Revenue Generation Capacity in Developing Countries: Implications for Physical and Human Capital Development in Tanzania, Kenya and Uganda

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Abstract

This paper is an attempt to investigate the effects of tax revenue generation capacity on public spending in Sub-Saharan Africa drawing empirical lessons from three East African countries-Tanzania, Kenya and Uganda. It employs the co-integration and error-correction modeling framework to analyze the effects of erratic and inadequate revenue generation on physical and human capital development in Tanzania, Kenya, and Uganda using time-series data over the period 1970-2005.The results unambiguously demonstrate that changes in tax revenue have strong impacts on physical and human capital development spending in the three countries. The policy lessons that can be drawn from the findings of this paper is that the three countries should strike a balance of the composition of government expenditure; reprioritize public expenditure into productive spending and strive to generate sufficient tax revenue to finance budget expenditures on physical and human capital development in order to reduce poverty and promote long-run economic development.

Key words: Tax Revenue Generation Capacity; Physical infrastructure; Human Capital, Tanzania, Kenya and Uganda

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1.0 Introduction

The political economy theory of fiscal policy suggests that fiscal policy may either promote or inhibit economic growth through its effects on decisions regarding resource allocation on public investment spending in physical and human capital development. This is especially true when revenue generation is not forthcoming, given the trade-off on public expenditure allocation and management among the expenditure items. Investment spending on physical and human capital can bolster long-term growth. In turn, a higher rate of growth generates greater resources to finance spending on human capital development, further bolstering the dynamism of the economy (Clement et al., 2003; Ndulu, 2006; Palley, 2006). Therefore, if any policy changes have to enhance growth and reduce poverty, they must be accompanied by public investment in physical and human capital development. It has been report that Tanzania, Kenya and Uganda are experiencing volatile and erratic revenue generation, though at varying rate (Mwakalobo, 2009, 2010; 2013; 2013). It is demonstrated that the three countries have been experiencing lower levels of government revenue and erratic tax revenue generation. Declining, inadequate and erratic revenue generation may create unpredictability of revenues available to finance public capital expenditures, resulting in sub-optimal allocation of government resources. This is likely to have adverse consequences on long-run growth of the economy. It may also jeopardize macroeconomic stability and limit the speed of economic development that have already been achieved and the extent to which their benefits can be realized.

This paper investigates whether erratic and inadequate government revenue generation, have had any adverse consequences for public investment spending in sub-Saharan Africa, drawing empirical experiences from three East African counties-Tanzania, Kenya and Uganda. Getting a better understanding of the consequences of fiscal squeeze on public investment has far-reaching implications for several perspectives. First provides useful insights to improve the effectiveness of national poverty reduction strategies that will promote long-run economic growth and enhance human development outcomes provided by the United Nations sanctioned Millennium Development Goals (MDGs)[2]. Secondly, provide potential information useful for formulating and implementing appropriate fiscal policies that will ensure effective and efficient allocation of public spending to productive expenditure that will bolster long-term economic growth and poverty reduction. As such, this information is essential for budget planning and management purposes. Thirdly, this information is crucial for design, formulation and execution of sound fiscal and macroeconomic policies.

The data used in this paper were obtained from various official government reports from the bureaus of statistics, central banks, and ministries of finance and revenue authorities of the respective countries. These data were complemented with data from other various sources such as the Government Finance Statistics (GFS) and International Finance Statistics produced by the IMF; and World Development Indicators reports and African Development Indicators produced by the World Bank.

The rest of paper is organized as follows. Theoretical and empirical evidence on the subject are reviewed in section two. Section three describes the trend and patterns of selected public expenditures for the three East African countries. It also traces changes in the composition of public investment spending on physical infrastructure and human capital. Section four

[2] The goals are directed at reducing poverty in all its forms; including halving poverty, achieving universal primary education, reversing the spread of HIV/AIDS, reducing child and maternal mortality, and ensuring environmental sustainability.

presents an econometric analysis of the effects of inadequate government revenue and erratic revenue generation on physical and human capital investment as well as investigating other determinants of physical and human capital investment. Conclusions and policy implication are summarized in section five.

2.0 Theoretical and Empirical Evidence

The theoretical underpinning builds on the political economy theory of fiscal policy. The theory suggests that governments raise revenues and use the collected resources to finance public investment spending for the provision of public goods and services as well as targeted development projects. Policy decisions are made by the government, which decides on how best to allocate the collected limited resources into alternative competing sectors (Hassler et al., 2007; Battaglini and Coate, 2008). In developing countries, as in developed countries, governments play a key role in the provision of public goods and services. Choices have to be made how to allocate the limited resources, so governments face tradeoffs (Khattry, 2003).

Khattry (2003) succinctly summarizes the tradeoffs which governments often face in the process of public expenditure management. Khattry identifies three tradeoffs. The first one involves the tradeoff between public spending on physical infrastructure and human capital. Because of substantial costs involved in capital investment, the involvement of the private sector is limited. Thus the government takes a large share of the burden to undertake such investment. But governments also put much emphasis on allocating substantial resources on human capital investment in order to maintain social cohesion and political legitimacy.

The second dilemma is allocating resources between defense spending and spending on physical and human capital investment. It is contended that governments in developing countries facing deteriorating political and social conditions tend to invest in military apparatus in order to maintain political authority, while compromising physical and human capital investment.

The third is the concern of allocating resources between public investment in both physical and human capital infrastructure and interest payments on accumulated debt. Developing countries that have accumulated large debts have reduced spending on capital investment in order to service the debt and qualify for new borrowing to meet spending obligations.

Following the implementation of economic reforms, many developing countries underwent fiscal adjustment. In so doing they marginally managed to reduce their fiscal deficits. However, this resulted in cuts in public expenditure, especially when economic reforms included policy measures that restrain government revenue, thus inducing increased budgetary pressure and diminished resources available for public spending on domestic capital investment (Rao, 1999; Palley, 2006; Drether, 2006; Tanzi, 1993; Basu and Morrissey, 1997; Khattry, 2003; Roy et al. 2006, Palley, 2006; Clement, et al. 2003; Roy, et al. 2006; Schade, 2005; Kumar et al. 2007; Gupta et al. 2002, 2005; Baldacci et al. 2004).

Empirical evidence demonstrates that in periods of restrictive fiscal policies and fiscal consolidation, public spending on infrastructure is often the first item to suffer from government expenditure compression (Tanzi, 1993; Basu and Morrissey, 1997; Drether et al., 2006; Palley, 2006; Clement, et al. 2003; Roy, et al. 2006; Schade, 2005; Kumar et al. 2007; Gupta et al. 2002, 2005; Baldacci et al. 2004). This is partly due to the fact that deleterious effects of reduced public investment are felt with long lags, whereas other components of government budgets, such as transfers and public sector wage bill have higher and more

immediate political costs. The extent of the effect of revenue generation on public investment spending may differ, given differences in macroeconomic conditions, structure of the economy and level of development (Randolph, 1996; Rodrik, 1998; Sturm, 2001; Clement, et al. 2003; Drether, et al. 2006; Kumar, et al. 2007). Furthermore, it is acknowledged that the fiscal adjustment-public investment nexus depends on the magnitude of fiscal adjustment and the means through which the fiscal budget balance is achieved (Gupta, et al. 2003; Gupta, et al. 2005; Mackenzie and Orsmond, 1996; Roy, et al. 2006; Drether, et al. 2006; Kumar, et al. 2007).

