Deciphering the Effectiveness of Foreign Aid on the Economic Development of West Africa

Major Paper

by

Fred Khaouli

3256194

Supervisor: Professor Fernanda Estevan

ECO 7997

University of Ottawa

Department of Economics

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Abstract

This paper analyzes the effectiveness of foreign aid on the economic development of 15 countries in West Africa. Despite much criticism and ambiguity related to the efficacy of foreign aid on economic development, this report attempts to combine an empirical study with an in depth policy analysis to simplify the problem of attribution. More specifically, the policy analysis completed will follow the template of both Burnside and Dollar (2000) and Bourguignon and Sundberg (2007) Causality Chain-Inside the Black Box model for examining the relationship of donors to country outcomes. The empirical approach in this report follows key studies by Rajan and Subramanian (2008), Minoiu and Reddy (2010), and Masud and Yontcheva (2005) in their cross country growth regression approach to testing the effectiveness of foreign aid. This analysis covered a balanced panel data study of West African Countries from 1960 to 2008 in a balanced panel data study for 3 different categories of regressions. Basic OLS, Time and Country Dummy, and Fixed Effects regressions were completed for data collected from the World Bank Development Indicators. The results indicate a weak ability for researchers to attribute the 6 development related foreign aid variables to economic development. Correcting for population dynamics over the 48 year time period proved to be important as significant results were captured once this was complete. The results show only 2 of 6 aid variables to be significant and both show a negative effect on economic development.

I. Introduction

There is no consensus on the effect foreign aid has on economic development. This is expected considering the ambiguity that exists with respect to foreign aid motivations, limitations of analysis tools, and the complexity of governmental policies. Economists have struggled for decades to accurately measure the effectiveness of foreign aid on economic development and yet most studies show its ineffectiveness to create economic growth (Bjornskov, 2010). Foreign aid is victim to unproductive government consumption and corruption by adversely affecting the judicial and regulatory system. Also, those planning and implementing aid projects may suffer from perverse incentives that may drive the social returns of many developmental plans to a break-even point (Bjornskov, 2010). Numerous researchers have found that even in high quality countries that contain good policies, a robust attribution between foreign aid and economic growth is not certain (Rajan and Subramanian, 2005). From this, it can be concluded that corruption and economic mismanagement cannot be solely responsible for foreign aid having a negative effect on economic growth. In addition to this paradox, aid may create short term gains in standards of living but fail to persist for the long term (Rajan and Subramanian, 2005). These researchers found that the inflow of foreign aid dollars declines a country's competitiveness which was evident in the decline of labor intensive and tradable industries in the manufacturing sector (Rajan and Subramanian, 2005).

More specifically to the dire case of Sub-Saharan Africa, the economic development of countries is declining despite record foreign aid levels. Figure 1, taken from Easterly (2003), displays Growth Per Capita levels declining by 2.5% meanwhile aid as a percentage of GDP is rising from 5.2% to approximately 19%. Easterly (2003), effectively displays the percentage

Growth Per Capita despite 30 years of consistently growing aid inflows. In per capita terms, aid flow to Sub-Saharan Africa since 1970 has exceeded all other developing nations in the world (Asiama and Quartey, 2009).

Aid and Growth in Africa
(10-year moving averages)

