

Regional Foreign Direct Investment Potential in Selected African Countries

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Abstract

The recent devolutionary trend across the world has been in part fuelled by claims of a supposed ‘economic growth by direct investment dividend’ associated with the fiscal decentralization. There is however, little empirical evidence to substantiate these claims. Most prior research has determined different research techniques of measurement by generating mix results. More so, these studies do not differentiate between short and long run techniques and mechanisms through which county expenditure affects economic growth, by investment growth, and by foreign reserve of African countries. The background has investigated empirically the short and long run techniques effect of components of county expenditure on economic growth investment, by foreign direct investment growth in the African countries in period of 2013 to 2017. The variables tested by unit root by no stationary at interval levels. The long and short run of variables computed by ARDL methods by Keynesian theory. However, the budget allocation and execution improved to capital infrastructure and like transport communication help to improve private capital accumulation and economic growth.

Keywords: African countries, counties, expenditure, economic growth by foreign direct investment, ARDL, panel, recurrent and capital

1. Background to the Study

The global drive towards devolution was justified on the resources of sub national which was expected to deliver much better efficiency in different public sectors and the direct investment growth held by direct investment (Martinez Vazquez & McNab, 2005; Ezcurra & Rodríguez-Pose, 2010; IMF, 2016). Further, lots of study on expenditure and economic growth, by direct investment growth have been conducted at the national and international level, for example, Lin and Liu (2000); and Kimaro et al. (2017). However, County government area is a fertile ground for research, but has not garnered the attention national government has. Since counties are major service providers, changing their structure may have a considerable effect on various aspect of its governance such as policy decisions, expenditure levels, and service delivery among others (Mitchell, 2005; Morgan, 2006; Chebet, 2013).

The mechanisms through which fiscal decentralization may affect growth are as follows. First, government investment in infrastructure is believed to have a direct effect on economic growth by direct investment through increasing the economy’s capital stock. The second channel is the externality effect of government spending that alters economic growth, investment growth, foreign reserve, direct investment and by raising production through expenditure on growth of nations, which contribute to the accumulation of human capital. The third channel is expenditure on goods and services that increases the aggregate demand in the economy (Abu & Abdullahi, 2010; Kakar, 2011). The fourth channel is intersectoral productivity differentials which makes some sectors to be more productive than others (Agenor, 2007; Maingi, 2017).

Table 1 below shows the trend of African countries’s GCP per capita by selected county, 2013-2017 as provided by Gross County Product (GCP) report 2019, increasing (KNBS, 2019).

Table 1. National Per capita GCP and selected county share of GCP

Year	African countries	Nairobi	Mombasa	Kiambu	Mandera	West Pokot	Turkana
2013	87261	212543	150156	98566	25867	36077	37753
2014	89430	208509	152625	102992	26594	36926	38277
2015	91989	208733	153030	109361	27287	38111	39982
2016	94789	211055	159418	114762	27968	39493	39699
2017	96800	212498	168448	118343	28602	38021	38592
% GCP for 2013-2017	5.5	21.7	4.7	5.5	0.5	0.7	1.1

Source: Bundervoet et al. (2015); GoK (2018); KNBS (2019).

Table 1 above shows that Nairobi resident are the richest in the African countries with each spending over sh 200,000 per year, above national GCP per capital of sh 96,800. Mombasa has a GCP per capita of slightly above sh 150,000, followed by Kiambu at just above sh 100,000 GCP per capita. Mandera, West Pokot and Turkana are poorest counties with resident spending less than sh 50,000 per year. Nairobi contributes the most of African countries's GCP at 21.7 percent followed by Nakuru at 6.1 per cent. Only a quarter of the counties are above the national GCP per capita, highlighting huge disparities across counties in terms of GCP per capita (Bundervoet et al., 2015; KNBS, 2019).

Table 2. Government size in African countries

YEAR	2012	2013	2014	2015	2016	2017
Real GCP growth rate - (%)	4.6	5.9	5.4	5.7	5.9	4.9
National Expenditure - (% GCP)	23.7	23.7	25.9	26.6	25.3	24.6
County Expenditure - (% GCP)	1.0	4.3	5.4	5.4	5.3	5.3

Source: KIPPRA (2016); GoK (2018); KNBS (2019). The trend between government size and GDP growth.

