GATS and Financing of University Education in Kenya (1978 – 2008)

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Abstract

This paper analyses public expenditure on university education in Kenya within the selected sample period. The period was selected because it is within which a number of macroeconomic changes took place in the country besides other factors. The study seeks to establish the relationship between total public expenditure on education with key selected variables in university education namely student enrolment, staffing situation, university infrastructure and annual average teacher's salary during the sample period

The main findings reveal that five variables were significant: Student Enrolment (5%); Staffing situation (1%); GATS (5%); combined effects of GATS and Economic Reforms (10%) and, the combined effects of GATS, Economic Reforms with staffing (1%). The coefficients exhibited by these variables were relatively inelastic (0.35, 0.62, 0.71, 0.89 and 1.66 respectively). This implies that the government does not adjust its budgetary allocations to match the changes in education development aspects such as enrolment; staffing situation; level of infrastructure and, academic staff salaries among others, at the university education level. However, GATS presence had a significant effect on university staffing in the country, although other economic reforms carried out during the period were ineffective in boosting university education growth.

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Key Words: GATS, financing, University Education, Kenya.

Introduction

The purpose of this study is to analyse the pattern of financing university education in Kenya during the selected period. The study analyses the responsiveness of public expenditure on university education to changes in variables namely: Enrolment, staffing situation in schools, infrastructure establishment, as well as the salaries for teachers at university level of education. Moreover the study analyses the impact of GATS on university education in the country.

Background of the Study

'Knowledge' is the driving force in the rapidly dynamic globalised economy and society (Rani, 2004; Tilak, 2001). In this regard, quantity and quality of highly educated and specialised labour force determine their competence in the global market. It is now well recognised that the growth of the global economy has increased for those countries with good levels of education and vice versa for those without such developments (Corny, 1999; Ilon, 1994; Stewart, 1996; Tilak, 2001.

Although there have been a lot of changes in the education system in Kenya, this study focuses on the effect of GATS and other economic reforms on university education in the country. This study has been triggered by a number of factors, some of which are outlined as follows: Education sector has always been the leading recurrent spender in Kenya followed by General Administration, Agriculture and Defence in that order as displayed in the various issues of Economic Survey.

The government has not been keen on revising university teachers' salaries upwards over time to match the employees' demands in this subsector. Consequently, there has been persistent pressure from University Academic Staff Union (UASU) to make the government review faculty staff salaries. Despite a few instances when the government has yielded to the UASU demands, the offers have always been disputed as irrational and falling short of the target by a wide margin prolonging the industrial stand-off between the agitating parties. As a result inadequate salaries offered by public universities, most of the academic staff are increasingly engaging in various income generating activities to supplement their monthly earnings. Moreover, quite a number of lecturers are quitting government employment every year to greener pastures thereby adversely affecting the quality of public university education in the country.

The number of public universities has grown over the years from a single university in 1978 to seven universities currently. Despite over 600 % increase in the number of public

universities during the sample period, the number of government scholarships has stagnated at 10,000 students each year for more than two decades now.

The above scenarios and other challenges make it necessary to carry out the study on the responsiveness of educational expenditure to changes in variables such as enrolment, teachers' salaries, level of institutional infrastructure and staffing situations among other issues affecting university education in Kenya. More importantly the study makes an attempt to evaluate the impact of major economic reforms that were introduced in the country during the sample period including General Agreement on Trade in Services (GATS) initiatives. This is done with a view of establishing the implications of such reforms to public expenditure on higher education.

Objectives of the Study

Specific objectives of the study are to:

1) Analyse the distribution and trends of government expenditure at higher education levels of education in Kenya.

2) Establish the relationship between the changes in gross domestic product (GDP) and budgetary allocations to education sector in Kenya during the sample period;

3) Assess the relationship between public expenditure on education with variables such as: enrolment, staffing situation, institutional infrastructure and staff salaries at different levels of education in Kenya.

4) Analyse the implication of various initiatives by World Trade Organisation (WTO)/GATS initiatives on education sector in Kenya.