Previous work has concluded that the principal determinants of public investment are: macroeconomic environment, underlying economic structure, level of development, and the size of the government. Macroeconomic conditions are reflected by the size of the public budget deficit and public debt as well as the inflation rate. In addition to reflecting the macroeconomic conditions of the country, the change and size of government budget deficit account for the effects of fiscal adjustment. The size of the fiscal deficit controls for initial fiscal conditions and any improvements in tax collection in the adjustment process. Empirical evidence on the relationship between fiscal adjustment and public investment is, however, inconclusive, because it appears to depend on the magnitude, length and quality of adjustment (Gupta, et al. 2005; Clement, et al. 2003; Baldacci, et al. 2004; Kumar et al. 2007).

Higher government budget deficit in the previous period tends to lower the level of infrastructure expenditures. In the presence of high public budget deficits, governments may be forced to adopt restrictive fiscal policy measures by cutting back or postponing public capital spending, whilst maintaining other sensitive social spending in order to maintain political legitimacy (Randolph 1996; Sturm, 2001; Roy, et al. 2006; Rao, 1999; Ndikumana, 2004). Furthermore, high public deficits may cause high inflation which can create uncertain investment climate. This may force the government to increase infrastructure investment to compensate for or stimulate private investment (Randolph, et al. 1996). Generally, however, the relationship between public budget deficit and public investment depends on initial and accompanying macroeconomic conditions.

Like public deficit, high public debt can lead to budget cuts on government investment spending on capital expenditure (Rao, 1999; Clement, et al. 2003; Sturm, 2001; Roy, et al. 2006; Schade, 2005). A high level of external debt reduces government incentives to carry out structural and fiscal reforms; because these reforms could intensify the pressure to repay the debt. It is argued that any strengthening of the fiscal position resulting from structural policy reforms intensify the pressures to repay foreign debt. In this case in order to remain under the shadow not to repay the debts, some countries strategically undertake distortionary policies so that won't repay the debts (Clements et al., 2003). Debt servicing depresses a country's resources available to finance budget expenditures, thus resulting in cuts in capital development expenditures.

It is also argued that high debt overhang depresses public investment. That is, as the public debt increases, there is a growing concern about governments' actions and policies for servicing the debt obligations, and this tends to have adverse effects on both public and private investment. For example, with high stock of debt, there may be expectations that the government may decide to service the debt through distortionary measures, such as inflation tax (Agenor and Montiel, 1999). Higher inflation rates reduce the real value of tax revenue, thus reducing government resources for spending on physical capital (Sturm, 2001; Aubin et

al. 1988, McMahon and Schmidt-Hebbel, 2000).

In certain circumstances, various public spending components may complement or substitute each other. For instance, defense and infrastructure spending are substitutes, higher spending on defense is associated with decreased spending on physical capital investment (Khattry, 2003; Looney, 1997); whilst there is some evidence that education and defense expenditures may complement one another. That is, military spending encourages modernization, supplies technological innovations to civilian industries, contributes to the building of physical infrastructure, provides modern education and health services to defense personnel (Marlow and Shiers, 1999; Mehrotra and Delamonica, 2007).

Furthermore, the ways in which the public budget deficit is financed may affect public investment spending. External financing of the budget deficit is socially desirable, provided it is invested in credit-worthy investment development projects with high economic returns. Deficit financing through domestic borrowing may be associated with inflationary pressures. Higher levels of inflation are associated with macroeconomic instability and often contribute to the decline in government revenues due to the fall in demand for money and decline of the real value of tax. Reduction in government revenue again limits the availability of resources required to finance budget capital expenditures (Weiss, 1995; Gupta, et al. 2005; Baldacci, et al. 2004; Kumar et al. 2007).

The size of the government is reflected by the share of tax revenue in GDP. The ratio of tax revenue in GDP also controls for the initial fiscal conditions and the contribution of improvements in tax collection to fiscal adjustment effort (Gupta, et al. 2005). High tax revenue reflects the availability of resources required to finance government expenditure. Higher tax revenue is associated with increased public investment spending on physical and human capital development (Sturm, 2001; Khattry, 2003).

The level of development is reflected by openness to international trade, levels of per capita GDP, and urbanization. The more the country is open to the rest of the world, the more it becomes vulnerable to foreign competition and therefore competes for business by offering, among other things, adequate infrastructure. Similarly, in seeking to attract foreign direct investment, a government could increase public capital spending (Clement, et al. 2003; Rao, 1999; Sturm, 2001; Khattry, 2003). In addition to reflecting the level of development, the real GDP growth rate accounts for business cycle effects on public investment spending. Growth of GDP reflects previous failures in the adjustment process and the effects of exogenous growth shocks (Gupta, et al. 2002, 2005). Lower growth rates of GDP are associated with less government spending on capital investments (Drether, et al. 2006). The relationship between per capita income and public investment spending depends on the type of public spending. For instance, higher levels of per capita income are associated with higher spending on physical and human development (Sanz and Velazquez, 2002, Randolph et al. 1996). However, lower levels of development are associated with relatively more spending on physical infrastructure. Per capita GDP can exhibit an inverse relationship with total spending on physical capital, because private investment in physical infrastructure is low in the least developed countries (Khattry, 2003).

There are two opposing arguments on the impact of urbanization on public investment. First, as a society becomes more urbanized, there is a shift from the family to the public sector for services provision, such as education and health care. In this case urbanization is predicted to be associated with increased public investment in social service provision. Secondly, most

public capital spending concerns physical infrastructure, the need for which is relatively greater in rural areas. Hence greater urbanization may be associated with less public spending on infrastructure (Clement, et al. 2003; Sturm, 2001, Randolph et al. 1996). However, this may not be the case in some developing countries, particularly in sub-Saharan African countries where urban centers are not developed as compared to those in developed countries.

