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Comparison of Macroeconomic Performance of Selected African Countries: An Econometric Analysis of Economic Growth of the Countries

Ajayi Omobola

Eastern Mediterranean University, Famahusta, North Cyprus Mersin 10, Turkey

Abstract:

This paper compares the economic performance of selected African countries including: Ghana, Cameroon, South Africa and Kenya respectively over the last 30 years and it also make an econometric analysis for these countries for the period of 1980-2010 so as to show the relationship between economic variables highlighted in this study and the growth of these countries. The countries were chosen for the sake of comparability only. This study investigates six hypotheses on several macro-economic variables such as investment rate; inflation rate, trade openness, foreign direct investment, government expenditures, government debt and saving rate as it affect the gross domestic product (GDP). The relationship between these variables was tested using multiple regression analysis with ordinary least square method (OLS), alongside with the panel regression analysis. The study shows that investment, fdi, debt, consumption expenditure have positive relationship with growth, whereas inflation has a negative effect on growth with their respective significance at 1%, 10% and 5% as the case may be. Policies were also drawn from the differences in performance of these countries

Key words: African Countries, Economic variables and Economic Growth

1. Introduction

There are has been a lot of literatures and studies on the economic performance of African countries, all explaining the crawling growth of this continent compared to the rest of the world. African economy has been known for its flaws and a low standard of living over the past decade. According to Jeven 2010, he explained that the economic performance is not a chronic failure but a recurring one. However, there has been a tremendous change in the performance of African countries over the last two decades. The endogenous growth theory explains a long run economic growth that is determined from an internal force like accumulation of human capital (labor), policies that includes both the monetary and fiscal policy which measures growth as a result of the progress of these forces as they contribute to growth.

Furthermore the World Bank suggested six factors that will lead to economic growth and macroeconomic stability in 1993 which includes: high investment in education and training, high domestic savings, high investment rate, trade openness, focus of investment in high productive sectors and increase in technology and provision of a competitive market. Some of these factors were looked into in order to ascertain their relationship with growth and to be able to do the comparison of these countries based on their performances during the chosen period for this study.

A lot of researchers have argued that there is a positive relationship between domestic saving, investment and consumption expenditures, trade openness and growth. According to Alexander and Ellin (2009) in their study, they ascertained that there is a positive relationship between trade openness and growth; and they suggested that the more an economy is closed the more it's at risk of crisis

In this study, six hypotheses will be investigated upon below for the countries; which comprises of annual data from the period of 1980-2010.

- **H1-** An increase in the share of investment rate (% of GDP) will affect growth positively
- **H2-** An increase in inflation rate (% of GDP) will affect growth negatively
- **H3-** An increase in the degree of export (% of GDP) will affect growth positively
- **H4-** An increase in the level of foreign direct investment (% of GDP) will affect growth positively
- **H5-** An increase in the government expenditures (% of GDP) will have a positive impact on growth rate
- **H6-** An increase in government debt (% of GDP) will negatively affect growth rate

2. Comparison of Macroeconomic Performance of the Countries

We will analyze the macroeconomic variables that are chosen for this study in order for comparison to be made of the performances of these countries on these variables. The basic variables chosen for the purpose of comparison includes: investment rate, export, import, inflation, external debt, government consumption expenditures, saving rate, current account balance, foreign direct investment and annual growth rate of GDP; all of these variables were used as their percentage to growth rate and all these indicators are from the period between 1980 and 2010.

3. Annual Growth Rate

Period/countries	Cameroon	Ghana	Kenya	South Africa
1980-1990	3.1	2.1	4.2	2
1991-2000	1.5	4.3	1.9	1.8
2001-2010	3.3	5.9	4.1	3.5

Table 1: Periodical annual growth rate

Sources: World Bank data base

Table 1 shows that Kenya's performance is much more impressive than the rest of the countries in the first period, but we can see that Ghana has been on an increasing rate since the second period until the last period, whereas all of the others countries experience fall in their respective years until the last decade that all experience an increase.