2. Theoretical Literature

According Harrod (1973); and Romer (2001), Harrod-Domar (H-D), model have determined in Keynesian framework of growth in the economy. H-D pointed out that, the warranted rate could be influenced by three different components of effective demand coming from the government sector, the private sector, in the form of autonomous investment, and the foreign sector. Further, Harrod (1973) argued that fiscal policy was appropriate to achieve this long-term objective. It should be used by varying the tax rates while keeping government expenditure constant. Monetary policy was appropriate instead to deal with what H-D defined as the short-term policy objective of correcting the divergence of the actual rate from the warranted rate and stabilizing the fluctuations of the economy (Harrod, 1973; Romer, 2001). The model stresses the dual role of capital (Romer, 2001). The model description are fixed and ratio to assumed to be fixed in case of developing countries economic growth. (Mendoza et al., 1997; Branson, 2002; Ntibagirirwa, 2014).

The condition of coffecient is relaxed by neo-classical growth model (Harrod, 1973; Mendoza et al., 1997). These refinements allow increasing capital intensity to be distinguished from technological progress. The investment and growth are determine the countries growth by different regions and having a saving investment rate. And the growth of countries accumulation more capital work in per-capita. Solow (1956). The specific model prescription determined the long run growth of individual state. (Mankiw et al., 1992; Mendoza et al., 1997; Romer, 2001).

The prior research has introduced different modifications to the neoclassical Solow model aiming at highlighting the role of a factor(s) in explaining economic growth by foreign direct investment. Mankiw et al. (1992) emphasizes the importance of adding human capital to the Solow model. Islam (1995) examines the results of the augmented Solow model obtained by MRW using cross-section regressions change by using different techniques, namely panel data. Ram (1986); and Barro (1990), in turn, allows for the government expenditure to affect the production function. Barro (1990) model constitutes without any doubt a breaking point in this evolution. By allowing for government spending, that is capital expenditure that increases private capital marginal productivity, as for example infrastructure sector or property rights in counties.

The Ramsey-Cass Koopmans (RCK) model is similar to the Solow model; however, savings in the RCK model is endogenous, as opposed to exogenous as in the Solow model (1956). The RCK model builds upon the Solow model by incorporating government spending and household optimization through consumption and risk. Both of these models have the same implications once in the steady state: the growth rates of output, capital, savings, and consumption, all in per worker terms, grow at the rate of technological progress (Romer, 2001).

The theory of Keynes's (1936) determined the expenditure and increase economic growth by advance GCP and multiplier effects in economic growth (Branson, 2002). According to this theory African states conclude the expenditure of economic growth in investment (Maingi, 2017).

2.1 Empirical Studies

Gebreegziabher (2018) determined the effects of fiscal policy particularly expenditure of state and taxation on economic growth by investment growth by foreign reserve by investment growth by foreign reserve in Africa from 1966-2014, using the time series ARDL modeling approach. On the fiscal side, a good performance in the collection of indirect tax revenue and increased capital and recurrent expenditure had a significant positive effect on the growth of the economy both in the short-run and long-run. This study ignored causality tests during the analysis.

Oguso (2017) did a study on effects of public expenditure in African countries' economic growth by foreign direct investment. The study used sector level macro panel data from fiscal year 1999 to 2015, with a cross-sectional unit of seven sectors using panel ARDL model. The findings showed that an increase in share of public recurrent costs in sectoral GDP has an insignificant negative effect on sectoral growth in the short-run but a significant negative effect in the long-run. The results also showed that an increase in share of sectoral capital expenditure has a positive but insignificant effect in the short-run but a significant growth effect in the long-run.

Gisore (2017) examined empirically how components of public sector size relate to GDP growth in East Africa from 1985-2015, using panel fixed effect model. The finding confirm the conventional view that relative capital spending - advances economic growth by direct investment growth by direct investment growth by direct investment growth while consumption expenditure retards it. Finally, human capital allocation was insignificant, probably because effects from education sector would have very long lags. This study ignored co integration test to test for long-run relationship between underlying variables change.

