

Foreign Aid and Growth in Select African Countries

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Abstract:

This paper analyzes the effects of foreign aid on economic growth in a set of African countries. This paper differs from previous literature in several ways; this paper analyzes a small sample set of aid-receiving African countries of varying distances from the equator. This paper also uses the most up-to-date data available, which will provide an insight into the 21st century conditions. Previewing the empirical results, this paper determines that aid, in the form of technical cooperation grants, has a significant, positive impact on growth.

Keywords: Foreign Aid, Africa, GDP Growth.

JEL Classification: C33, O11

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1.0 Introduction:

Foreign aid plays a key role in the economies of many poor nations, many African nations especially. This study attempts to increase the understanding of the relationship between foreign aid and growth by examining five aid-receiving African countries. The topic of foreign aid and its relation to economic growth will maintain relevance so long as countries are providing aid to one another to spur economic growth, which doesn't appear to be ending any time soon.

The study of the relationship between GDP growth and foreign aid is an important one because GDP growth can act as a proxy for the increase in standard of living and determining the effectiveness of foreign aid on standard of living will illuminate the effectiveness of aid. Better knowledge of the effectiveness of aid has the potential to influence future policy regarding aid.

The continued issues regarding the effectiveness of aid in Africa generally revolve around the ability of funds to be transitioned from one financial institution to the recipient nation, with the hope that the funds avoid misappropriation through corruption and poor capital management to realize fruition through the development of institutions which will foster economic growth. Poor utilization of aid by a country can result in a lack of return on borrowed funds, compounding in severity by interest accruing on the loan from an entity like the IMF or World Bank, which will cause the recipient nation more suffering than it would have endured without the aid. Under such circumstances, information regarding the effectiveness of aid is crucial to lending decisions, which contributes to the importance of this paper as it pertains to those concerns.

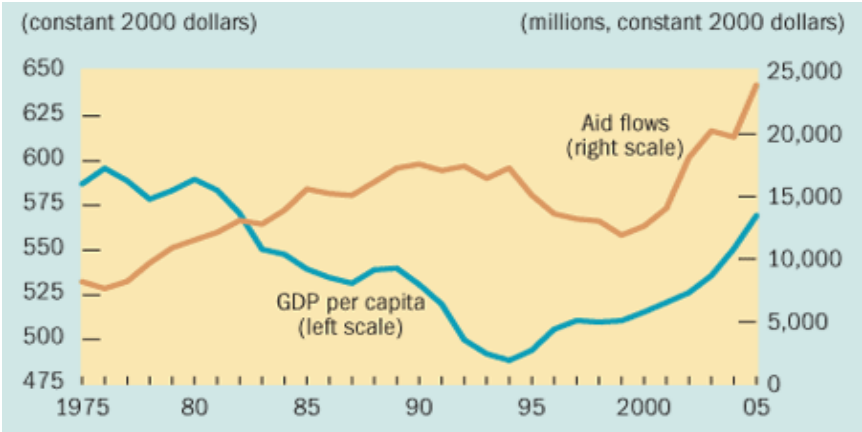
The way in which this paper differs from previous material on the subject is that this paper examines only five select African countries: The Democratic Republic of Congo, Egypt, Ethiopia, Tanzania and Zambia. Previous literature on the issue has focused on all aid-receiving countries, including those in Asia, as well as using ethnic fractionalization as an independent variable, and focused on only sub-Saharan African countries, which this paper does not. The reason that these five countries were selected is because they represent five of the top ten aid receiving nations in Africa and a diverse geographical spread as opposed to only sub-Saharan African countries, which other studies have used.

The remainder of this paper is organized as follows: Section 2 discusses the trends in Aid and Growth. Section 3 provides a brief literature review. Section 4 covers the data and empirical methodology. Section 5 presents and discusses the empirical results. Section 6 is a conclusion.

2.0 Aid and Growth Trends:

As figure 1 shows, aid in Africa has crept upwards since between 1975 and 2005, while GDP per Capita has fallen and recently picked up, but it is still below 1975 levels. This indicates an inverse relationship and signals negative expectations for the relationship between GDP growth and aid.

