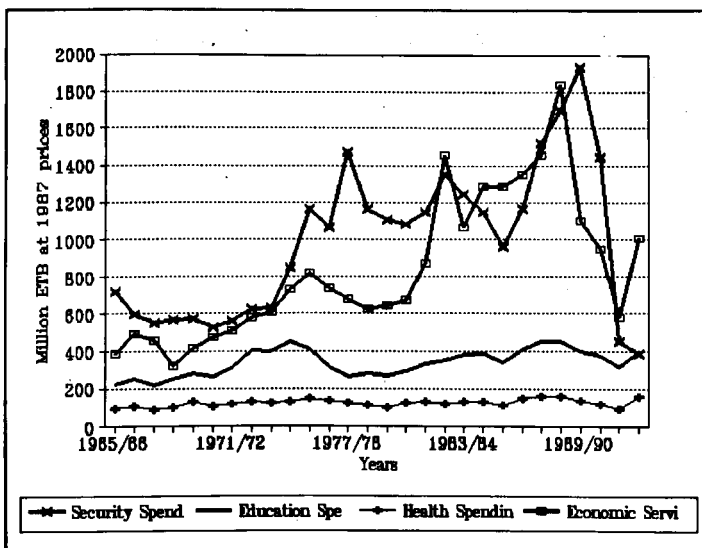
**SOURCES:** Compiled from data obtained from the Ministry of Finance (MOF) and Ministry of Planning and Economic Development (MOPED).



#### 4. TRENDS OF SECURITY, ECONOMIC SERVICES, AND EDUCATION/HEALTH EXPENDITURES

Table 3 shows the breakdown of total government expenditure into the various expenditure items. The share of security expenditure was very high in 1965/66 and accounted for 44.2% of total government expenditure. Nevertheless, the share of security expenditure in total government spending started to fall in the subsequent years until it reached 26.8% in 1973/74. A sharp increase took place in 1974/75 when the ratio was about 30%. Big increases were also noticed in the following years until it peaked in 1977/78 when the share of security spending in government expenditure was almost 50%. Gradual reductions in the share of security spending in total government spending took place in the period 1978/79-1985/86 until it reached 26.5% at the end of that period. The trend was reversed in the subsequent years until it peaked again in 1989/90 when it was about 44.7%. Sharp reductions in the security outlays were carried by the present government and in

Figure 2. Trends of Real Term Security, Education, Health and Economic Services Expenditures, 1965/66-1992/93



SOURCE: Ministry of Finance.

**Table 3. Breakdown of Ethiopian Government Expenditure into Various Spending Items, 1965/66-1992/93**

Year	1	2	3	4	5	6
1965/66	207.9	44.2	64.0	13.6	27.5	5.8
1966/67	169.2	34.3	70.8	14.4	30.5	6.2
1967/68	156.4	28.8	61.1	11.3	23.9	4.4
1968/69	161.9	30.5	71.1	13.5	27.9	5.2
1969/70	167.2	28.6	80.7	13.8	36.9	6.3
1970/71	168.7	26.7	84.3	13.3	33.2	5.3
1971/72	178.9	26.6	98.8	14.4	37.0	5.5
1972/73	186.8	26.1	120.7	16.9	38.8	5.4
1973/74	208.7	26.8	131.8	17.0	40.6	5.2
1974/75	305.4	29.1	161.5	15.4	46.4	4.4
1975/76	443.3	36.6	153.9	12.7	54.7	4.5
1976/77	522.0	38.8	153.8	11.4	66.3	4.9
1977/78	839.7	49.5	149.0	8.8	70.3	4.1
1978/79	755.3	40.9	183.2	9.9	71.6	3.9
1979/80	830.0	38.5	200.6	9.3	74.7	3.5
1980/81	855.7	37.3	228.3	9.9	96.6	4.2
1981/82	963.7	36.4	282.0	10.6	109.5	4.1
1982/83	1203.3	31.6	312.4	8.2	105.2	2.8
1983/84	1100.0	34.4	333.8	10.4	110.6	3.5
1984/85	1092.2	27.8	369.8	9.4	121.7	3.1
1985/86	1095.3	26.5	386.1	9.3	125.6	3.0
1986/87	1184.5	28.6	419.0	10.1	147.3	3.6
1987/88	1522.8	30.1	447.4	9.0	154.9	3.1
1988/89	1814.1	30.7	484.8	8.2	169.7	2.9
1989/90	2224.7	44.7	454.0	9.1	151.6	3.0
1990/91	1750.1	38.9	454.8	10.1	137.0	3.0
1991/92	737.3	20.2	510.5	14.0	155.2	4.2
1992/93	697.0	13.5	713.5	13.8	279.2	5.7