4. Saving Rate

Period/countries	Cameroon	Ghana	Kenya	South Africa
1980-1990	23.8	4.8	18.3	28
1991-2000	18.4	7.5	13.5	19
2001-2010	18.5	6.9	8.5	19

Table 2: saving rate as a % of GDP

Sources: World Bank data base

Savings is said to have a positive relationship with growth as its increases the capital accumulation (ciftioglu and karaaslan 2004); from this table we can see that savings has been on a decreasing rate for all the countries except for Ghana which has been increasing over the years

5. Investment Rate

Period/countries	Cameroon	Ghana	Kenya	South Africa
1980-1990	23.3	8.4	23.3	23
1991-2000	14.7	21	17.6	16.5
2001-2010	18.6	24	18	19

Table 3: rate of investment as % of GDP

Sources: World Bank data base

From the effects of savings on investment; table 3 shows that investment has been decreasing for all the countries except for Ghana which experience an increase all through the years. Though, the rest of the countries perform better than Ghana in the early years.

6. Foreign Direct Investment Rate

Period/countries	Cameroon	Ghana	Kenya	South Africa
1980-1990	0.92	0.2	0.4	-0.1
1991-2000	0.47	2	0.6	-0.3
2001-2010	1.6	3.3	0.5	1.8

Table 4: gross inflow of FDI as a % of GDP

Sources: World Bank data base

From the table we can see that all the countries had a relative increase in the level of foreign direct investment in the last decade compared to the first period of 1980-1990 with Ghana being on an increasing rate.

7. Inflation Rate

Period/countries	Cameroon	Ghana	Kenya	South Africa
1980-1990	6.5	46.1	9.4	15.7
1991-2000	5.7	25.4	15.6	10.3
2001-2010	2	27	5.9	7.4

Table 5: inflation rate as a % of GDP

Sources: World Bank data base

This table shows that inflation for all the countries has been decreasing over the years, except for the last period of 2001-2010 that Ghana had an increase in its inflation rate.

8. Rate of Export

Period/countries	Cameroon	Ghana	Kenya	South Africa
1980-1990	25.2	11.7	25.7	28.4
1991-2000	21.2	28.3	27.2	24
2001-2010	23.5	33.8	26	30

Table 6: share of export as a % of GDP

Sources: World Bank data base

From the table the performance of all the countries had a relative increase from the period of 1991-2010 compared to the first period, but south Africa had an impressive rate in the first period with Ghana being the highest from the time of increase.

9. Rate of Import

Period/countries	Cameroon	Ghana	Kenya	South Africa
1980-1990	24.6	15.3	30.6	23.3
1991-2000	17.5	41.7	31.4	21.3
2001-2010	24.6	50.4	35.5	29.6

Table 7: share of import as a % of GDP

Sources: World Bank data base

From table 6 and table 7 we will see that Cameroon has tried to strike a relative balance by exporting as much as it is importing whereas Ghana on the other hand has been importing more than its export throughout the years. However, Kenya and South Africa has also been importing more than their export but with a minimal difference compared to Ghana.

10. Government Expenditure

Period/countries	Cameroon	Ghana	Kenya	South Africa
1980-1990	10.3	9	18.4	17.6
1991-2000	10.3	11.6	15.5	19.2
2001-2010	9.9	11.4	17	20

Table 8: government consumption expenditures as a % of GDP

Sources: World Bank data base

From this table we can analyze that consumption has been relatively stable for Cameroon and Kenya with Ghana and South Africa on an increasing rate.

11. Current Account Balance

Period/countries	Cameroon	Ghana	Kenya	South Africa
1980-1990	-5	-2.8	-5	0.7
1991-2000	-2.7	-6.4	-9.3	-0.2
2001-2010	-2.6	-6.3	-2.6	-3.3

Table 9: current account balance as % of GDP

Sources: World Bank data base

From this table we will see that all of the countries experienced a negative balance all through the years except for South Africa in the early period of 1980-1990

12. External Debt

Period/countries	Cameroon	Ghana	Kenya	South Africa
1980-1990	3	14	15	19.3
1991-2000	14	24	25	30
2001-2010	24	34	35	40

Table 10: external debt as a % of GDP

Sources: World Bank data base

Debt has been increasing for all the countries throughout the years.