Maingi (2017) conducted descriptive study on expenditure of states in direct investment Ram (1986) model. According to this study the endogenous growth theory for the period 1963 to 2008. The strength for this study was that it was able to compare the properties of the different components of public expenditure using VAR.

3. Methodology

3.1 Research Design

This study employed historical research design so as to capture the trend of county growth and expenditure. The research period has taken between 2013-2017 with annual serious data in 47 countries and ARDL research technique compute the observation in panel data. The secondary data has been taken from the World Bank side and each country its own semi-autonomous government structure so the study utilized the direct investment in review reports.

3.2 Model Specification

The research model specified regression by log

$$y = f(rg, cg, ng, ar, hc, cr, tc, ec),$$

$$\ln y_{i,t} = \beta_0 + \beta_1 \ln rg_{i,t-1} + \beta_2 \ln cg_{i,t-1} + \beta_3 \ln ng_{i,t-1} + \beta_4 \ln ar_{i,t-1} + \beta_5 \ln hc_{i,t-1} + \beta_6 \ln cr_{i,t-1} + \beta_7 \ln tc_{i,t-1} + \beta_8 \ln ec_{i,t-1} + \varepsilon_{i,t} \quad (1)$$

Where,

In y -County real Gross County Product (GCP) per Capita (Proxy for economic growth by direct investment growth by direct investment growth), $\ln cg$ - County government capital expenditure, $\ln rg$ - County government recurrent expenditure, $\ln ar$ - Absorption rate of County government expenditure, $\ln hc$ -County Human capital, $\ln cr$ - County Corruption rate, $\ln tc$ - County Total Crime rate, $\ln ec$ -Electricity Consumption.

3.3 Panel Unit Root Test

In the panel unit root individually elaborated each variable with in non-stationary and resolve by Levin-Lin-Chu (LLC), Harris-Tzavalis (HT) and Phillips - Perron (PP) test individual. The serious of unit root The study adopted by HT techniques for non-stationary variables and the unit root considering equation are stated below.

$$\Delta X_{i,t} = \alpha_i + \beta_i X_{i,t-1} + \sum_{j=1}^k \gamma_{i,j} \Delta X_{i,t-j} + \varepsilon_{i,t} \quad (2)$$

$$\Delta \ln y_{i,t} = \beta_0 + \sum_{i=0}^k \beta_1 \Delta \ln rg_{i,t-1} + \sum_{i=0}^k \beta_2 \Delta \ln cg_{i,t-1} + \sum_{i=0}^k \beta_3 \Delta \ln ng_{i,t-1} + \sum_{i=0}^k \beta_4 \Delta \ln ar_{i,t-1} + \sum_{i=0}^k \beta_5 \Delta \ln hc_{i,t-1} + \sum_{i=0}^k \beta_6 \Delta \ln cr_{i,t-1} + \sum_{i=0}^k \beta_7 \Delta \ln tc_{i,t-1} + \sum_{i=0}^k \beta_8 \Delta \ln ec_{i,t-1} + \gamma ECM_{i,t-1} + \varepsilon_{i,t} \quad (3)$$

In this model γ_t is the impact multiplier or short-run effect that measures the immediate impact that a change in G_t will have on change in Y_t . On the other hand, ECM_{t-1} is the feedback effect or adjustment effect. The difference $X_{i,t}$ is dependent variable, $\varepsilon_{i,t}$ is the white-noise disturbance with a variance σ^2 of $1, \dots, N$ indexes county and $1, \dots, T$ indexes time and ECM indicated supported variable.

3.4 Post Estimation Panel Diagnostic Tests

The estimation results are biased, inconsistent and inefficient if econometric problems such as heteroscedasticity, serial correlation, model mis-specification and correlation of error term occur in the model. Therefore, diagnostic checking was essential to ensure the model was free from econometric problems.

4. Results and Discussions

4.1 Descriptive Statistics of GCP per Capita and Growth Variables

Descriptive statistics of real Gross County Product (GCP) per capita and independent variables were used to describe the trends of the variables under study. Table 3 elaborated the descriptive techniques.