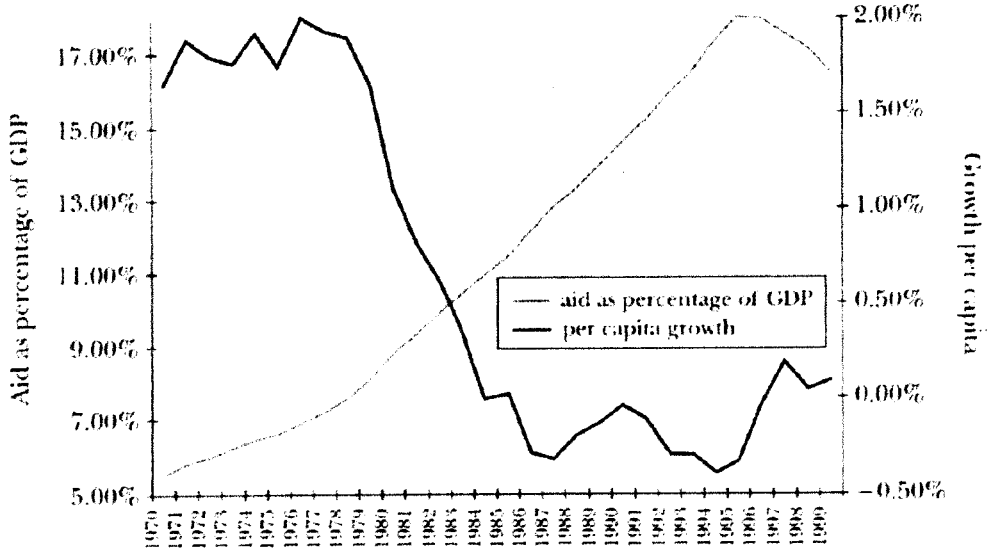
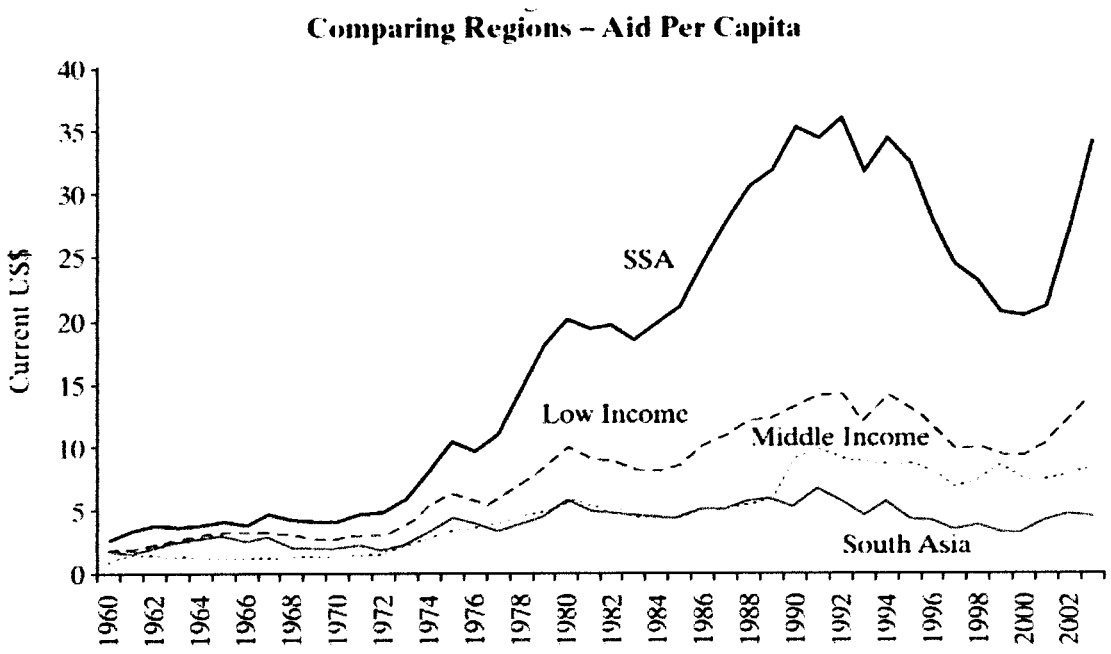


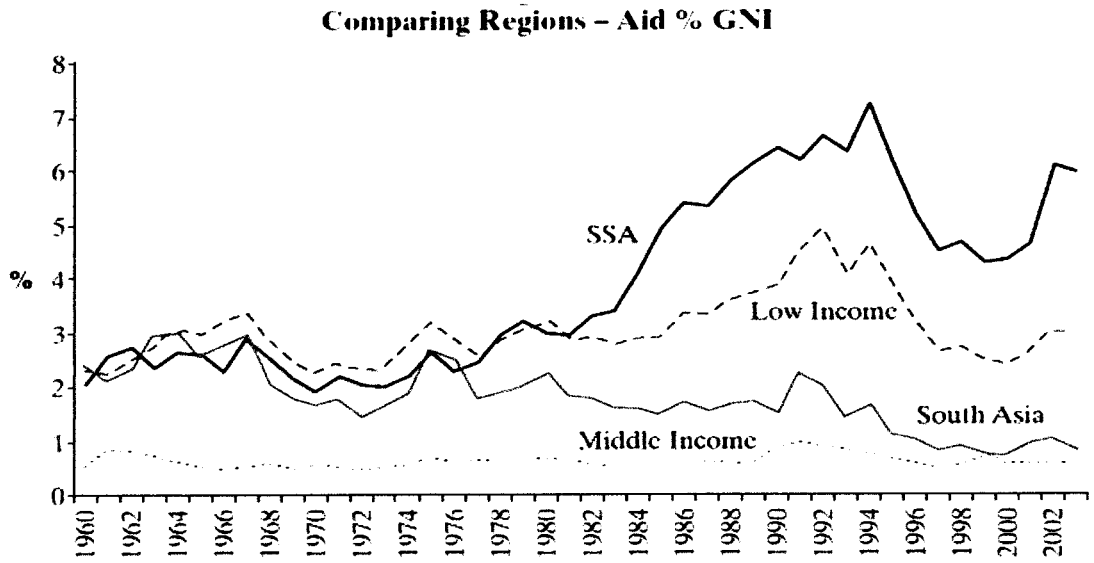
Figure 1. Aid and Growth in Africa. Source: Easterly (2003).