1. Security expenditure at current prices (ETB million).
2. % share of security expenditure in total government expenditure.
3. Education expenditure at current prices (ETB million).
4. % share of education expenditure in total government expenditure.
5. Health expenditure at current prices (ETB million).
6. % share of health expenditure in total government expenditure.

**SOURCES:** World Bank World Tables, Ministry of Finance (MOF) and Ministry of Planning and Economic Development (MOPED).

1992/93 a minimum record of 13.5% was reached. The trend of security expenditure, in constant prices, was very similar to the trend of its share in government spending (see Figure 2 above).

The shares of both education and health in total government expenditure have changed in a relatively modest fashion over the same period compared to that of security expenditure. The share of education has shown a steady rise in the first eight years, finally reaching 17% in 1972/73 from its initial level of about 14%. In the subsequent years, however, the share of education began to fall until it reached 9% in 1977/78, after that the trend was relatively stable between 9% and 10% of TGE. Such a passive trend of education expenditure continued until the fall of the Derg regime. Finally, in the first years of the Transitional Government of Ethiopia, it has shown sharp increases, when a record of about 14% was observed.

Although the share of health expenditure appears to be much more stable than that of education, the overall trend has been to fall until it finally reached 3% in 1982/83. However, this record of 3% prevailed until 1990/91, then a modest rise in the last two years of the period is noticed. The most striking observation one can make from Table 3 is the fact that the shares of education/health expenditures in the total government expenditure in 1992/93 are the same as that in 1965/66, 14% for education and 6% for health. It is evident from Figure 2 that the trend of real expenditures on education/health is similar to that of their relative spending.

Figure 2 also shows that the overall trend of the share of economic services in the total expenditure was, first, to rise until it peaked in 1976/77, reaching about 27%. Then, after a sharp decline in the subsequent years, the trend was again reversed until it reached a record of 36% in 1985/86. Recently, however, the share of economic services has fallen except that a record of a little more than one-third of the total expenditure was recorded in 1992/93.

## 5. TRADE-OFFS BETWEEN SECURITY SPENDING AND THE DEVELOPMENT OF HUMAN RESOURCES

Mohammed [8] points to the trade-off between military spending and government spending on health and education as an important conduit through which military spending affects human capital formation and consequently economic growth and development. This section uses a number of methods to test for the existence and strength of budgetary trade-offs. The analysis, however, faces three main problems. Firstly, in Ethiopia, although aggregate data on government budget do exist, there is some doubt about the reliability of the data that exist. This is particularly true for data on security spending.<sup>7</sup> Secondly, the categorization of expenditure into particular items is not very accurate. Thirdly, "since government expenditure increases from year to year, it is an increasing rather than zero sum game in which faster or lower growth of expenditure in the different categories is the norm" [6, pp. 165]. Therefore, the identification of such trade-offs might not be straightforward.

The relationship between the three variables is tested initially by means of simple correlations. The correlation coefficient between security and education's spending shares was negative (-0.44), and the coefficient between health and security share was negative (-0.22) for the period 1965/66-1992/93. Moreover, the correlation coefficient between security share and the share of economic services was also negative (-0.39). However, the correlation between education and health shares was positive and high (0.82) over the same period. This suggests some trade-off between security spending and spending on health, education and economic services, but it is very difficult to draw a strong conclusion about the existence of a crowding-out from these simple correlations, although they can serve as good indicators for the existence of trade-offs.