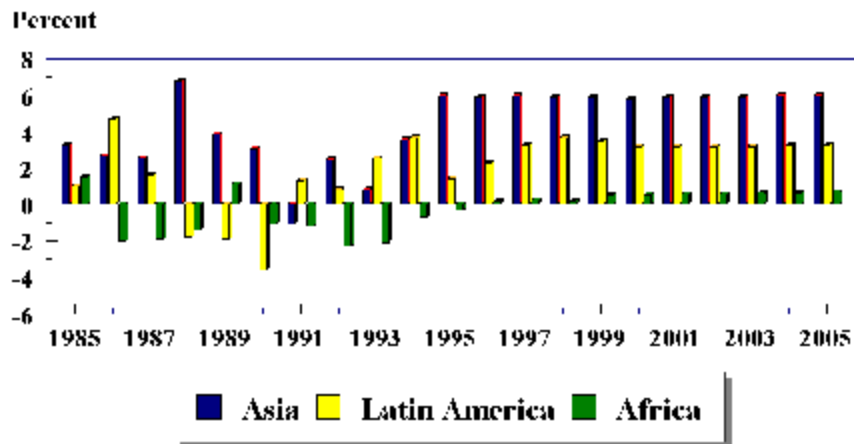
Figure 1: GDP per Capita against Aid Flows in Africa



Source: World Bank, World Development Indicators

Figure 2: Real GDP Growth Rate in Africa

Real Per Capita GDP Growth Rate

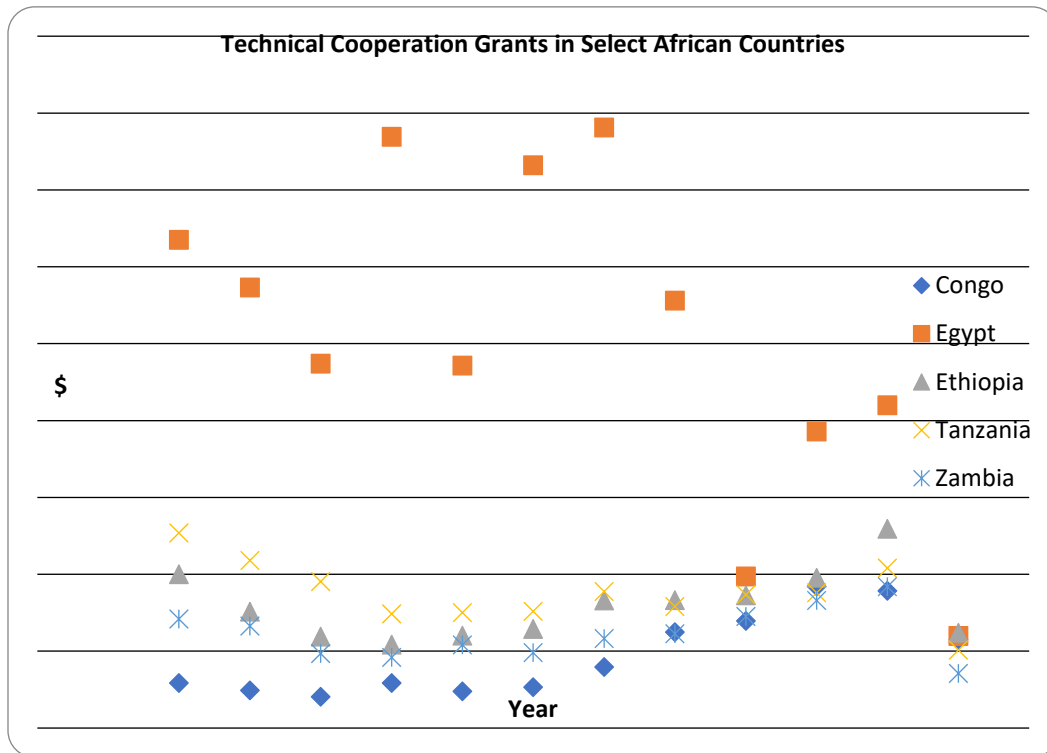


Source: fapri.iastate.edu

Figure 2 shows the GDP per capita growth rates between 1985 and 2005 for Asia, Latin America and Africa. After 1985 GDP per capita growth rate in Africa never exceeds 2% in any given year and is negative for all but one year between 1986 and 1996. Although African GDP growth starts trending upwards after 1996, it is still very far behind the growth rates of Asia and Latin America.