3.0 Econometric Analysis

Based on the theoretical and empirical evidence (Kumar, et al., 2007; Roy, et al. 2006; Drether, et al. 2006; Gupta, et al. 2005; Gupta, et al. 2003; Clement et al., 2003; Mackenzie and Orsmond, 1996; Kumar, et al. 2007; Sturm, 2001; Rodrick, 1998; Rondolph, 1996), the reduced-form equation for analyzing the effect of revenue generation on public investment spending is as follows:

$$PI_t = f(G_t, PI_{t-1}, OP_t, E_t, M_t,) \quad (1)$$

where PI is the public expenditure category as percentage of GDP; G is the size of the government measured by the change in tax revenues; E is a vector controlling for the structure of the economy; M is a vector controlling for macroeconomic conditions; and OP is the index of openness measure (export plus import divided by GDP) capturing the effects of trade liberalization. The estimation equation is specified as follows:

$$PI_t = \beta + \gamma PI_{t-1} + \rho \mathbf{G}_t + \phi_q OP_t + \delta_i E_t + \eta_i M_t + \alpha_t + \varepsilon_t \quad (2)$$

In order to capture short-run and long-run dynamic changes in fiscal adjustments as a result of changes in tax revenue generation a general autoregressive distributed lagged model is specified:

$$PI_t = \beta + \gamma PI_{t-1} + \rho G_t + \phi\, OP_t + \delta_i E_t + \eta_i M_t + \rho G_{t-1} + \phi OP_{t-1} + \delta E_{t-1} + \eta_i M_{t-1} + \varepsilon_{it} \quad (3)$$

Estimating equation (3) while variables are in levels there is, however, a danger of encountering spurious regression; that is, obtaining significant regression results from unrelated data. An alternative approach is to estimate the error-correction regression equation. The error-correction model is obtained by re-parameterizing and re-arranging equation (3) as follows:

$$PI_t = \alpha + \rho \Delta G_t + \phi \Delta OP_t + \delta_i \Delta E_t + \eta_i \Delta M_t + \lambda \varepsilon_{t-1} + \Omega_t \quad (4)$$

where $\lambda = (\gamma - 1)$, is the adjustment coefficient (i.e. the estimated coefficient on the error-correction term). The expected value of adjustment coefficient is negative, which implies that there are dynamic stability in the long-run within the error-correction estimation model; $\varepsilon_{t-1} = (PI_{t-1} - hG_{t-1} - kOP_{t-1} - jE_{t-1} - lM_{t-1})$ is the error-correction term lagged one period, and $h = \phi/(1-\gamma)$; $k = \rho_1/(1-\gamma)$; $j = \delta_1/(1-\gamma)$; and $l = (\eta_1 + \eta_2 + \eta_3)/(1-\gamma)$. It is obtained directly from the residuals of the co-integration regression equation (2). This captures long-run equilibrium changes of public investment spending as a result of changes in conditioning environment as discussed above. Equation (4) is estimated separately for physical capital and human capital and then separately for education and health investment spending.

4.0 Econometric Results

With time-series data it is meaningless to estimate the error-correction model with variables which are not stationary. Therefore, the first step before embarking on the error-correction estimation approach is to ascertain the stationarity, order of integration and whether the variables under scrutiny are co-integrated.

4.1 Unit Root Test Results

A unit root test was performed for each variable for the period spanning 1970 to 2005. First, a unit root test was performed for each variable in their levels. For the variables in which the null hypothesis of non-stationarity was rejected, their first differencing was tested for stationarity. To minimize the possibility of falsely rejecting the true null hypothesis or accepting the null hypothesis which is false, both the augmented Dickey Fuller Test (ADF) and Pillips-Perron (P-P) non-parametric test were used to test for the presence of unit root. Table 1 summarizes results of the ADF and P-P unit root tests. The results show that after taking the first differences most of the variables became integrated of order 1. Other variables were integrated of order 0. Variables integrated of order 0 were also included in the estimation of the error-correction estimation after taking their first differences.

Table 1: Unit Root Tests for Variables in the Regression Analysis[3]

Variables	Tanzania			Kenya			Uganda		
	ADF Z(t) value	PP Z(t) Value	I(?)	ADF Z(t) value	PP Z(t) Value	I(?)	ADF Z(t) value	PP Z(t) Value	I(?)
CAE	-2.852*	-3.905**	I(1)	-3.466***	-6.976***	I(1)	-3.783***	-5.184***	I(1)
HCE	-1.974	-6.487***	I(1)	-5.095***	-7.693***	I(1)	-7.703***	-7.414***	I(1)
EDE	-2.185	-6.572***	I(1)	-5.265***	-7.976***	I(1)	-3.491**	-8.046***	I(1)
HEE	-2.666*	-6.137***	I(1)	-4.801***	-6.464***	I(1)	-3.933***	-5.735***	I(1)
DFE	-5.004***	-9.254***	I(1)	-3.247**	-4.947***	I(1)	-4.978***	-4.424***	I(1)
EXD	-5.698***	-5.095***	I(1)	-3.167**	-5.322***	I(1)	-1.814	-4.183***	I(1)
TRADE	-2.344	-3.668***	I(1)	-4.277***	-6.871***	I(1)	-6.193***	-6.139***	I(1)
ODA	-3.254**	-5.654***	I(1)	-3.025**	-5.704***	I(1)	-3.736**	-6.877***	I(1)
TXRV	-4.681***	-6.989***	I(1)	-4.669***	-7.165***	I(1)	-5.103***	-6.342***	I(1)
URBAN	-2.494	-3.324**	I(1)	-	-	-	-	-	-
INFLT	-3.822***	-6.548***	I(1)	-3.782***	-6.099***	I(1)	-2.889**	-5.555***	I(1)
GBDEF	-2.958**	-4.028***	I(1)	-3.888***	-5.972***	I(1)	-4.361***	-5.791***	I(1)
PCGDP	-2.084	-3.689***	I(0)	-2.331	-6.759***	I(0)	-3.234**	-5.494***	I(0)

4.2 Co-integration Analysis and Results

Since multivariate co-integration regression equation is used, critical values generated by the Mackinnon (1991) and Ericsson and Mackinnon (2002) method were used for co-integration analysis. This is because ADF and P-P do not take into account finite samples and asymptotic distribution properties (Mackinnon, 1991). Results for co-integration analysis (unit root test for the residuals-the error-correction term) are summarized in Table 2. An examination of unit root tests for the residuals in Table 2 fail to reject the null hypothesis of non-stationary series, suggesting that the variables in the co-integration regression equation are co-integrated. This warrants the use of the error-correction model to examine the effects of changes in tax revenue generation and determinants of short-run and long-run dynamic changes in public investment spending in Tanzania, Kenya and Uganda.

[3] CAE: share of physical capital (transport, communication, roads, fuel and energy) expenditure, DFE: share of defense spending; EDE: share of education expenditure; HEE: share of health spending; HCE: share of human capital development spending (education and health); GBDEF: the change in public budget deficit; ODA: Natural logarithm of the share of the share of official development aid in GDP; EXD: Natural logarithm of the share of the share of external debt in GDP; TRADE: is the share of trade volume (percentage of import plus export) in GDP; TXRV: is the natural logarithm of the share of tax revenue in GDP; URBN: is the natural logarithm of urbanization (% of the urban population to the total population); INFLT: is the natural logarithm of inflation rate; PCGDP: is the natural logarithm of real per capita GDP. *** = significant at 1% level, ** = significant at 5% level and * = significant at 10% level