Table 3. Descriptive statistics results of GCP and growth variables

Variable	Mean	Standard Deviation	Min	Max	Skewness	Kurtosis
$\ln y$	4.805	0.172	4.413	5.327	0.604	0.563
$\ln cg$	2.647	1.090	-0.658	3.806	-1.595	1.323
$\ln rg$	3.275	0.532	1.288	4.324	-1.234	0.970

Note. all the absolute values of the variables are expressed in natural log (ln) model so as to allow for regression coefficients to be treated as elasticities.

$\ln y$ -County real Gross County Product (GCP) per Capita (Proxy for economic growth by direct investment growth), $\ln cg$ - County government capital expenditure, $\ln rg$ - County government recurrent expenditure.

The descriptive findings, from Table 3 above, were that capital and recurrent county expenditure have relatively larger variation compared to the other variables in the regression model. For example, the capital expenditure ranges between -0.658 and 3.806, while recurrent expenditure ranges between 1.288 and 4.324. This suggests that capital and recurrent spending have higher variation compared to other variables in this study. This may indicate that capital and recurrent expenditure may be volatile. Because they are determined by the expenditure allocation as determined by fiscal transfers and grants from the national government to finance their budgets, county budget allocation and steady use of funds, and tax revenue and distribution across counties. Further, The county expenditure shows expenditure which compared to the recurrent expenditure. Usually, there is always a lag between capital spending, budgeting and disbursement (IMF, 2016; OCOB, 2019).

4.2 Correlation Matrix of GCP Per Capita and Growth Variables

In this study, Pearson Correlation (r), the most commonly used bivariate correlation technique, was used in variables. The correlation matrix results are shown in Table 4 below.

Table 4. Correlation matrix results

	$\ln y$	$\ln cg$	$\ln rg$
$\ln y$	1		
P-value	-		
$\ln cg$	0.035	1	
P-value	0.5890	-	
$\ln rg$	0.248***	0.819***	1
P-value	0.0001	0.0000	-

Note. *** Significant at 1 percent, ** significant at 5 percent and * Significant at 10 percent using two tail test.

The correlation coefficient between county economic growth by investment growth by foreign reserve. This shows that government recurrent expenditure can contribute positively to economic growth by investment growth by foreign reserve by investment growth by foreign reserve by improving purchasing power. Further, from the results the relationship between capital expenditure and coefficient of county was insignificant at 5 percent level. Most often, the actual capital amount disbursed relative to recurrent expenditure is very small and may not have been enough to have a significant and expected positive effect on GCP growth (OCOB, 2018). Further, most of the variables exhibited a value less than 0.5 correlation index which implies a low likelihood of

the problem of multicollinearity in the data used.

4.2.1 Panel Unit Root Tests

The table-5 indicated by HT (1999) unit root test, while doing the HT test, the study picked the lag length on the augmentation term based on whether the exclusion of lagged term causes serial correlation in the test equation's error term.

Table 5. Results of HT

Variable	Statistic	Z	P-Value	Variable	Statistic	Z	P-Value	Order of Integration
$\ln y$	0.5352	0.495	0.6896	$\Delta \ln y$	-0.6761	-12.758***	0.0000	I(1)
$\ln cg$	0.1754	-4.568***	0.0000					I(0)
$\ln rg$	0.1627	-4.745***	0.0000					I(0)

Note. The null hypothesis is that the series is non stationary or the series has a unit root. *** 1% significance level, and** 5% significance level, Δ Symbol indicates that the first difference of the variable was taken.

The results of Table 5 indicate the level of GCP with 5 percent so therefore the null hypothesis for all can not be rejected in first difference.

4.2.2 Co-Integration Test

The co-integration test based on autoregressive distributed lag model (ARDL) approach introduced in Pesaran et al. (2001). ARDL bounds testing approach has advantage over the other cointegration technique, such as: Engle and Granger (1987), Johansen-Juselius (1990), Johansen (1992), and Saikkonen and Lutkepohl (2000). ARDL bounds testing approach has an advantage as it is applicable regardless the stationary properties of each independent variable (Narayan & Smyth, 2005). The approach have been determined by 30 to 80 observation in sample size with F bound investigation.