Looking at the five select African countries used in this study, we can determine that technical cooperation grants for four of the five countries were increasing from the mid 1990s up until about the 2007 financial crisis period, where they begin to drop off. Egypt is the outlier country in the set, with technical cooperation grants loosely trending downward from 1996-2007.

Figure 3: TCG in Select African Countries



Source: World Development Indicators

3.0 Literature Review:

Aid can be described as the support given from one nation to a poor nation in the hopes of stimulating growth. As Dalgaard et al. (2004) tells us, the question of whether to give aid or not has been around since aid was advocated for Eastern and South Eastern Europe in 1943. It wasn't until the 1960's that questions arose debating whether foreign aid worked or not (Dalgaard et al., 2004). Previous literature on the topic has determined that aid does in fact work to spur economic development under the proper policy conditions (Burnside and Dollar, 2000; Goldsmith, 2001; Easterly, 2003; Easterly and Roodman, 2004; Dalgaard et al., 2004; Annen and Kosempel, 2007).

Foreign aid can be rife with issues that would prevent it from being effective, the two main ideas being institutions and policy. A government must have the ability to effectively manage the aid it receives and ideally have favorable policies. Many studies have examined the links between policy and aid to reveal that countries with western monetary and fiscal policies

tend to utilize aid more efficiently (Burnside and Dollar, 2000; Easterly, 2003; Easterly and Roodman, 2004). Institutional quality is also important to the effectiveness of aid, as the longstanding perception is that corruption within a nation will reduce the effectiveness of aid (Goldsmith, 2001; Easterly, 2003).

Annen and Kosempel (2007) examined the issue of fragmentation between donor and recipient as a possible determinant of aid effectiveness. Fragmentation is described as the number of levels that aid would pass through before reaching the end target (Annen and Kosempel, 2007). The hypothesis states that higher levels of fragmentation will have a negative impact on economic growth. The underlying assumptions behind this hypothesis being that the more levels that aid must travel through, the more diluted it will become, the more chances there are for corruption to extract from the sum, and the more time it takes for the aid to reach the end user, all of which should factor into a reduction in aid effectiveness as it translates to economic growth.

Aside from the issues regarding the effectiveness of aid in spurring growth, another issue at play with foreign aid is political. As Goldsmith (2001) points out, aid is often given to a country with stipulations regarding policy so that the aid receiving nation will implement policies favorable to the donor nation.

4.0 Data and Empirical Methodology:

4.1 Data:

The study uses annual panel data on Egypt, Ethiopia, The Democratic Republic of Congo, Tanzania and Zambia between 1996 and 2007. The data was obtained from World Bank World Development Indicators, Penn World Table 6.3 and World Governance Indicators (Kaufmann et al., 2010). Table 1 provides the summary statistics from the data.

Table 1: Summary Statistics

	Observations	Mean	Median	Min	Max	Std Dev
openk	60	54.57	51.385	14.78	201.44	28.59895144
ki	60	10.37233333	9.53	1.51	32.38	6.592496599
GDPPPP	60	1386.692924	933.6027893	241.8057738	4762.117022	1390.420095
PopG	60	2.500971537	2.598966664	1.838492357	3.11678083	0.370983508
M2	55	34.99476836	23.98857953	0.461276605	92.09060879	26.7462436
Infl	55	11.38711308	7.941448641	-8.237844534	43.073098	9.83391145
TCG	60	212248000	151610000	40460000	781280000	181436561.2
AvgGov	45	-0.872598288	-0.53391958	-2.478902445	-0.117345705	0.655964014
LOGGDP	60	2.96055452	2.970058638	2.383466667	3.677800063	0.390455219

4.2 Empirical Model:

Following the example of Annen and Kosempel (2007) the model uses the log of GDP per Capita as the dependent variable, however it has been modified to include a governance factor and has removed the ethnic fractionalization components and variables found to be statistically insignificant to the model. The final model is as follows:

$$\text{LOGGDP} = \beta_0 + \beta_1\text{KI} + \beta_2\text{M2} + \beta_3\text{TCG} + \beta_4\text{AVGGOV} + \beta_5\text{INFL} + \beta_6\text{PopG} + \beta_7\text{OpenK} + c$$

Explanation of variables is contained in Appendix A.