Equation	Without Constant			Without Trend			With Trend		
	Z(t)	1%	5%	Z(t)	1%	5%	Z(t)	1%	5%
Tanzania									
CAE	-4.354**	-4.919	-3.939	-4.269	-5.362	-4.323	-4.182	-5.802	-4.699
HCE	-6.625***	-4.710	-4.174	-6.489***	-5.806	-4.542	-6.435***	-6.301	-4.917
EDE	-6.075***	-4.710	-4.174	-5.965***	--5.806	-4.542	-5.944**	-6.301	-4.917
HEE	-9.003***	-4.710	-4.174	-8.759***	-5.806	-4.542	-8.481***	-6.301	-4.917
Kenya									
CAE	-6.511***	-4.206	-3.407	-6.422***	-4.696	-3.872	-6.346***	-5.144	-4.293
HCE	-5.425***	-4.510	-3.602	-5.330***	-4.961	-4.091	-5.282**	-5.383	-4.480
EDE	-5.043***	-4.510	-3.602	-4.958**	-4.961	-4.091	-4.991**	-5.383	-4.480
HEE	-5.656***	-5.047	-4.109	-5.542***	-5.432	-4.454	-5.428**	-5.813	-4.794
Uganda									
CAE	-5.077***	-4.725	-3.736	-4.954**	-5.273	-4.170	-4.815**	-5.729	-4.589
HCE	-4.774**	-5.067	-3.977	-4.668**	-5.556	4.376	-4.552	-6.053	-4.771
EDE	-4.943**	-5.067	-3.977	-4.833**	-5.556	4.376	-4.729	-6.053	-4.771
HEE	-4.024**	-4.725	-3.736	-3.927	-5.273	-4.170	3.762	-5.729	-4.589

*** = significant at 1% level, ** = significant at 5% level and * = significant at 10% level (Critical values at 1% and 5% estimated using Ericsson and Mackinnon (2002) Method

4.3 Error-Correction Estimation Results and Discussion

Co-integration analysis results in Table 2 demonstrate that variables in the co-integration regression equation are co-integrated. This suggests that we can proceed to estimating the error-correction equation (4) to investigate short-run and long-run effects of changes of tax revenue generation, openness to the rest of the world and macroeconomic environment, structure of the economy and level of development on public investment spending in Tanzania, Kenya and Uganda. Tables 3, 4 and 5 report both co-integration (column 1) and error-correction (column 2) estimation results for physical capital, human capital development, education and health spending for the three countries respectively. It is apparent from the results that there exist long-run relationships between changes in tax revenue generation, greater openness to the rest of the world, countries' economic conditions and public investment spending on physical capital (infrastructure), human capital development, education and health in Tanzania, Kenya and Uganda. This is supported by the negative and statistically significant adjustment coefficient (error-correction term). A close examination at the results in Tables 3, 4 and 5 suggests, however, that there are noticeable differences among the three countries as described below.

4.3.1 Tanzania

Table 3 reports the co-integration (column 1) and error-correction (column 2) regression results for physical capital and overall human capital development as well as its components: education and health for Tanzania. The results show that there are short-run and long-run relationships between changes in tax revenue generation, greater openness to global markets, initial conditions and public investment spending on physical and human capital development in Tanzania. Strong support is inferred by the negative signs on the adjustment coefficients (error-correction term) across capital development spending categories. This suggests that there are short-run and long-run dynamic stability. That is, the movement of changes in public investment spending on infrastructure, human capital development, education and health towards the steady state are partly explained by changes in tax revenue generation, as well as great openness of the Tanzanian economy to the rest of the world; prevailing

economic structure, macroeconomic environment and level of development. However, the speed of adjustment towards the equilibrium among the public investment spending category varied. Physical capital adjusted faster, followed by education, human capital development and lastly heath, as reflected by the absolute value of adjustment coefficients (Table 3).

Table 3: Determinants of Public Investment Spending in Tanzania[4]

Variables	Physical Capital		Human Capital		Education		Health	
	1	2	1	2	1	2	1	2
CAP_{t-1}	0.503***		0.704***		0.583***		0.785***	
	(3.42)				(3.54)		(7.46)	
EXD	0.226***	0.322***		0.128		0.143		0.153**
	(3.14)	(3.49)		(1.54)		(1.28)		(2.40)
TRADE	0.047	-0.443	0.250	-0.069	0.228	-0.066	0.451**	0.282
	(0.33)	(1.26)	(1.26)	(0.19)	(0.85)	(0.14)	(2.69)	(1.10)
ODA	0.183	0.180	0.216	0.431*	0.306	0.406	0.074	0.346**
	(1.50)	(0.80)	(1.41)	(1.86)	(1.49)	(1.42)	(0.56)	(2.27)
DEFNS		0.014		-0.044		-0.079		0.071
		(0.09)		(0.30)		(0.40)		(0.68)
TXRV		-0.092	0.825**	0.566	1.153**	0.850*	0.756**	0.570**
		(0.22)	(2.38)	(1.39)	(2.48)	(1.69)	(2.62)	(2.13)
URBAN		-3.669		-2.636				
		(1.14)		(0.75)				
INFL		0.020	-0.135*	-0.084	-0.218**	-0.140	-0.016	-0.017
		(0.16)	(1.80)	(0.61)	(2.15)	(0.78)	(0.25)	(0.16)
GBDEF	0.008	0.027	0.015	0.027*	0.018	0.033	0.008	0.023*
	(0.55)	(1.50)	(1.05)	(1.67)	(0.94)	(1.48)	(0.69)	(1.92)
PCGDP		0.155	0.423*	0.896*	0.590*	0.807	0.325*	0.934**
		(0.32)	(1.76)	(1.76)	(1.78)	(1.24)	(1.64)	(2.71)
TREND	-0.023**							
	(2.40)							
ECM_{t-1}		-0.544*		-0.479*		-0.526**		-0.477*
		(1.71)		(1.85)		(2.02)		(1.85)
CONS.	-0.059	0.090	-5.033**	0.064	-6.754*	-0.020	-5.116**	-0.006
	(0.10)	(0.88)	(2.02)	(0.58)	(1.98)	(0.32)	(2.47)	(0.18)
N	29	27	29	27	29	27	29	27
F-value	34.87***	2.38*	16.60***	1.21	12.19	1.01	25.20***	3.35**
R^2Adj.	0.8789	0.3471	0.7959	0.0749	0.7366	0.0047	0.8581	0.4485

The coefficients on lagged dependent variables for each category of public investment spending are positive and statistically significant. This signals that there are partial short-run and long-run adjustments in physical capital, human capital development, education and health spending investment in Tanzania over time. Results in Table 3 also suggest that there are significant short-run effects of different variables included in the co-integration and error-correction regression models. In the short-run, contrary to the prior expectations, changes in total external debt positively and significantly contributed to increase spending on physical capital and health as well as on overall human capital development and education, though insignificant. Two reasons could be possible explanations for this finding. First, much of foreign aid has been provided in the form of poverty reduction budget to finance education

[4] CAP_{t-1}: is the natural logarithm of the share of the respective capital expenditure in GDP lagged one period; GBDEF: the change in public budget deficit; ODA: Natural logarithm of the share of official development aid in GDP; EXD: Natural logarithm of the share of external debt in GDP; TRADE: is the share of trade volume (percentage of import plus export) in GDP; TXRV: is the natural logarithm of the share of tax revenue in GDP; DEFNS: is the natural logarithm of the share of defense expenditure in GDP; URBN: is the natural logarithm of urbanization (% of the urban population to the total population); INFL: is the natural logarithm of inflation rate; PCGDP: is the natural logarithm of real per capita GDP; TREND: is the time trend variable; ECM_{t-1} is the residual of the regression of co-integrated variables lagged one period. Figures in Parentheses are absolute t-values, *** = significant at 1% level, ** = significant at 5% level and * = significant at 10% level

and health. Second, spending on the provision of social services was protected during fiscal adjustment in order to maintain social cohesion and political legitimacy.
The results also reveal that in the short-run, openness to the global economy is positively and significantly associated with increased spending on health investment and though insignificant is negatively associated with spending on physical capital, education and overall human capital development investment spending in Tanzania. As expected official development aid (ODA) is positively and significantly linked with increased public investment spending on overall human capital development and health as well as physical capital and education, although the estimated coefficients generally are not statistically significant.