5) Analyse the implications of various economic reforms on government funding of educational programmes in Kenya.

Scope of the Study

This study covers only the university level of education and only considers public expenditure on education within the sample period from 1978 to 2008. The sample period was selected because it covers major economic reforms which were introduced in the education system after independence as well as more recent ones including Structural adjustment Programmes (SAPs) and GATS, among others. The period also covers the two political systems of governance in the country - Single Party and Multi-Party democracies hence changes are reflected in the government policy towards education and the study takes account of them. The

study is confined to the analysis of direct expenditures on university education for which the resources are allocated through budget only.

Literature Review

Quite a number of researchers have written on the issues of public expenditure on education at various levels. Most of the studies focus on primary and secondary education and on aspects such as unit cost analysis. Datt, (1978) conducted a study on unit cost of education in a case study of Haryana state colleges in India. The study considered a number of variables that affect costs in education including enrolment, teachers' salaries, age of college and staffing situation in Haryana colleges. The findings of the study revealed that for the case of private colleges, enrolment and age of the college had a negative impact on unit costs while average pay of the teacher and ratio of non-teacher to total costs indicated a positive impact. But when the 24 private colleges and 4 state colleges were added to make the sample of all colleges, the results showed that the age of college had a positive impact instead of the negative one as before. Tilak, (1985) carried out a study on the analysis of costs of education in India using time series data for the period from 1970 to 1980. The study considered both public and household costs of education determined from various categories of actual expenditures incurred in different aspects of education provision. The study used %ages and per unit ratios to make the analysis. The main findings revealed that teacher-pupil ratio and average salary of teachers had a significant impact on the unit cost of education.

This study estimated the full social returns to education in various economies between 1960 and 1985. The study concluded that education of workforce expands productivity by facilitating the discovery, adaptation and use of more economically rewarding processes. This study concurred with Bray's study of year 2002. The generalised recommendation from the two studies is that low-income countries tend to benefit more from primary education investment, while middle income countries, including those about to achieve universal primary education, tend to gain highest social returns from expansion of secondary education. On the other hand, high-income countries derive highest returns from tertiary education. This is, however, complicated by the weak labour structures in most low-income countries.

Morriss and Gopinathan (1997) carried out a study on trends in education funding in Singapore for a 15 years period in an attempt to link changes with economic situation, and fiscal

and education reforms. According to the findings, education in Singapore was well funded by the government and that the impetus for investing in education came from a number of factors which addressed a number of challenges such as: Overcoming under-investment on education provision during the colonial rule; ensuring equity in education provision among the different ethnic groups; expanding educational opportunities; and changing the believe among the populace that education was an individual and social good. Consequently, investment in education was substantially increased even though economic growth in 1960s and 1970s was not very high. Another interesting finding of this study is that that economic growth rate in Singapore did not compromise expansion of education expenditures. More importantly, the study pointed out that increases in enrolment pushed up education funding in the country and this is one of the key objectives of the present study on Kenya.

Omotor, (2004) carried out a study on the analysis of Federal Government Expenditure in the education sector of Nigeria to establish the implications of such public expenditures on national development, utilizing time – series data (1977 – 1998). Among the main findings of the study was that on the average, increase in federal revenue to the tune of 100% is accompanied by 56% increase in total educational expenditure. The openness variable was negatively signed indicating no demonstration of effect of international exposure to increase in education expenditure. The study concluded that although increase in government revenue had a positive effect in the funding of this sector, it recommended that since Nigeria was highly a mono product economy, efforts must be geared up to sustain and enrich other sources of financing the sector like the Education Tax Fund. It further recommended that tertiary educational institutions look in-ward by investing in both the services and manufacturing sectors.

Using panel data of African countries from 1990 to 2002, Anyanwu and Erhijakpor (2007) studied the relationship between government expenditure on education enrolments, with illustration from Nigeria and other SANE (South Africa, Algeria, Nigeria, and Egypt) countries at the primary and secondary school levels.