Table 6. F-Bounds test result for panel co integration relationship

Test Statistics	Value	Lag	Significance Level	Bounds Critical values	
F-Statistics	6.261707**	4		I(0)	I(1)
			1%	2.79	4.10
			5%	2.22	3.39
K			10%	1.95	3.06

Note. Null hypothesis: No level relationship, *** 1% significance level, and** 5% significance level.

The lag length 4 was selected based on the AIC. Critical values were obtained from Narayan (2004) case II, restricted trend intercept and no trend for 47 observations, pp 26-28. The number of regressors is 8.

Table 6 indicated 6.26 value which is higher from the significant level in long run relationship in regressor panel data.

4.3 Long-Run Effect of Government Recurrent Expenditure on Economic Growth by Direct Investment Growth

The Government expenditure (Rg) indicated in Table 7 presents with recurrent on county economic growth by direct investment growth in the long-run.

Table 7. Long-run regression result based on AIC-ARDL (0, 1, 0, 3, 1, 1, 1)

Variable	Coefficient	Standard error	t- Statistics	P-value
$\ln rg$	0.172109**	0.074648	2.305608	0.0221
$\ln cg$	0.039798	0.044916	0.886040	0.3766
$\ln ar$	0.737254**	0.357025	2.064994	0.0401
$\ln cr$	0.326320***	0.083228	3.920807	0.0001
$\ln ec$	0.217309***	0.050008	4.345518	0.0000
$\ln hc$	0.069975	0.167153	0.418631	0.6759
$\ln tc$	-0.203137*	0.113608	-1.788058	0.0752
Cons	0.298654	0.190859	1.564786	0.1191

Note. *** denotes significant at 1 percent, ** significant at 5 percent, * significant at 10 percent.

$\ln y$ -County real Gross County Product (GCP) per Capita (Proxy for economic growth by direct investment growth by direct investment growth), $\ln cg$ - County government capital expenditure, $\ln rg$ - County government recurrent expenditure. The goodness of fit is 0.836 with F-test (4,210) in 5%.

The growth by direct investment was computed by ARDL in positive and statistically significant in long-run. Since the result is significant at 5 percent level of significance, null hypothesis was rejected at 5 percent level of significance.

The 0.17% result has been computed on the productive recurrent expenditure with capital expenditure in long run. The lots of countries promoted education, health with pre-primary service and significant spending like health and education. The 62.0% in development spending and 38% in OCBS, 2015. The table-7 indicated capital expenditure on GDP in 47 countries with recurrent expenditure like health and education sector. The estimated coefficient is 65% spending rate of direct investment by direct investment and economy expands in long run. The effect of economy investigates by growth in long run. Other side the corruption perception rate has significant effected by negatively in economic growth rate and the survey report ranked corruption is the third major problem in economy and it create the negative impact in African countries.

The coefficient of determination (adjusted R^2) test was used to show the total variation of the dependent variable that can be explained by the independent variable. The adjusted R^2 was 0.86, which implied that 86 percent of the variations in the dependent variable (real GCP) are explained by the changes in explanatory variables in the model within the period under review, which demonstrates that the regression model has a fairly good fit since it explains the largest variation of the dependent variable. The joint effect of these components of county expenditure and control variables on county economic growth by direct investment growth is statistically significant as indicated by the computed F-Statistic and its probability. Different post estimation panel diagnostic tests were carried out. The study used Breusch-Godfrey serial correlation LM test in panel data. From Table 7 result, the p-value was greater than 0.05 (0.4861), the study failed to reject the null hypothesis and concluded that the data did not have first-order autocorrelation. Breusch-Pagan test was carried out to test for heteroskedasticity, from above result the p-value was below 0.05 (0.000) and as such it was significant hence revealing that heteroscedasticity was a problem in the model. This study used panel robust standard error to correct it. Contemporaneous correlation was tested using Pesaran CD test of independence. The p-value was greater than 0.05 (0.1967) and therefore not significant at 5 percent level of significance. From the result contemporaneous correlation was not a problem, since 0.4165 was above the P value 0.05, Ramsey reset result showed that the model was well specified and did not suffer from omitted variable at 5 percent significance level, this study failed to reject the null hypothesis of correct specification. This indicated that the functional form was correct.