Tax revenue positively and significantly contributed to increase spending by the Tanzanian government on overall human capital development as well as on education and health. It seems the government commits its meager resources to human capital development. This could be attributed to the commitment of the government to HIPC initiative conditionalities and MDGs framework. Although not significant, changes in tax revenues had negative impact on physical capital spending. This finding is consistent with the theoretical literature that during fiscal adjustment for a government facing a budget constraint spending on physical infrastructure suffers the most from expenditure cuts. This is also reflected by how each spending category behaved as a result of changes in tax revenue.

In order to ascertain the responsiveness of government spending of each spending to changes in tax revenue, both short-run and long-run elasticities of public investment on physical infrastructure and human capital development, and separately for education and health were estimated. Results of the estimated elasticities are reported in Table 6. The results show that government spending on physical infrastructure, education and health was less sensitive to changes in tax revenue as evidenced by the elasticity of less than one both in the short- and long-run in all cases. However, overall government spending in human capital seems to be more responsive and sensitive to changes in tax revenue both in the short-run and long-run, as indicated by an elasticity of greater than one. It can also be noted from the results that government spending on physical infrastructure was less responsive to changes in tax revenue both in the short-run and long-run, even less responsive in the long-run as compared to other spending categories.

Contrary to a prior expectation, urbanization negatively and significantly affects public investment spending on health, though insignificant on physical capital, human capital and education. In the short-run, the results demonstrate that inflation negatively and significantly affects public investment expenditure on overall human capital development and education.

Changes in the public fiscal deficit, contrary to expectations, display a positive correlation with physical capital, overall human capital development and health spending as well as education although not significant. As expected, per capita GDP is positively and significantly associated with increased public investment spending on overall human capital development, education and health spending, as well as on physical capital development, although not statistically significant.

Kenya
Co-integration and error-correction estimation results for Kenya are reported in Table 4 under columns 1 and 2, respectively, for all public investment spending categories. The results demonstrate that there exist short-run and long-run relationships between Kenya's changes in tax revenue generation, openness to international trade, macroeconomic environment,

structure of the economy and level of development and public investment spending on overall human capital development, infrastructure, education and health. This is evidenced by the negative and statistically significant adjustment coefficients (error-correction term) across all government expenditure categories. This implies that long-run government investment spending on overall human capital development; physical capital; education and health gravitate towards the equilibrium in response to changes in macroeconomic environment, economic structure, the size of the government and level of development. The speed towards the equilibrium varies among the public investment categories, physical capital investment moving faster, followed by health spending, then overall human capital development spending, and lastly education (Table 4).

Results in Table 4 also suggest that there are partial adjustments in Kenya's public investment expenditures on physical and human capital development as well as on education and health. Strong support is implied by the positive and statistically significant coefficients on lagged dependent variables in all co-integration regression equations (see Table 4, column 1). Table 4 reveals some important significant short-run effects of variables on government investment spending in Kenya which are worth mentioning at this point.

Table 4: Determinants of Public Investment Spending in Kenya[5]

Variables	Physical Capital		Human Capital		Education		Health	
	1	2	1	2	1	2	1	2
CAP_{t-1}	0.763***		0.402***		0.431***		0.351*	
	(6.60)		(3.82)		(4.60)		(1.82)	
DEBT		-0.158		0.011		0.023		-0.025
		(1.26)		(0.46)		(0.85)		(0.63)
TRADE	0.272	0.334	-0.169*	-0.334***	-0.268**	-0.354***	0.061	-0.263*
	(0.57)	(0.65)	(1.74)	(3.28)	(2.63)	(3.19)	(0.38)	(1.63)
ODA		0.186	-0.030	0.005		0.034	-0.074*	-0.125*
		(0.86)	(1.21)	(0.10)		(0.71)	(1.61)	(1.76)
DEFNS		0.995**		-0.094	-0.045	-0.143*	0.111*	0.071
		(2.81)		(1.42)	(1.54)	(1.98)	(1.61)	(0.68)
TXRV		0.589	0.349***	0.224*	0.433***	0.296**	0.334	0.013
		(0.92)	(3.95)	(1.78)	(4.22)	(2.17)	(1.40)	(0.06)
INFL	-0.126	-0.160**		0.003		0.002		-0.001
	(1.58)	(2.06)		(0.17)		(0.13)		(0.03)
GBDEF	-0.045	0.186	-0.015**	-0.011*	-0.016**	-0.011	-0.010	-0.013
	(1.45)	(0.86)	(2.69)	(1.68)	(2.69)	(1.56)	(0.89)	(1.22)
PCGDP		3.113		0.518		0.694		0.120
		(1.49)		(1.23)		(1.52)		(0.02)
TREND							-0.007*	
							(1.66)	
ECM_{t-1}		-0.876***		-0.667***		-0.521**		-
		(3.96)		(3.18)		(2.50)		0.729***
								(3.19)
CONS.	-0.591	0.013	0.791*	0.008	0.767	0.010	-0.834	-0.001
	(0.31)	(0.23)	(1.70)	(0.73)	(1.55)	(0.86)	(1.03	(0.07)
N	35	34	35	34	35	34	35	34
F-value	16.87***	2.24**	31.37***	3.24**	41.65***	2.69**	4.10***	2.76**
R^2Adj.	0.6513	0.2525	0.8170	0.3783	0.8567	0.3157	0.3894	0.32.44

[5] CAP_{t-1}: is the natural logarithm of the share of the respective capital expenditure in GDP lagged one period; GBDEF: the change in public budget deficit; ODA: Natural logarithm of the share of official development aid in GDP; EXD: Natural logarithm of the share of external debt in GDP; TRADE: is the share of trade volume (percentage of import plus export) in GDP; TXRV: is the natural logarithm of the share of tax revenue in GDP; DEFNS: is the natural logarithm of the share of defense expenditure in GDP; URBN: is the natural logarithm of urbanization (% of the urban population to the total population); INFL: is the natural logarithm of inflation rate; PCGDP: is the natural logarithm of real per capita GDP; TREND: is the time trend variable; ECM_{t-1} is the residual of the regression of co-integrated variables lagged one period. Figures in Parentheses are absolute t-values, *** = significant at 1% level, ** = significant at 5% level and * = significant at 10% level

In the short-run, Kenya's openness to the rest of the world had significant adverse impact on public investment on overall human capital development, education and health. Spending on military apparatus seems to exert significant positive and negative effects on physical infrastructure development and education, respectively. Though insignificant, defense spending is also negatively and positively associated with public spending on human capital development and health respectively. Surprisingly, ODA seem to be statistically and negatively associated with health spending in Kenya in the short-run. However, ODA, though not significant is positively associated with other spending categories (Table 4).