The findings of the study reveals that in both primary and secondary education enrolments in Africa, the share of government education expenditure in GDP is statistically significant at a level of 1 %. A 10 % increase in government education expenditure increases

primary education enrolment in Africa by 21 to 28 % while increasing secondary education enrolment by 33 to 42 %. The primary education results are consistent with those of Baldacci et al. (2004) while those for secondary education are consistent with those of Gupta el at. (1999) though the coefficient estimates of the latter were much larger for 50 developing and transition countries.

Olusegun and Schoeman (2007) carried out a study on the Determinants of Educational Spending in Africa and the framework used in this study followed a public choice approach similar to that used by Hewitt (1991, 1992, and 1993) and Davoodi *et al.*, (2001). The model analyses the relationship between education spending and overall government spending. Thus, the determination of education spending is modelled as a government optimization problem. The study concluded that robust estimate of the impact of total government expenditure on education spending shows the expected results namely, that the share of education spending to total government spending increases when fiscal policy is contractionary. This means that government expenditure on education is not resilient to shocks while total government expenditure on the other hand is resilient to shocks in education spending. However, expenditure on education in Africa does not comply with the rules outlined by the IMF in terms of their fiscal adjustment program.

Methodology

This study used the deductive scientific method premised into an econometric model based on the extended version of Cobb-Douglas Equation including two dichotomous (dummy) variables. The model is applied in the analysis of historical time series trends in public expenditure at the university level of education against the selected explanatory variables during the sample period. The regression of the modelled equations is carried out using Ordinary Least Squares (OLS) method utilising E views 6 econometric package. The choice of the model was deemed appropriate for the study because of its versatility in addressing the problem of non-linearity of the relationship among the variables. The model also allows interpretation of the parameters in terms of elasticity since the study is concerned with the relative responsiveness of dependent variable to changes in each independent variable in the model.

Research Data

The main data used in this study are the national income (GDP) at market prices and government expenditure on education at their nominal values. This data was obtained from various issues of Kenya's Economic Survey; Budget Statistical Annex; Kenya National Bureau of Statistics (KNBS); International Financial Statistics (IFS) and Government Printed Estimates (GPE), as well as from the Ministry of Education Database. Data on enrolment of students in primary schools and secondary schools, together with their respective institutional infrastructure is also used in the analysis and this is taken from the Ministry of Education Database and the KNBS. In addition, the information about staffing situations and teachers' salaries in both primary and secondary education levels was obtained from the Teachers Service Commission (TSC).

The study also used university data pertaining to enrolment, staffing situation, institutional infrastructure and academic staff salaries. This information was obtained from various sources including Government Policy documents, Budget Statistical Annex; KNBS and, the Commission for Higher Education (CHE). The data about economic reforms and other discretionary policy changes were sourced from budget speeches for various years, and policy manuals from the Ministry of Education and its semi-autonomous government agencies (SAGAs), especially the TSC, CHE, and also from KNBS records.

The Model

Education budget in any fiscal year need to be financed in a multidimensional way considering all the key variables in the education system that cause direct implication on expenditure. This functional relationship can be expressed in general form as follows:

$$E_t = f(X_i) \tag{3}$$

This can be mathematically expressed as:

$$E_t = \alpha + \beta X_i + e_i \tag{4}$$

Where: E_t = Total public expenditure on education

X_i = A set of key explanatory variables

e_i = The error term

α and β = Constants

For the purpose of this study equation (4) can be specified mathematically as follows taking into consideration the identified explanatory variables:

$$E_t = \alpha N_t^{\beta 1} \, P_t^{\beta 2} \, S_t^{\beta 3} \, T_t^{\beta 4} \tag{5}$$

Where: N_t = Total students enrolment in a particular level of education

             P_t = Total number of teachers in a specific level of education (Staffing Situation).

             S_t = Number of schools per particular level of education (Institutional Infrastructure).

             T_t = Average annual teacher's salary in a particular level of education.

       α and β_i = Constants.

A close observation reveals that equation (5) is an extended version of Cobb-Douglas Production Function and can be expressed in double- logs as follows to make it linear:

$$InE_t = In\alpha + \beta_1 InN_t + \beta_2 InP_t + \beta_3 InS_t + \beta_4 InT_t + V_t \tag{6}$$

Note: Equations (2) and (6) are in double-logs and hence their coefficients are interpreted in terms of elasticities.