Figures 2 and 3, taken from Asiama and Quartey (2009), display the rise in aid flows post 1972 beginning at 10$ per capita and hitting a peak of 35$ per capita in 1990. Until the year 2000 aid flows were consistently declining until they took a sharp turn upwards peaking at 34.3$ Per Capita in 2003 (Asiama and Quartey, 2009). This rising aid flow trend can also be seen in relation to Gross National Income (GNI). Both Figures 2 and 3 displayed a post 1972 peak in 1994 at 7.4% and later consistently declined until bottoming at 4.3% in 2000. After 2000, a sudden upturn began, which placed aid as a percentage of GNI at a post 1972 peak of 6% in 2003 (Asiama and Quartey, 2009).



Source: World Development Indicators.

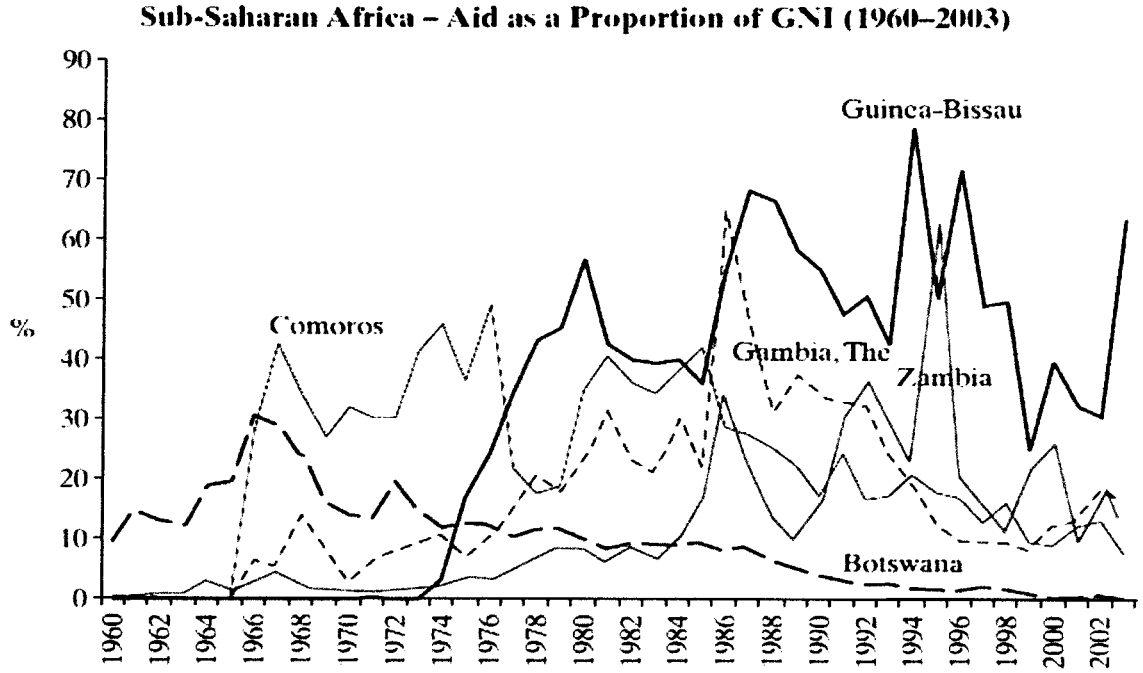
Figure 2. Comparing Regions – Aid Per Capita. Source: Asiama and Quartey (2009).