Table 4 also demonstrates that in the short-run tax revenue in Kenya had a positive and significant impact on public spending on overall human capital development and education. Although not significant short-run changes in tax revenue has positive effects on Kenya's public investment spending on physical capital and health. Short-run and long-run elasticities of government spending on each spending category with respect to tax revenue were estimated to ascertain their responsiveness to changes in tax revenue. Table 6 displays the elasticities of each government spending category both in the short-run and long-run. The results show that both in the short-run and long-run, government spending on human capital development was more responsive to changes in tax revenue. Splitting human capital into its components, education spending was more responsive only in the short-run, whereas spending on health was less responsive both in the short-run and long-run. The results show that spending on physical capital was less responsive to changes in tax revenue both in the short-run and long-run as compared to other categories. This suggests that fiscal adjustment in Kenya insofar as it was accompanied by rising tax revenue, had no adverse impact on public investment spending. However, adjustments in the public fiscal deficit adversely affect public investment spending in Kenya. The results in Table 4 reveal that public fiscal adjustment had significant adverse impact on physical and human capital development as well as on education in Kenya.

Inflation displays a significant negative correlation with physical capital development. Though, insignificant it is positively and negatively associated with public spending on overall human capital development, education and health spending respectively. Although not statistically significant, per capita GDP is negatively associated with physical capital development and positively related to overall human capital development spending.

Uganda

Table 5 depicts both co-integration (column 1) and error-correction (column 2) estimation results for Uganda for the period spanning from 1977 to 2005. It is apparent from the results that there are short-run and long-run relationships between public investment spending and Uganda's macroeconomic conditions, economic structure, level of development, changes in tax revenue generation and openness to the rest of the world. Strong support is implied by the significant and negative coefficients of the error-correction term in all error-correction regression equations. This suggests that in the long-run, government spending on infrastructure, overall human capital development, education and health move towards the equilibrium in response to changes in tax revenue generation, macroeconomic conditions, economic structure, level of development and openness to trade. The speed of convergence toward the steady state varies from one spending category to another; physical capital being the faster, followed by education, then human capital and lastly health. Coefficients on lagged dependent variables are not significant in the co-integration regressions, suggesting that there are no partial significant adjustments of public investment spending on physical capital, overall human capital development and its components-education and health.

The results in Table 5 suggest that in the short-run, as Uganda continued to open its economy to the rest of the world, the government increased spending on human capital development. This is implied by the positive and significant coefficients of the measure of openness (TRADE) on human capital and its components. Surprisingly, contrary to prior expectation, the coefficients of ODA on overall human capital development and education spending are negative and statistically significant. This could reflect the existence of inefficiencies in the targeting or the misuse of public resources in Uganda.

Table 5: Determinants of Public Investment Spending in Uganda

Variables	Physical Capital		Human Capital		Education		Health	
	1	2	1	2	1	2	1	2
CAP_{t-1}[6]	-0.036		-0.098		-0.080		0.082	
	(0.35)		(0.58)		(0.50)		(0.36)	
DEBT		-0.077		-0.057		-0.060		-0.260
		(0.37)		(0.18)		(0.19)		(0.60)
TRADE	-0.604**	-0.147	1.359**	1.622***	-1.029*	1.383**	1.843**	1.830**
	(2.74)	(0.43)	(2.20)	(3.33)	(1.75)	(2.72)	(2.18)	(2.60)
ODA	0.536***	0.681***	-0.591***	-0.072	-0.641***	-0.090	-0.280*	0.186
	(6.10)	(3.83)	(3.63)	(0.29)	(3.88)	(0.36)	(1.63)	(0.54)
DEFNS		0.035		-0.042		-0.132		0.428
		(0.17)		(0.15)		(0.43)		(1.06)
TXRV	0.625***	0.658***	0.581***	0.812***	0.583***	0.842***	0.449*	0.518*
	(5.67)	(4.31)	(2.98)	(3.71)	(3.08)	(3.63)	(1.69)	(1.71)
INFL	0.029	-0.210	-0.140*	-0.149*	-0.115	-0.149*	-0.251**	-0.203*
	(0.61)	(0.40)	(1.73)	(1.89)	(1.42)	(1.84)	(2.33)	(1.87)
GBDEF		-0.002		0.047*		0.038		0.064*
		(0.09)		(1.80)		(1.39)		(1.80)
TREND			0.039*		0.047**			
			(1.80)		(2.08)			
ECM_{t-1}		-1.106***		-1.009***		-1.010***		-0.779***
		(4.19		(4.12)		(4.03)		(2.95)
CONS.	0.874	-0.014	-3.963*	-0.008	-3.237	-0.005	-6.508*	-0.003
	(0.92)	(0.43)	(1.71)	(0.17)	(1.44)	(0.10)	(1.90)	(0.04)
N	25	24	25	24	25	24	25	24
F-value	50.21***	16.37***	33.99***	11.20***	32.45***	11.00	26.60***	5.09***
R^2Adj.	0.9111	0.8425	0.8919	0.7801	0.8872	0.7767	0.8421	0.5871

The results also demonstrate that tax revenue had positive and statistically significant effects on public investment in Uganda. This is supported by positive and significant coefficients across all spending categories. Since changes in tax revenue seem to be an important determinant of public investment it is important to ascertain the responsiveness of public investment to changes in tax revenue. Table 6 depicts estimated short-run and long-run elasticities for each government spending category. The results reveal that spending on physical infrastructure and human capital development was more responsive to changes in tax revenue in Uganda, as indicated by the elasticity of greater than one. Interestingly, spending on physical capital was more responsive to changes in tax revenue in the long-run. It is also

[6] CAP_{t-1}: is the natural logarithm of the share of the respective capital expenditure in GDP lagged one period; GBDEF: the change in public budget deficit; ODA: Natural logarithm of the share of official development aid in GDP; EXD: Natural logarithm of the share of external debt in GDP; TRADE: is the share of trade volume (percentage of import plus export) in GDP; TXRV: is the natural logarithm of the share of tax revenue in GDP; DEFNS: is the natural logarithm of the share of defense expenditure in GDP; URBN: is the natural logarithm of urbanization (% of the urban population to the total population); INFL: is the natural logarithm of inflation rate; PCGDP: is the natural logarithm of real per capita GDP; TREND: is the time trend variable; ECM_{t-1} is the residual of the regression of co-integrated variables lagged one period. Figures in Parentheses are absolute t-values, *** = significant at 1% level, ** = significant at 5% level and * = significant at 10% level

evident from the results in Table 8 that the public fiscal deficit had no adverse impact on human capital development investment spending. Strong support is provided by positive and statistically significant coefficients on human capital and health, as well as on education though not significant, as opposed to an insignificant negative coefficient on physical capital development.