Equation (6) can be expressed as:

$$\mathbf{E}_{jt} = \boldsymbol{\alpha} + \boldsymbol{\beta}_1 \mathbf{N}_{jt} + \boldsymbol{\beta}_2 \mathbf{P}_{jt} + \boldsymbol{\beta}_3 \mathbf{S}_{jt} + \boldsymbol{\beta}_4 \mathbf{T}_{jt} + \mathbf{V}_{jt} \tag{7}$$

Where: $\mathbf{N}_{jt} = InN_t$

             $\mathbf{P}_{jt} = InP_t$

             $\mathbf{S}_{jt} = InS_t$

             $\mathbf{T}_{jt} = InT_t$

             $\mathbf{V}_{jt}$ = Error term

       $\boldsymbol{\alpha}$ and $\boldsymbol{\beta}$ = Constants

         j = Denotes a specific level of education (j stands for a, b or c representing Primary, Secondary and University education levels respectively).

The impact of GATS initiatives and other key economic reforms is captured by the introduction of two dummy variables, that is, D_{2t} and D_{3t} in Equation (7). Thus, D_{2t} represents the effects of GATS initiatives on the education system in Kenya and assumes the value of 0 for pre-GATS and value of 1 for post-GATS periods respectively. Likewise D_{3t} captures the effects of various economic reforms introduced in the education system during the sample period. Similarly, this dummy variable takes the value of 0 in absence of any major economic reforms,

and value of 1 whenever a major economic reform was introduced in the education system in a particular fiscal year.

It is assumed that the effects of GATS and those of other major economic reforms are interactive. Moreover, the effects of these policy reforms are constant across all explanatory variables. Consequently the two dummy variables are introduced into the model (Equation (7)) multiplicatively to all the four explanatory variables concurrently as follows:

$$\mathbf{E}_{jt} = \boldsymbol{\alpha}_1 + \boldsymbol{\alpha}_2\, D_{2t} + \boldsymbol{\alpha}_3\, D_{3t} + \boldsymbol{\beta}_1\mathbf{N}_{jt} + \boldsymbol{\beta}_2\mathbf{P}_{jt} + \boldsymbol{\beta}_3\mathbf{S}_{jt} + \boldsymbol{\beta}_4\mathbf{T}_{jt} + \boldsymbol{\beta}_5(D_{2t}D_{3t}\mathbf{N}_{jt}) + \boldsymbol{\beta}_6(D_{2t}D_{3t}\mathbf{P}_{jt}) +$$
$$\boldsymbol{\beta}_7(D_{2t}D_{3t}\mathbf{S}_{jt}) + \boldsymbol{\beta}_8(D_{2t}D_{3t}\,\mathbf{T}_{jt}) + \mathbf{Z}_{jt} \qquad\qquad (8)$$

Analysis of Public Expenditure on University Education

Table 6.1 shows the estimation results from Equation (8c) on public expenditure on education at university level for the period 1978 – 2008. Based on the estimated results the model was found to be fit for analysis because the F-value was relatively high at 159.66 while the corresponding Prob (F-statistic) was 0.00 implying that the overall model was valid, with all coefficients in the model being statistically different from zero. The R-squared and Adjusted R-squared had high values of 0.98 and 0.96 respectively implying that the model is a good predictor of the dependent variable. The Durbin-Watson statistic was 2.04 and very close to the conventional value of 2 meaning there was no autocorrelation between the variables. It is also evident that all the control variables in the model had the correct positive signs as expected although two of them were found to be insignificant even at the conventional 10% level.

The constant had a coefficient of 14.17 and was highly significant at the conventional 1% level. Thus a constant was quite necessary for the specification of the model at university level of education. This constant coefficient gives the intercept value of public expenditure on education when the effects of all explanatory variables in the model are equal to zero.