Moreover, in the period 1965/66-1992/93, average security spending was about three-fold of education spending, more than eight-fold of health spending, and more than two-fold of the combined spending on health and education. Figure 2 above shows in this period the government spending on security surpasses the combined spending on health and education.

The second test for the budgetary trade-offs employs multiple regression analysis.

It tests for the influence over time of security spending as a proportion of total government expenditure (TGE) on education, health and economic services expenditure, all as proportions of TGE. This regression analysis treats the ratio of education (health or economic services) expenditure to TGE as the dependent variable; security spending share in TGE as the independent variable; and the annual average growth rate of GDP as a control variable. Economic growth also measures the level of the growing resources available to the public sector. Moreover, the effect of security expenditure on the combined spending on health and education is also investigated. Thus we have;

$$\frac{E}{TGE} = \alpha_0 + \alpha_1 \frac{S}{TGE} + \alpha_2 g + \epsilon_1 .$$

$$\frac{H}{TGE} = \beta_0 + \beta_1 \frac{S}{TGE} + \beta_2 g + \epsilon_2 .$$

$$\frac{C}{TGE} = \gamma_0 + \gamma_1 \frac{S}{TGE} + \gamma_2 g + \epsilon_3 .$$

$$\frac{HR}{TGE} = \rho_0 + \rho_1 \frac{S}{TGE} + \rho_2 g + \epsilon_4 .$$

where E represents education expenditure, H represents health expenditure, S represents security expenditure, C represents spending on economic services, HR stands for the combined spending on education and health, TGE stands for total government expenditure, g is the annual average growth rate of GDP, and  $\epsilon_i$  constitutes the disturbance term. The coefficient of the security spending,  $\alpha_1$  ( $\beta_1$ ,  $\gamma_1$  or  $\rho_1$ ), indicates the direction and magnitude of the trade-off between security and education (health or economic services) expenditure.

The above four equations assume that the trade-off is constant (linear). Verner [16, pp. 77-92], however, points to the possibility of an increasing larger (non-linear) trade-off as the share of security expenditure in TGE increases. He suggests the use of both linear

and non-linear (quadratic) functions to determine the form of the trade-offs. Both methods (linear and non-linear) were tried and the linear regression did better than the non-linear regression. The OLS estimation of the four linear equations, however, reveals the presence of serial correlation. Therefore, the equations are estimated by Cochrane-Orcutt iterative procedure, AR(1).<sup>8</sup> The results of the estimation are summarized in Table 4.

Close analysis of the results contained in Table 4 points to the following remarks. First, economic growth did not play an important role in deciding the level of budgetary allocations for various sectors. The rate of economic growth had a positive and statistically significant effect on the spending on economic services only. In the rest of the equations its effect is statistically insignificant. The current levels of government spending on many categories were rigid in the downward direction because it is likely that there will be some hangover from previous expenditures and commitments to various programmes, or simply because of a ratchet effect as in Peacock and Wiseman [14]. Second, the intercepts of all the equations were statistically significant and their magnitude corresponds with our earlier analysis of the trends of these four sectors. Finally, the effects of security spending on education spending and the combined spending on health and education was negative and statistically significant. However, its effect on health spending was negative but not statistically significant and its effect on spending on economic services was negligible and statistically insignificant as well. The results of this test, however, suggest that trade-offs between security spending and education spending (and the combined spending on education and health) took place in the period between 1965/66 and 1992/93, although the evidence on the existence of trade-offs between security spending and health (and economic services) is not strong enough to draw any conclusion.