In the short-run, as expected, inflation displays significant negative impacts on human capital development investment and its components, as well as negative impacts on physical capital although not statistically significant. As expected, the results demonstrate that public debt had been associated with negative effects on public investment in Uganda. Spending on military had insignificant positive effects on physical capital and health spending and negative effects on overall human capital and education spending (Table 5).

Table 6: Short- and Long-run Elasticities of Public Spending with Respect to Tax Revenue

Country	Physical Infrastructure		Human Capital		Education		Health	
	Short-run	Long-run	Short-run	Long-run	Short-run	Long-run	Short-run	Long-run
Tanzania	0.873	0.499	1.940	1.955	0.956	0.968	0.983	0.989
Kenya	0.809	0.834	1.977	1.746	1.050	0.973	0.927	0.782
Uganda	1.031	4.035	1.984	1.963	0.993	0.972	0.991	0.991

Conclusions and Policy Implications

This paper has analyzed the determinants of various categories of government investment spending in Tanzania, Kenya and Uganda. It is apparent from the results of this paper that all the three countries have experienced declines in one or more of the public spending categories

The results unambiguously demonstrate that public spending on infrastructure; human capital and education have declined in Tanzania and have increased in Uganda. For Kenya the results show unambiguous decreases in government spending on physical capital and health investment spending. It is also evident from the results that changes in tax revenue have strong impacts on public investment spending in the three countries. The findings of this paper are consistent with both the empirical and theoretical literature that when the government is in short-supply of resources to finance its budgets, physical infrastructure is the first expenditure item to suffer from government expenditure compression during fiscal adjustment. This is particularly, evident in Tanzania.

The results show that ODA had negative effects of health spending in Kenya and human capital development spending in Uganda. This is an indication of the diversion of foreign aid funds to other uses (McGillivary and Morrissey, 2004; O'Brien and Ryan, 2001).

It is evident from the findings that there are variations in the sectoral priorities spending in the three countries. The results indicate that spending on defense as share in total government expenditure has been reduced in all the three countries, but it has relatively remained higher in Uganda as compared to Tanzania and Kenya. Tanzania allocates most of its resources on general public services, followed by physical infrastructure. Education and defense get almost the same amount of resources. The priority sectors in Kenya are physical infrastructure, education and public services. Uganda's priority sectors are physical

infrastructure, defense and general public service. Overall, the share of human capital development in total government spending is relatively lower in Tanzania as compared to its counterparts, Kenya and Uganda. This calls into question whether Tanzania will be able to achieve MDGs and PRSPs poverty reduction goals and overall economic development, given the meager resources the country spends on human capital development. Following the work on endogenous growth theory, it has been widely acknowledged that human capital development has large long-run economic growth and poverty reduction impacts. Higher economic growth in turn has positive impact on human capital development outcomes and long-term solution to poverty. Therefore, low spending on human capital development is cause for concern.

A couple of policy lessons can be drawn: First, increase in tax revenue has positive impacts on public investment spending in physical capital and human capital development as well as education and health in all the three countries. This suggests that governments in these three countries should continue to reform their tax system in order to bolster revenue generation and thus increase availability of public resources to finance budget expenditure. This in turn will help to reduce poverty and promote overall economic development in these countries.

Second, the findings have relevant policy implications for the achievement of the Millennium Development Goals (MDGs) and poverty reduction strategies' objectives. That is, the three East African governments should strike a balance of the composition of government expenditure if they are to attain poverty reduction objectives as stipulated in the MDGs framework and in their Poverty Reduction Strategy Papers (PRSPs). This could be achieved by increasing spending on physical and human capital development and reducing their spending in unproductive sectors such as defense and general public services. Again, spending on physical and human capital development have direct long-run impacts on poverty reduction and economic growth. Utilizing resources more effectively and efficiency will enhance the achievements of MDGs and PRSPs objectives and long-run economic growth. Reprioritization of public expenditures into more productive sectors and achieving better governance should be at the fore in future institutional reforms in the three East African countries.

References

Agenor, Pierre-Richard and P. J. Montiel (1999): "*Development Macroeconomics*" 2nd edition. Princeton, New Jersey.

Aubin, C., Berdot, J-P., Goyeau, D. and Lafay, J.-D. (1988): "The Growth of Public Expenditure in France." in Lybeck, J. A. and Henrekson, M. eds. *Explaining the Growth of Government*. Amsterdam: North-Holland.

Baldacci, E., Clements, B., Gupta, S. and Mulas-Granados, C. (2004): "Front-Loaded or Back-Loaded Fiscal Adjustments: What Works in Emerging Market Economies." *IMF Working Paper 04/157,* Washington: IMF

Bank of Tanzania (Various Issues): "*Economic and Operations Report,*" Bank of Tanzania, Dar es Salaam, Tanzania.

Bank of Tanzania (Various Issues): "*Economic Bulletin (Quarterly),"* Bank of Tanzania, Dar es Salaam, Tanzania

Bank of Uganda (Various Issues): "*Quarterly Economic Report,*" Bank of Uganda, Kampala, Uganda

Basu, P. and Morrissey, O. (1997): "The Fiscal Impact of Adjustment in Tanzania in the 1980s." In Patel, C. K. ed. *Fiscal Reforms in the Least Developed Countries*. Edward Elgar Publishing Ltd. pp. 150-189

Battaglini, M. and Coate, S. (2008): "A Dynamic Theory of Public Spending, Taxation and Debt." *American Economic Review*, 98 (1), pp. 201-236.

Clement, B., Bhattacharya, R. and Nguyen, T. Q. (2003): "External Debt, Public Investment, and Growth in Low-Income Countries." *IMF Working Paper 03/249,* Washington, D.C., IMF

Drether, A. (2006): "The influence of globalization on taxes and social policy-an Empirical analysis for OECD countries." *European Journal of Political Economy* 22, 1, pp. 179-201.

Drether, A., Sturm, J. and Ursprung, H. W. (2006): "The Impact of Globalization on the Compositition of Government Expenditures: Evidence from Panel Data." *CESifo Working Paper No. 1755.*

Ericsson, N. R. and MacKinnon, J. G. (2002): "Distribution of Error Correction Tests for Co-integration." *Econometrics Journal*, Vol. 5, pp 285-318

Fischer, P. V. (2006): *"Rent-Seeking, Institutions and Reforms in Africa: Theory and Empirical Evidence for Tanzania."* Springer, New York

Fjldstad, O-H. and Semboja, J. (2000): "Why People Pay Taxes: The Case of the Development Levy in Tanzania" *World Development,* 29 (12), pp. 2059-2074.

Fjeldstad, O-H (2002): "Fighting Fiscal Corruption: The case of the Tanzania Revenue Authority." *CMI Working Paper Number WP.2002:3* Chr. Michelsen Institute, Development Studies and Human Rights, Available online at: http//www.cmi.no

Fjeldstad, O-H. and Rakner, L. (2003): "Taxation and Tax Reform in Developing Countries: Illustration from Sub-Saharan Africa"; *Research Report R-2003: 6.*

Government of Kenya (Various Issues): "*Economic Survey*", Ministry of Finance and Development Planning, Nairobi, Kenya.