4.4 Recurrent Expenditure by Short-Run

In the panel data the ARDL long-run co-integrating model has been estimated, the next step is to model the short-run dynamic parameters within the panel ARDL framework. the estimated short-run regression results revealed similar results, as presented in Table 8 below.

Table 8. Short-run regression

Variable	Coefficient	Standard error	t- Statistics	P-value
$\Delta \ln y$	0.121080*	0.064295	1.883196	0.0613
$\Delta \ln rg$	0.041532**	0.017191	2.415894	0.0165
$\Delta \ln cg$	0.012064	0.010664	1.131342	0.2595
$\Delta \ln ar$	0.146693***	0.052704	2.783324	0.0059
$\Delta \ln cr$	-0.022315***	0.008413	-2.652314	0.0086
$\Delta \ln hc$	0.077260***	0.025301	3.053665	0.0025
$\Delta \ln ec$	0.200397***	0.014893	13.45537	0.0000
$\Delta \ln tc$	-0.105820***	0.021968	-4.816972	0.0000
ect_{t-1}	-0.241310***	0.031560	-7.646052	0.0000
Cons	0.069422***	0.009716	7.145338	0.0000
LM Test				
	F(4,205) = 0.354537		Prob > F = 0.8407	
Breusch - Pagan Test				
	F(20,209) = 7.176797***		Prob > F = 0.0000	
Pesaran CD				
	(z) = -0.891176		Pr = 0.3728	
Ramsey-Reset Test				
	F(1,209) = 1.053198		Pr = 0.3060	
F statistics = 44.15612***	P-value(F) = 0.0000			
Goodness of Fit Test	R^2 = 0.641592		Adjusted R^2 = 0.627062	

Note. *** significant at 1 percent, ** significant at 5 percent and * significant at 10 percent. Δ - First difference operator, ect_{t-1} - representing the error -correction term.

Table 8 indicates the LM test 0.354 with different coefficient error and t-statistics and adjusted R square is 0.62 in 47 countries in the short-run which is not categorized and not provided the high recurrent allocation in weak infrastructure. The capital expenditure on real GDP was insignificant in short-run and it take effect on economy by the actual capital. Also the expected positive impact on growth significantly affected on actual capital in African countries.

This result can increase, leading to increases in productivity for private factors of production and the accumulation of physical and human capital (skilled), thus economic growth by investment growth by foreign reserve by investment growth by foreign reserve (Fournier & Johansson, 2016; OCOB, 2019). In addition, the government of African countries offers secondary education to population at no cost or at subsidized level.

The direct investment indicated in investment crises in public and private sector by short and long run effects. (Cardenas, 2007; McCollister et al., 2010), whereas other concludes that the effect is insignificant (Goulas & Zervoyianni, 2012; Ray & Ishita, 2009).

5. Conclusion and Recommendations

5.1 Conclusion

The computed results indicated the empirically effect on recurrent expenditure on GDP of the countries. The individual ARDL shows the effects of countries recurrent spending economic growth by foreign direct investment. The short and long run techniques regressor results stimulate an increased output depending on expenditure multipliers. The country government stimulated spending through increasing purchasing power, which stimulated creates new jobs with relationship of expenditure budget allocation. The methodology revealed the capital expenditure which was insignificant both in long-run and short-run with addition on recurrent expenditure. The lacks of prioritization of government projects the quality of capital expenditure in financial planning process and investigate a longer period of control variable. The absorption rate of human capital and elasticity consumption as a key determinant of growth where the factor indicate economic growth by foreign direct investment.

5.2 Recommendations and Implications

The recommendation refers that robust growth of nation in direct investment and its necessary an increased output on expenditure from past imperial results. The direct investment enhance growth by policy makers and is to examine on average 63% country budget.

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