The third method to test for the existence of budgetary trade-offs was suggested by Harris et. al. [6, pp. 165-177].<sup>9</sup> The test measures the vulnerability of a sector to government expenditure decline and the elasticity of the sector to government expenditure increases. In the period 1965/66-1992/93 the Ethiopian government cut its, real term, TGE in ten years. Security expenditure was, however, reduced in thirteen years; while health expenditure was cut in twelve years; education expenditure in eleven years; and spending on economic services was reduced in ten years. Moreover, the vulnerability index V

(defined as the ratio of proportional reduction in each sector expenditure to total government reductions) for five sectors is estimated. The results are shown down in Table 5 below.

**Table 4. Estimation Results of Budgetary Trade-offs Regressions, 1965/66-1992/93**

Dependent Variable	Constant	Coefficient of S	Coefficient of g	Method of Estimation	Number of Iterations	R <sup>2</sup>	F (3,23)
E	15.39 (8.71)	-0.133 (-2.89)	-0.057 (-1.03)	AR(1)	3	0.74	22.00
H	5.03 (6.12)	-0.028 (-1.20)	0.005 (0.18)	AR(1)	3	0.58	10.47
C	27.07 (6.52)	0.001 (0.01)	0.418 (3.29)	AR(1)	4	0.56	9.58
HR	20.37 (8.34)	-0.159 (-2.46)	-0.053 (-0.68)	AR(1)	3	0.72	19.47

\* Figures between brackets are t-ratios.

\*\* 28 observations are used for estimation from 1965/66 to 1992/93.

**Table 5. Vulnerabilities of Expenditure Items to Spending Cuts.**

Year	V <sub>S</sub>	V <sub>E</sub>	V <sub>H</sub>	V <sub>C</sub>	V <sub>O</sub>
1968/69	-1.8	-8.4	-8.6	14.80	-2.3
1970/71	3.9	2.4	8.4	-6.50	1.2
1973/74	-1.2	0.5	3.7	-3.90	7.2
1976/77	0.6	1.6	0.4	0.70	1.8
1978/79	4.6	-1.7	2.3	1.60	10.7
1983/84	0.5	-0.5	-0.4	1.80	1.3
1985/86	1.3	1.1	1.1	0.01	1.7
1989/90	-0.7	0.6	0.8	1.80	2.1
1990/91	1.8	0.3	1.0	1.00	-0.7
1991/92	1.7	0.4	0.4	1.00	0.1

V<sub>S</sub> : Vulnerability of security expenditure to TGE cuts.

V<sub>E</sub> : Vulnerability of education expenditure to TGE cuts.

V<sub>H</sub> : Vulnerability of health expenditure to TGE cuts.

V<sub>C</sub> : Vulnerability of economic services spending to TGE cuts.

V<sub>O</sub> : Vulnerability of "other unclassified" expenditure to TGE cuts.

The results demonstrate that education spending was vulnerable only three times in the ten years of expenditure cuts ( $v > 1$ ), while security and health expenditures were vulnerable five times, economic services six times and the other unclassified expenditures seven times. This suggests that education and security spending were more immune from expenditure cuts than the other sectors. Indeed, in three years the shares of security and education spending in TGE were increased ( $v < 0$ ) when, real term, government expenditures were cut. The other categories of expenditures had negative vulnerability index twice in the ten years of real expenditure cuts.

On the other hand, total government expenditure, at constant prices, increased in 17 years in the period 1965/66-1992/93. In the same period security spending increased in 14 years, health spending in 15 years, education spending in 16 years, and spending on economic services increased in 17 years. Moreover, the sectoral elasticities ( $e_s$ ) are estimates during the years of government expenditure increases (at constant prices) and the results are presented in Table 6 below.<sup>10</sup>

The elasticities' test suggests that economic services were more elastic to increases in government expenditures than other budget categories. In the seventeen years of real term expenditure increases, the elasticity of economic services to TGE increases was greater than unity in eleven years, while  $e_s$  and  $e_E$  were greater than unity in eight years and  $e_H$  and  $e_O$  were greater than unity in seven years only. These elasticities show that health and other unclassified spending were less elastic to expenditure increases than other expenditure categories. Security and education spending were on the same level but were both less elastic than the elasticity of the spending on economic services.