Source: World Development Indicators.

Figure 3. Comparing Regions - Aid % GNI. Source: Asiama and Quartey (2009).

Among the top foreign aid recipients in Africa, 40% of them were a part of the West African region when aid was measured as a proportion of GNI (Asiama and Quartey, 2009). Figure 4, displayed both West African countries, The Gambia and Guinea-Bissau, which peaked at 60% and 80%, respectively for aid as a proportion of GNI (Asiama and Quartey, 2009). These numbers are a result of the large foreign aid levels reaching these 2 countries and are coupled with weak macroeconomic performance. Even if a causal relationship between foreign aid and economic development cannot be established and there is no counterfactual, the inspection of these figures suggests that a beneficial effect of aid on growth is less than evident.



Source: World Development Indicators.

Figure 4. Sub-Saharan Africa. Source: Asiama and Quartey (2009).

Despite the overwhelming negative correlation evidence, progress has been made on this complex process on aid to country outcomes. Burnside and Dollar (2000) found that aid

contributes positively to economic growth in a positive policy and regulatory environment. More specifically, countries with good fiscal, monetary, and trade policies experience improvements in economic growth in response to foreign aid. In contrast, Burnside and Dollar (2000) recognize that aid has a minor positive if not negative impact on economic growth when policy is not conducted properly. Easterly, Levine, and Roodman (2003) responded to this paper in the sense that aid can have positive impacts on economic growth and suggest that it is crucial that foreign aid be distributed selectively to countries that are practicing accepted economic policies. The only problem is the difficulty of transparency of governments and aid organizations to assess the quality of policy when economic performance is deteriorating in their region. The quest for transparency is not helped by aid organizations, such as the World Bank, that consistently publish reports ensuring future success in Sub-Saharan African nations receiving foreign aid and overlooking or debunking serious concerns that still plague the nation's development.

Considering the problems with respect to foreign aid, this report attempts to further the understanding of this ambiguous relationship via the use of Bourguignon and Sundberg (2007) Causality Chain – Inside the Black Box Model. This model explains exactly where policy and policy makers rest in the complex chain from foreign aid to country outcomes. Bourguignon and Sundberg (2007) Causality Chain – Inside the Black Box is shown below in Figure 5. The details of the model will be explained in the Model section of the report; however for now it should be clear of its usefulness in providing a template for the importance of policy and regulations in response to foreign aid. The empirical analysis that follows, tests a newly created model by this

paper on 15 West African countries known as the *West Africa and Foreign Aid Model*. More detail on this will be presented in later sections.