13. Methodological and Structures

The next division is the regression analysis carried out in order to show the relationship between the variables that were chosen for this study and the annual growth rate. The analysis was carried out for each of the countries separately, including panel regression so as to test the variable in a cross sectional time series.

There are two equations set up for this study:

- $$\text{GDP growth}_t = a + b_1 (\text{investment/GDP})_t + b_2 (\text{inflation})_t + b_3 (\text{export/GDP})_t + b_4 (\text{gross inflow of foreign direct investment})_t + b_5 (\text{government consumption expenditures/GDP})_t$$
- $$\text{GDP growth}_t = a + b_1 (\text{investment/GDP})_t + b_2 (\text{inflation})_t + b_3 (\text{export/GDP})_t + b_4 (\text{Gross inflow of foreign direct investment})_t + b_5 (\text{government central debt/GDP})_t$$

- #### Cameroon

Case 1: The effects of investment/GDP, inflation, gross inflow of FDI, exports/GDP and government consumption expenditures/GDP on growth rate of GDP in Cameroon

$$\text{GDP} = 1.75 + 0.17 * \text{INV_GDP} - 0.046 * \text{INF} - 0.047 * \text{EXP_GDP} + 0.055 * \text{FDI} + 0.10 * \text{CON_EXP_GDP}$$

$$(0.4840) \quad (0.9476) \quad (-1.7900)^* \quad (-0.4980) \quad (0.5238)$$

$$(0.2879) \quad \text{R-squared} = 0.4089$$

The effect of investment/GDP, inflation, export/GDP, Foreign direct investment and government debt/GDP on the growth rate of GDP.

$$\text{GDP} = 1.69 + 0.11*\text{INV_GDP} - 0.047*\text{INF} - 0.04*\text{EXP_GDP} - 0.026*\text{FDI} + 0.14*\text{DEBT_GDP}$$

$$(0.76) \quad (0.59) \quad (-1.87)^* \quad (-0.49) \quad (-0.18) \quad (0.09)$$

$$\text{R-squared} = 0.4259$$

• Ghana

Case 1: The effects of investment/GDP, inflation, export/GDP, gross inflow of foreign direct investment, government expenditures/GDP on the rate of growth.

$$\text{GDP} = -8.3 + 0.13*\text{INV_GDP} - 0.037*\text{INF} - 0.007*\text{EXP_GDP} + 0.64*\text{FDI} + 0.55*\text{CON_EXP_GDP}$$

$$(-1.41) \quad (0.92) \quad (-0.68) \quad (-0.07) \quad (1.0) \quad (1.55) \quad \text{R squared} = 0.30$$

Case 2: The effects of investment/GDP, inflation, export/GDP, foreign direct investment and government debt/GDP on growth rate of GDP

$$\text{GDP} = -8.2 + 0.49*\text{INV_GDP} - 0.009*\text{INF} - 0.04*\text{EXP_GDP} + 0.4*\text{FDI} + 0.11*\text{DEBT_GDP}$$

$$(-1.75) \quad (3.19)^{***} \quad (-0.16) \quad (-0.44) \quad (0.67) \quad (2.1)^{**}$$

$$\text{R-squared} = 0.36$$

• Kenya

Case 1: the effect of investment/GDP, inflation, export/GDP, gross inflow of FDI/GDP, government expenditures/GDP on the growth rate of GDP.

$$\text{GDP} = -8.30 + 0.13*\text{INV_GDP} - 0.037*\text{INF} - 0.007*\text{EXP_GDP} + 0.6*\text{FDI} + 0.55*\text{CON_EXP_GDP}$$

$$(-1.41) \quad (0.92) \quad (-0.68) \quad (0.07) \quad (1.00) \quad (1.55) \quad \text{R-squared} 0.31$$