Taking the results of the three tests together we can conclude the following. First, from simple correlation results, the share of security spending in TGE appears to move in the opposite direction of other expenditure categories (education, health, and economic services) in the period 1965/66-1992/93. The magnitude of security share was also higher than other categories and exceeded the average share for other LDCs [8]. Second, linear regression analysis also suggests that the security share in TGE had a negative and statistically significant impact on shares of education spending and the combined spending on education and health, a negative but not a statistically significant impact on health



spending, and negligible and statistically insignificant impact on spending on economic services. Third, security and education spending were less vulnerable to expenditure cuts than expenditures on health and economic services. Fourth, the elasticities of education and security spending to increases in TGE are higher than the elasticities of health and other unclassified expenditures in the period 1965/66-1992/93. Therefore, from the three previous tests it can be concluded that a trade-off between security spending and health/education spending (as proxies for human capital formation) took place in the period 1965/66-1992/93.

Table 6. Elasticities of Expenditure Categories

Year	$e_s$	$e_E$	$e_H$	$e_c$	$e_o$
1966/67	-2.6	1.9	1.9	4.3	5.90
1967/68	-0.9	-1.6	-2.4	-0.9	11.60
1969/70	0.2	1.4	3.6	3.3	-0.03
1971/71	1.0	2.7	1.8	1.3	-0.10
1972/73	1.0	2.2	0.9	0.9	0.60
1974/75	1.4	0.5	0.2	0.9	1.20
1975/76	4.0	-1.0	1.3	1.3	-1.60
1977/78	4.5	-2.0	-1.0	-1.0	-1.10
1979/80	-3.6	-3.9	-7.3	2.0	11.60
1980/81	-2.1	8.0	22.5	4.4	-2.30
1981/82	0.7	1.9	0.8	3.5	-1.10
1982/83	0.5	0.1	-0.3	1.9	1.40
1984/85	-0.6	0.2	0.1	1.5	3.20
1986/87	1.7	1.8	2.6	0.4	0.60
1987/88	1.3	0.4	0.3	0.3	1.90
1988/89	1.1	0.1	0.2	2.5	-0.20
1992/93	-0.5	1.0	2.2	2.6	0.50

$e_s$  : Elasticity of security expenditure to TGE increases.

$e_E$  : Elasticity of education expenditure to TGE increases.

$e_H$  : Elasticity of health expenditure to TGE increases.

$e_c$  : Elasticity of economic services spending to TGE increases.

$e_o$  : Elasticity of "other unclassified" expenditure to TGE increases.

## **6. THE PERFORMANCE OF THE THREE ETHIOPIAN GOVERNMENTS**

The results presented in the previous sections examined the existence of budgetary trade-offs in the period 1965/66 - 1992/93 as a whole. But as we mentioned in the introduction of this study, one of the main purposes of this study is to judge the declared objectives of the three Ethiopian governments against their actual commitment to economic and social sectors. Therefore, in this section we will examine the existence and the extent of the trade-offs in three periods: 1965/66 - 1973/74 which represents the Imperial era; 1974/75 - 1990/91 which represents the Derg regime; and 1991/92 - 1992/93 which constitutes the first two years of the Transitional Government of Ethiopia.

From the trends of, real term, expenditures of the three governments on various expenditures' categories, it is noticed that the commitment of the Imperial government to human resource development was more than the commitment of the Derg and the current transitional government. 14.5% of TGE in the period 1965/66-1973/74 was allocated for education. This was reduced to only 8.9% of TGE during the Derg era, and was increased again during 1991/91-1992/93. Similarly the share of health spending in the period between 1965/66 and 1973/74 was 5.5%, dropped to only 3.2% during the Derg period, and was increased to 4.9% of TGE in the first two years of the transitional government. The share of the economic services was, more or less, stable over the whole period of the three governments (see Table 7 below). Nevertheless, the trend of the share of security spending in TGE was the reverse of the spending on human capital development. The share was 29.6% in the period 1965/66-1973/74, but jumped to 34.3% during the Derg era, and declined sharply to a minimum of 16.2% in the first two years of the transitional government.