LOGGDP is the Log of GDP per Capita, PPP adjusted in constant 2005 international dollars. KI is the investment share of real GDP per capita. M2 is the money and quasi-money supply as a percentage of GDP. TCG is technical cooperation grants in 2005 dollars. AVGGOV is the average of three governance indicators; political instability, government effectiveness and regulatory quality. PopG is the population growth per year as a percentage. OpenK is a measure of the openness of markets to trade and is measured in constant prices.

5.0 Empirical Results:

The empirical results are presented in Table 2. All variables except PopG have a positive sign, meaning a positive impact on GDP per Capita Growth. This coincides with our

expectations except regarding inflation. The expectation was that inflation would have a negative effect on GDP growth due to instability of the currency causing a negative impact on that nation's growth. The regression implies that an increase in inflation will have a positive effect on GDP growth.

The regression revealed governance to have a positive sign with correlation to GDP per capita growth and significance at the 5% level. This leads to the belief with a high sense of certainty that the stronger the institutional quality of a country based on its governance, the higher the rate of GDP growth will be. Investment rate was also proved to have a positive sign and significance at the 10% level, which makes sense to due to the inclusion of investment as a factor in the Solow growth model. Alternatively capital accumulation through investment leads to higher levels of GDP in the Solow growth model, but not sustainable economic growth, so we may also conclude with an unknown level of certainty that these countries are not presently at their Solow growth model steady states and are below the steady state levels since investment has a positive effect on GDP growth rate.

Money supply as a percentage of GDP also has a positive sign with significance at the 1% level. This verifies our expected sign. Technical cooperation grants, which are the measure of aid in the regression, prove to have a positive sign and significance at the 10% level, which is to say that aid positively impacts GDP per capita growth. This result both confirms our expectations and the findings of previous authors of similar literature. Population growth and openness were not statistically significant and therefore, no conclusions can be drawn regarding their significance to the model.

Table 2: Regression Results for Five Select African Countries

Variable	Coefficient Probability
AVGGOV	.289291** 0
INFL	0.002923 0.0547*
KI	0.005738* 0.0743
M2	0.00805*** 0
OpenK	0.001002 0.2621
PopG	-0.10964 0.2705
TCG	2.05E-10* 0.0838
C	3.022275 0
R ²	.966484

Note: *** Denotes significance at the 1% level, ** denotes significance at the 5% level and * denotes significance at the 10% level.

6.0 Conclusion:

In summary, foreign aid does have a positive impact on growth in the five sample countries. The results of this paper imply that governance, money supply, investment and

inflation are also relevant to the growth rate of GDP per capita, with positive signs. The regression analysis implies that countries with good governance, high money supply relative to GDP, higher levels of inflation, high investment rates and more technical cooperation grants will have higher levels of GDP per capita growth.

With regards to the study, some improvements may be to include more variables that are present in economic growth models, such as a measure of productivity, technology and human capital. In the current study, the variables do not precisely correlate to the Solow economic growth model, and this may represent an omitted variable bias.

Turning an eye towards policy concern, this study would conclude that aid is most effective when provided to nations with higher levels of governance and money supply as a percentage of GDP. My policy recommendation would be that aid be given to countries based on a list of qualities that they must possess, which would include a relatively high level of governance and a high percentage of money supply to GDP.

Appendix A: Variables-Explanations and Expected Signs

Variable	Description	Data Source	Expected Sign
LOGGDP	Log of GDP per Capita, PPP adjusted in constant 2005 international dollars	World Bank World Development Indicators	
AVGGOV	Average of 3 governance indicators which range from -2.5 to 2.5 Political Stability and Absence of Terrorism Government Effectiveness Regulatory Quality	Aggregate Governance Indicators (Kaufmann et al., 2010)	+
INFL	Inflation in consumer prices as an annual percentage	World Bank World Development Indicators	-
KI	Investment share of real GDP per capita	Penn World Table 6.3	+
M2	Money and quasi-money as a percentage of GDP	World Bank World Development Indicators	+
OpenK	Openness in Constant Prices	Penn World Table 6.3	+
PopG	Population Growth in Annual Percentage	World Bank World Development Indicators	-
TCG	Technical Cooperation Grants in 2005 \$	World Bank World Development Indicators	+

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