Gupta, S., Clement, B. Baldacci, E. and Mulas-Granados, C. (2002): "Expenditure Composition, Fiscal Adjustment, and Growth in Low-Income Countries." *IMF Working Paper 02/77.* Washington: IMF.

Gupta, S., Clement, B., Baldacci, E. and Mulas-Granados, C. (2005): "Fiscal Policy, Expenditure Composition, and Growth in Low-Income Countries." *Journal of International Money and Finance*, 24, pp. 441-463.

Hassler, J., Storesletten, K. and Zilibotti, F. (2007): "Democratic Public Good Provision." *Journal of Economic Theory*, Vol. 133, pp 127-151.

IMF (Various Issues): "*Government Finance Statistics Yearbook*", International Monetary Fund, Washington, DC.

IMF (Various Issues): "*International Financial Statistics*", International Monetary Fund, Washington, DC.

Kenya, Central Bureau of Statistics (Various Issues): "*Economic Survey*" Central Bureau of Statistics, Nairobi, Kenya.

Kenya, Central Bureau of Statistics (Various Issues): "*Statistical Abstracts*" Central Bureau of Statistics, Nairobi, Kenya.

Kenya Central Bank (Various Issues): "*Annual Reports*", Central Bank of Kenya, Nairobi, Kenya

Kenya Central Bank (Various Issues): "*Monthly Economic Review*," Central Bank of Kenya, Nairobi, Kenya

Khattry, B. (2003): "Trade Liberalization and the Fiscal Squeeze: Implications for Public Investment." *Development and Change* 34(3) pp. 401-424

Kumar, M. S., Leigh, D. and Plekhanov, A. (2007): "Fiscal Adjustments: Determinants and Macroeconomic Consequences." *IMF Working Paper 07/178*, Washington: IMF

Looney, R. (1997): "Excessive Defense Expenditures and Economic Stabilization: The Case of Pakistan." *Journal of Policy Modeling* 19 (4) pp. 381-406

Mackenzie, G. A. and Orsmond, D. W. H. (1996): "The Quality of Fiscal Adjustment and Growth." *IMF Occasional Paper Series*, Washington: IMF.

Mackinnon, J. G. (1991): "Critical Values for Co-integration Tests" in Granger, C. W. J. and Mizon, G. E. (eds), *Long-Run Economic Relationships: Readings in Co-integration*. Oxford University Press, New York, USA.

Mackinnon, J. and R. Reinikka (2002): "How Research Can Assist Policy: The Case of Economic Reforms in Uganda." *The World Bank Research Observer, 17 (2)*, pp. 267-292.

Marlow, M. L. and Shiers, A. F. (1999): "Do Law Enforcement Expenditures Crowd-Out Public Education Expenditures?" *Applied Economics* 31 (2): pp. 255-266.

Mehrotra, S. and Delamonica, E. (2007): "*Eliminating Human Poverty: Macroeconomic and Social Policies for Equitable Growth."* (International Studies in Poverty Research), Zed Books, London, New York.

Morrissey, O. (1995): "Political Commitment, Institutional Capacity and Tax Reform in Tanzania", *World Development* 23 (4). pp. 637-649.

Mwakalobo, A. B. S. (2013): "The Political Economy of Economic Reforms in Sub-Saharan Africa: Implications for Government Revenue Generation in Tanzania, Kenya and Uganda." Working Paper, Department of Economics and Statistics, University of Dodoma.

Mwakalobo, A. B. S. (2013): "Dynamics of Revenue Generation in Tanzania, Kenya and Uganda: A Co-Integration and Error-Correction Modeling Approach." A Paper Submitted for Publication in the Development Southern Africa.

Mwakalobo, A. B. S. (2010): "The Dynamics of Tax Performance in Tanzania: An Empirical Investigation of Short- and Long-run Relationships" Eastern and Southern Africa Journal of Agricultural Economics and Development,

Mwakalobo, A. B. S. (2009): "Economic Reforms in East African Countries: The Impacts on Government Revenue and Public Investments." A PhD Thesis, University of Massachusetts-Amherst, USA.

Ndikumana, L. (2004). "Fiscal Policy, Conflict, and Reconstruction in Burundi and Rwanda", In Addison, T. and A. Roe (eds.), *Fiscal Policy for Development, Poverty,*

Reconstruction and Growth, Palgrave – MacMillan, pp. 274-302

Ndulu, B. J. (2006): "Infrastructure, Regional Integration and Growth in Sub-Saharan Africa: Dealing with the Disadvantages of Geography and Sovereign Fragmentation." *Journal of African Economies*, Vol. 15, AERC Supplement 2, pp. 212-244.

Palley, T. I. (2006): "Thinking Outside the Box about Trade, Development, and Poverty Reduction." (Silver City, NM & Washington, DC: Foreign Policy in Focus, January 18, 2006).

Patel, C. K., Toh, S. and Brownbridge, M. (1997): "Overview." In Patel, C. K. ed. *Fiscal Reforms in the Least Developed Countries*. Edward Elgar Publishing Ltd. pp. 1-17

Randolph, S., Bogetic, Z. and Hefley, D. (1996): "Determinants of Public Expenditure on Infrastructure: Transportation and communication." *Policy Research Working Paper 1661,* World Bank, Europe and Central Asia Country Department I, Country Operations Division

Republic of Uganda (Various Issues): "*Statistical Abstracts*" Bureau of Statistics, Republic of Uganda, Kampala, Uganda

Roa, M. J. (1999): "Globalization and the Fiscal Autonomy of the State." *Human Development Report Background Paper 1999. Volume 1,* New York: UNDP.

Roy, R., Heuty, A. and Letouze, E. (2006): "Fiscal Space for Public Investment: Towards a Human Development Approach." Paper Prepared for the G-24 Technical Meeting-Singapore, September 13-14, 2006.

Sanz, I., and Velazquez, F. J. (2002): "Determinants of the Composition of Government Expenditure by Functions." European Economy Group-UCM and FUNCAS.

Schade, K. (2005): "Domestic Revenue Mobilization in the Context of Regional Integration: The case of Namibia." The Namibian Economic Policy Research Unit (NEPRU)

Strum, J. (2001): "Determinants of Public Capital Spending in Less-Developed Countries." University of Groningen & CESifo Munich

Tanzi, V. (1993): "Fiscal Issues in Adjustment Programs." In Faini, R. and de Melo, J. eds. *Fiscal Issues in Adjustment Developing Countries*, St. Martin's Press, New York. pp. 21-42,

URT (various issues): "*Economic Survey*", Government Printers, Dar es Salaam.

Weiss, J. (1995): "*Economic Policy in Developing Countries: The Reform Agenda*." Prentice Hall/Harvester Wheatsheaf

World Bank (Various Issues): "*World Development Indicators*", World Bank, Washington DC.

World Bank (Various Issues): "*African Development Indicators*", World Bank, Washington DC.