These trends suggest that the Imperial government devoted more budgetary resources than the Derg government for education and health and less budgetary share was devoted to security spending. The transitional government increased the budgetary shares of education and health spending to levels higher than was the case during the Derg period, but they were still less than the shares during the Imperial period, although it managed to

reduce the share of security spending to levels even lower than the share during the Imperial era. Mulat [13, pp. 94] documented this pattern of decline in spending on human resources during the Derg regime. He concluded that "increasing levels of government expenditures have been made in 'defence' with noticeable neglect of the social and economic sector development. As a result health and educational standards have deteriorated and the rate of economic growth decelerated considerably."

**Table 7. Percentage Share of Expenditure Categories of the Three Ethiopian Governments (1965-1993)**

Period	% Share of Security spending in TGE	% Share of Education Spending in TGE	% Share of Health Spending in TGE	% Share of Spending on Economic Services in TGE	% Share of "Other Unclassified" Spending in TGE
1965/66-1973/74 (Imperial Government)	29.6	14.5	5.5	28.4	22.0
1974/75-1990/91 (Derg regime)	34.3	8.9	3.2	29.0	24.6
1991/92-1992/93 (Transitional Government of Ethiopia)	16.2	13.9	4.9	31.5	33.5

**SOURCES:** Compiled from data from the Ministry of Finance.

Moreover, if we look at the estimated vulnerability indices and expenditure elasticities (Tables 5 and 6) during the Derg era we find that security spending was less vulnerable to expenditure cuts than all other expenditure categories and was more elastic to increases in TGE than education, health, and the "other unclassified" spending (but not more than spending on economic services). Furthermore, the regression analysis for the existence of budgetary trade-offs was repeated for a shorter period (1974/75-1990/91) to examine the trade-offs during the Derg period. The magnitude of the estimated coefficients, their signs, and t-ratios, however, did not change significantly. They confirm the same pattern of trade-offs for the whole period.<sup>11</sup>

## 7. SUMMARY AND CONCLUSIONS

This study surveyed the patterns of Ethiopian public finance in the period between 1965/66 and 1992/93. It pointed to the increasing structural deficits during the Derg era which were caused mainly by structural changes in the expenditure structures. The trends of security, health, economic services and education spending and their shares in TGE were examined over the whole period. It was shown that security allocation over this period was very high compared with other countries and compared with other expenditure categories. In the period 1965/66-1992/93, average security spending was about three-fold of education spending, more than eight-fold of health spending, and more than two-fold of the combined spending on health and education.

To examine the existence and extent of budgetary trade-off between the various expenditure categories, and particularly between security spending and human resource development, various complementary tests were employed. The first used simple correlation between various expenditure items, and confirmed that the correlation between security share in TGE and the shares of education, health, and economic services were all negative for the period studied. However, the correlation between education and health shares was positive and high.

The second test relied on estimating linear regression equations for each item of the expenditure categories as a dependant variable. The explanatory variables were the share of security spending in TGE and the average annual growth rate of GDP. The results of this test also suggested that security spending crowded-out education expenditure and the combined spending on health and education, although the negative impact of security spending on health spending was negative but not statistically significant, and the relationship between security spending and spending on economic services was weak and statistically insignificant.

Estimating the vulnerability of expenditure categories to cuts in TGE and their elasticity to increases in TGE was the third method to investigate the existence of budgetary trade-offs between the shares of security, education, health and economic services expenditures. The shares of security spending were found to be less vulnerable to cuts in

TGE and were more elastic to increases in TGE than most of the other expenditure categories.