Table: 6.1
Regression Results for Public Expenditure on Education at University Level

VARIABLE	COEFFICIENT
Constant	14.0717*** (0.9919)
Students Enrolment	0.3532** (0.1618)
Staffing Situation	0.6178*** (0.1820)
Institutional Infrastructure	0.0456

*Source: regression E-Views 6 author's construction Figures in are Errors; *** significance whereas; * significance *Indicates at 10% level; † Indicates the value to be adjusted by Harvosen and Palmquist technique.*

Raw results from plus

*Note: parenthesis Standard Indicates at 1% level * Indicates at 5% level; significance*

	(0.0766)
Average Annual Teacher's Salary	0.2345 (0.1673)
GATS Initiatives on Education	† 0.7082*** (0.1281)
Major Economic Reforms on Education	0.0079 (0.0960)
GATS and Economic Reforms only	†0.8863* (4.9517)
GATS and Economic Reforms with Enrolment	-0.3323 (0.4891)
GATS and Economic Reforms with Staffing Situation	1.6565*** (0.6314)
GATS and Economic Reforms with Institutional Infrastructure	0.0787 (0.2137)
GATS and Economic Reforms with Average Annual Teacher's Salary	0.0661 (0.6639)
R-squared	0.9839
Adjusted R-squared	0.9617
F-statistic	159.6550
Durbin-Watson Statistic	2.0379

Students Enrolment

This variable had a coefficient of 0.35 and was quite significant at 5% level. This means that controlling for the effect of other explanatory variables an increase of students' enrolment by 100% to a 35% increase in public expenditure on education at university level during the sample period. This clearly shows that enrolment had a net positive impact on public expenditure on education at this particular level of education albeit with low elasticity. One of the possible reasons for low response of educational expenditure to enrolment at this level is that the enrolment rates at public universities have been held constant by the government through Joint Admission Board for the last two decades. Moreover the amount of scholarship offered to selected candidates has also been fixed over the same period. These are among the major factors that have contributed to low elasticity of the dependent variable to changes in enrolment.

Staffing Situation

This variable was very significant at a level below the conventional 1% and had a coefficient of 0.62. In this regard the net effect of a 100% increase in staffing levels in public universities led to an increase of 62% on public expenditure on education during the review period. This means that the elasticity of public expenditure on education with respect to staffing

situation at university level was quite inelastic elastic implying that this staffing situation at the university level was not booster of public expenditure on education in Kenya during the sample period. The findings conform to real situation in the country in that public universities are autonomous institutions operating under separate Acts parliament and recruit their staff independent of the government directive. More importantly, the salaries paid to the new members of staff are not directly pegged on the amount of government financing to particular universities. These are some of the militating factors that lead to low elasticity of public expenditure with respect to changes in staffing levels in the university sector.

Institutional Infrastructure

This variable had had the correct positive sign but was insignificant at 10 % level. Such a situation means that that public expenditure on education was perfectly inelastic and therefore not responsive to changes in institutional infrastructure at university level during the sample period. This scenario is possible because the growth of universities in Kenya depends to, a large extent, on discretionary policies of the government since it is the prerogative of the president to elevate an existing public institution to university status. Such a decision mainly depends on the political will of the government in place at a particular time rather than the demand and supply factors of university education. Moreover, there have been instances where a presidential decree is issued to elevate an institution without any additional financial allocation to this particular university in the subsequent government budgets. Indeed the growth of universities in the country has been sluggish in the last three decades as established in Chapter Four.

Average Annual Teacher's Salary

This variable was found to be insignificant at 10% level although it had the expected positive sign. This clearly implies that public expenditure on education was perfectly inelastic to changes in average annual teacher salary at university level in Kenya during the sample period. This means that changes in university academic staff salaries virtually had no impact on public expenditure on education over the review period. This situation is in line with the actual situation in the country whereby the government allocates funds to public universities at specific rates and determines the minimum remuneration for teachers but individual universities fix the effective salaries of their staff members autonomously depending on their own financial endowments.