Case 2: The effect of investment/GDP, inflation, export/GDP, gross Inflow of FDI/GDP and government debt/GDP on the rate of growth.

$$\text{GDP} = -8.29 + 0.49*\text{INV_GDP} - 0.009*\text{INF} - 0.042*\text{EXP_GDP} + 0.42*\text{FDI} + 0.119*\text{DEBT_GDP}$$

$$(-1.75) \quad (3.19)^{***} \quad (-0.17) \quad (-0.45) \quad (0.67) \quad (2.11)^{**}$$

• South Arica

Case 1 the effects of investment, inflation, export, gross inflow of FDI and government expenditures on the rate of growth.

$$\text{GDP} = 10.6 + 0.10*\text{INV_GDP} - 0.09*\text{INF} + 0.11*\text{EXP_GDP} + 0.25*\text{FDI} - 0.8*\text{CON_EXP_GDP}$$

$$(-0.10) \quad (4.5)^{***} \quad (-0.37) \quad (-1.13) \quad (0.68) \quad (-0.49)^{***}$$

$$\text{R-squared} 0.18$$

Case 2 the effects of investment, inflation, gross inflow of FDI and government debt on the growth rate of GDP

$$\text{GDP} = -3.07 + 0.27*\text{INV_GDP} - 0.12*\text{INF} + 0.47*\text{FDI} + 0.04*\text{DEBT_GDP}$$

$$(-1.07) \quad (4.7)^{***} \quad (-0.57) \quad (1.79)^{***} \quad (2.5)^{***} \quad \text{R- squared} 0.22$$

14. Panel Regression Analysis

Panel regression is a longitudinal and a cross sectional time series data in which the behavior of entities can be observed across time so as to overcome the bias caused by unauthorized heterogeneity

Case 1: The effect of investment, inflation, gross inflow of FDI, exports and government consumption expenditures on growth rate of GDP

$$\text{GDP} = 0.27 + 0.20*\text{INV_GDP} - 0.025*\text{INF} - 0.039*\text{EXP_GDP} + 0.086*\text{FDI} + 0.025*\text{CON_EXP_GDP}$$

(0.11) (4.32)***(-1.35)*** (-2.55) (2.04)** (0.18)

R-Squared 0.21

Case 2: The effects of investment, inflation, export, gross foreign direct investment and government debt on growth rate of GDP.

$$\text{GDP} = -1.15 + 0.22*\text{INV_GDP} - 0.019*\text{INF} - 0.056*\text{EXP_GDP} + 0.071*\text{FDI} + 0.074*\text{DEBT_GDP}$$

(-0.70) (4.76)*** (- 1.21) (-3.27)*** (3.17)***(2.24)***

R-squared 0.22

15. Result and Conclusion

Investigation has been carried out on all the six hypotheses set up for this study and we have seen that an increase in the level of investment, foreign direct investment, export, inflation, government consumption expenditures and debt will affect growth rate of GDP. But it is of importance that we see which way each of these variables affect growth.

The result from both the panel and the multiple regressions shows that there is a positive relationship between investment, foreign direct investment and debt on growth rate for all the countries. Meanwhile export, inflation and government consumption expenditures show a negative relationship with growth. Export of these countries should be considered and check because of its negative effect for these countries. According to Balcioglu and Vural, growing with export can lead to a negative effect on economy such as uncertainty and risk.

Furthermore, it is concluded that if the level of savings and investment is increased, it will lead to a higher economic growth rate and it is advisable for these countries and countries in their contemporary (especially African countries) to take advantage of borrowed funds to take profitable projects, as we can see that debt actually has a positive relationship with growth for these countries. Finally, savings and investment should be kept at a high level in order to keep experiencing growth but inflation and import should be kept as low as possible.

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