Taking the results of the previous tests together, it was concluded that noticeable budgetary trade-offs took place in Ethiopia in the period between 1965 and 1993. In particular, the shares of security spending crowded-out spending on human capital formation (education and health) and economic services. Then the period of study was broken down into three periods: the imperial era, the Derg regime, and the current transitional government. The trade-offs were analyzed in each period separately, and it was found that the commitment of Derg regime to the security sector was more than its commitment for human resources compared with the other two governments. The transitional government increased the budgetary allocations for health and education and reduced significantly the security outlays, but still the shares of education and health spending in TGE were below the shares during the Imperial time. Given the collapse in government revenues since 1991, it is expected that the spending on human resource development will increase if government revenues increase in the future.

## **8. DEFINITIONS OF VARIABLES AND DATA SOURCES**

1. Total Government Expenditure (TGE)- refers to the total spending of the central government- both recurrent and capital- including external assistance and transfers.
2. Security Spending (S)- refers to the total expenditure of the central government on "national defence" and "internal order and justice". This includes both the outlays of the Ministry of Defence as well as spending on security, police and paramilitary forces.
3. Education Spending (E)- refers to the total spending of the central government on "education and training"- both recurrent and capital.
4. Economic Services Spending (C)- refers to the total spending of the central government on "agriculture and land resettlement", "industry", "mining and energy", "transport and communication", "construction", "water resources", "commerce and tourism", and "financial agencies" - both recurrent and capital.
5. Others Unclassified (O)- in this study includes both recurrent and capital spending of the central government on all items other than security, education, health, and economic services. It is simply the excess of TGE over S,E,H, and C.
6. Total Revenue - refers to the total revenue of the central government and includes "total tax revenue", "total non-tax revenue", "special contributions", "foreign loans and credits", and "external assistance".
7. All real expenditure magnitudes are arrived at using Consumer Price Index at 1987 constant prices.

8. Average annual growth rate of real GDP (g) is at constant factor cost.
9. The data for the Total Government Expenditure and Total Revenue and their components are compiled from data obtained from the Ministry of Finance (MOF) and Ministry of Planning and Economic Development (MOPED).
10. The data source for average annual growth rate of GDP is Ministry of Planning and Economic Development (MOPED).
11. All expenditure and revenue figures are given in millions of Ethiopian Birr (ETB).

## NOTES

<sup>1</sup> An example of other studies on warfare-welfare trade-offs is Dixon and Moon's [4, pp. 660-684] study on the military burden and the provision of basic human needs. The regression analysis corroborated that, when controlling for the size of the military establishment, military spending tends to inhibit welfare outcomes in LDCs.

<sup>2</sup> The main limitation of the analysis is that it depends on only one or two years of data.

<sup>3</sup> See also [11, pp. 411-433] and [12].

<sup>4</sup> The estimated multiplier of defence spending on the ratio of education spending to GDP was -0.33.

<sup>5</sup> The figures for 1991/92 and 1992/93 are the budget estimates and not the actual figures. Therefore, care should be taken in interpreting the estimates of the last two years, despite the fact that the diversion between actual and budgeted figures in Ethiopia is very small.

<sup>6</sup> See [13, pp. 74].

<sup>7</sup> Bevan [1, pp. 4] points also to the huge off-budgetary allocations to the military hardware.

<sup>8</sup> For the estimation with the presence of serial correlation and the use of Cochrane-Orcutt iterative method, see [5, pp. 353-389].

<sup>9</sup> This test was also used by Mohammed [8] to test for budgetary trade-offs in the Sudan. His results conform the existence of some level of trade-offs.

<sup>10</sup> Let  $s_i$ : sector (i) expenditure and TGE: total government expenditure, then,

$$e_i = \frac{\delta s_i}{s_i} + \frac{\delta TGE}{TGE}.$$

<sup>11</sup> Of course the number of observations (and degrees of freedom) were reduced considerably.

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