GATS Initiatives

This variable was very significant at the conventional 1% level with a coefficient of 0.71 in semi-log form. Applying Harvosen and Palmquist technique (Ibid) for semi-log transformation the actual coefficient for this variable becomes 1.03. This implies that controlling for the influence of other variables, the effects of GATS on public expenditure on education was 103% higher than the situation without GATS at university level during the sample period. This means at the university level of education the reforms initiated under GATS programme had significant influence on public expenditure on education over the review period. The findings support the reality in Kenya because the university education sub-sector has been growing remarkably since the inception of GATS programme.

Major Economic Reforms on Education

This variable was not significant even at 10 % level even though a number of major economic reforms were introduced in the country's education system during the sample period. This clearly implies that most of the reforms implemented during the sample period had no impact on public expenditure on education at university level. Most importantly, of all the key economic reforms introduced in the education system in Kenya during the sample period only the Mackey Report of 1985 directly targeted the university sector by recommending the introduction of the second public university-and Moi University was established. Therefore it is no wonder that most of these reforms were insignificant at the university level and hence had no implication on the public expenditure on education in the country.

GATS and Major Economic Reforms only

The interactive effect of GATS and other major economic reforms on education was significant at 10% level with a coefficient 8.86 in semi-log form. After transformation through Harvosen and Palm Quist technique the coefficient value becomes 60.68 %. This implies that for the periods when both qualitative variables were present in the education system, their joint effect was 61% higher than the situation in absence of these reforms particularly at the University level.

GATS and Economic Reforms with Enrolment

The combination of GATS and other economic reforms with enrolment was insignificant even at the conventional 10% level. This implies that both the GATS initiatives and other economic reforms lamped together with enrolment had no interactive effect on public

expenditure on education at university level if the influence of other variables is held constant over the sample period. The findings reveal that most of these reforms not effective in driving public expenditure on education through students' enrolment at this particular level of education during the sample period.

GATS and Economic Reforms with Staffing Situation

This variable was significant at 1% level with a coefficient of 1.66. This implies that combination of GATS initiatives and other economic reforms with staffing situation as a compound variable had a positive effect on public expenditure on education at university level during the review period. Therefore holding the effects of other explanatory variables constant, the combination of GATS and other major economic reforms with staffing situation led to 166 % increase in public expenditure on education as compared to the period when these reforms were absent.

GATS and Economic Reforms with Institutional Infrastructure

This variable was not significant even at 10 % level. This situation means that the combination of GATS and key economic reforms together with institutional infrastructure had no impact on public expenditure on education at university level during the sample period. More importantly, most of the key reforms implemented during the sample period did not address the improvement of infrastructure at the university level.

GATS and Economic Reforms with Average Annual Teacher's Salary

When GATS and Major economic reforms were combined with average annual teacher salary, the variable was insignificant at 10% level. This implies that this combined variable had no influence on public expenditure on education at university level during the review period controlling for the effects of other variables in the model. Indeed none of the major reforms addressed the issue of salary changes at the university level. Moreover university staff salaries are determined internally by individual universities and hence are not driven by policy decrees

Conclusions and Recommendations

At the university level of education, the empirical findings reveal that enrolment and staffing situations were significant although their respective coefficients exhibited inelastic responses relative to public expenditure on education. This implies that the government did not adjust budgetary allocations substantially in support of changes in enrolment and staff turnover

during the sample period. Most importantly, GATS initiatives alone were found to be quite significant though fairly inelastic in relation to public expenditure on education as revealed by the value of the coefficient. Moreover, the interactive effects of GATS, economic reforms and staffing situation proved to be significant at this level of education. This is clear evidence that GATS initiatives coupled with other major economic reforms are attracting more education funding at the university level because particularly in boosting academic staffing numbers. This situation is in tandem with the actual scenarios in Kenya because GATS reforms are more targeted to university level compared to other subsectors in the education system even today. More importantly this conclusion corroborates what was established in Chapter five. However, public expenditure is ineffective in supporting the improvement of university education in terms of enrolment, staffing situation, institutional infrastructure and remuneration of academic staff. In this regard, this subsector is bound to suffer if measures are not taken to mobilise additional funding from the government to replenish other vital aspects in the education development matrix.

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