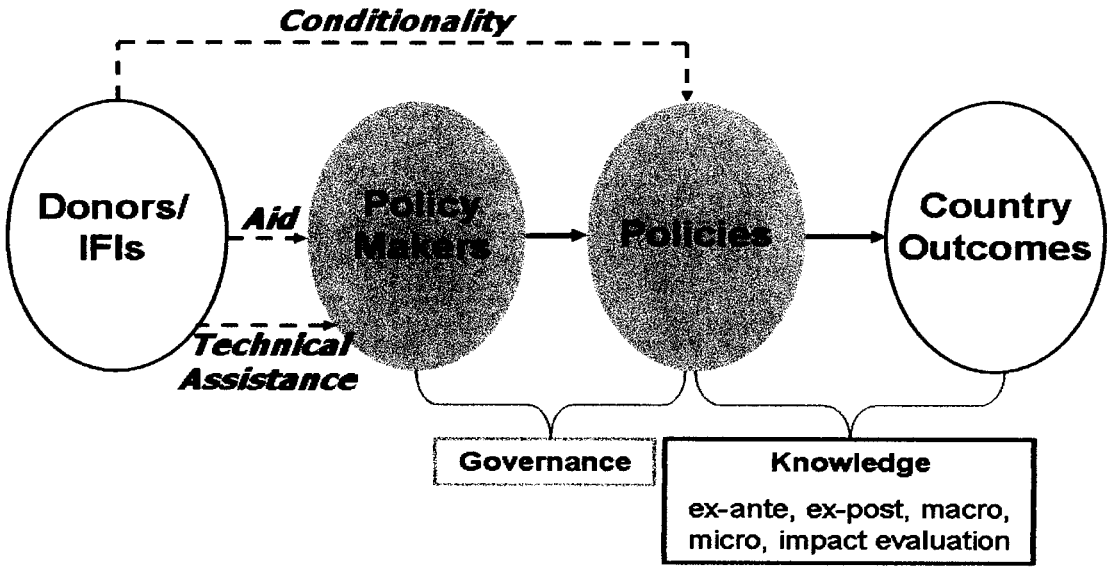


Figure 5. The Causality Chain. Taken from Bourguignon and Sundberg (2007).

With respect to policy decision making, this report will also utilize the famous paper from Burnside and Dollar (2000) which discusses the positive economic effects of foreign aid when coupled with good policy. This report's analysis took an empirical approach to understanding the steps within Causality Chain Model by choosing important macroeconomic explanatory variables from World Bank Database, 2010. Using a balanced panel data from 15 Sub-Saharan countries, we estimated the relationship of foreign aid on country outcomes.[1]

This paper is organized into 6 major sections. Section II provides information from key literature on economic development and foreign aid. Section III gives an overview of both dependent variables, aid-related explanatory variables, World Bank, 2010 database and World Development Indicators. This section also highlights the sample restrictions that exist for data

[1] This was completed by use of an OLS and Fixed Effects with Time Dummy Regression.

collected and missing. The Section IV describes the structure of the analysis along with common problems faced by researchers facing this same research question. Section V provides an in depth analysis of the results and explains possible problem with respect to the *West Africa and Foreign Aid Model* presented in this report. Section 6 summarizes the preceding sections and provides closing remarks and forward looking statements to the effectiveness of foreign aid on economic development in West Africa.

II. Literature Review

Given the analysis on the *West Africa and Foreign Aid Model*, the review of literature is limited to those papers looking at a relationship between economic development and foreign aid. Not all papers presented in this section contain information specific to Sub-Saharan Africa but the problems facing the attribution of this key aid-outcome relationship are general and not limited to any particular region. For this reason, the Causality Chain Model was taken from Bourguignon and Sundberg (2007) to signify the complexity of the aid-outcome relationship.

As mentioned previously, the literature on the impact of aid on long-term sustainable economic development is mired with controversy and holds many claims and counter-claims about the overall effectiveness of aid (Rajan and Subramanian, 2005). Current literature is focused on the long run sustainability of foreign aid and this is where the puzzle of attribution still remains (Rajan and Subramanian, 2005). One explanation for this phenomenon could be in the direction of aid funding. Banerjee et. al (2004) take the example of education, schools require textbooks, salaries classrooms and stationary which aid funding is successful at providing; however when aid funding is solving the easy purchases there remains the difficulty of ensuring teachers show up to work, fair grading practices, homework completion and anti-

bullying are all consistently in place. These are all long term educational matters that contribute strongly to the performance and motivation of a student and are left behind by aid organizations as they require proper management and policy making decisions (Rajan and Subramanian, 2005).

Adam and O'Connell (1999) go one step further and argue that aid has detrimental long term effects. They recognize the positive effect aid has on governmental budgets; however claim foreign aid's ability to create a lax environment on raising tax revenues which forms a chronic dependency on foreign aid to keep their budgets balanced. They also explain that foreign aid expands a government's resource base and removes the incentive of complete transparency towards the people. This proves to have a corrupting effect on governance and may not have a discernible effect in the long run because it weakens institutions, and this offsets any positive effect aid has in the short run (Rajan and Subramanian, 2005).

Policy issues go further, when governments implement a fixed exchange rate regime, when aid inflows are spent on domestic goods, they will push up the price of other critical resources that are in limited supply domestically – such as skilled workers or coastal land thus rendering industries that face international competition and depend on that resource uncompetitive. When a government implements a floating exchange rate policy the inflow of aid pushes up the nominal exchange rate rendering traded goods sector uncompetitive if wages in that sector do not adjust downwards. Regardless of the exchange rate policy, an overvalued real exchange rate has adverse consequences on the growth of the traded goods sector in recipient countries.

Banerjee et. al. (2004), Rajan and Subramanian (2005) and Bourguignon and Sundberg (2007) display how various governmental policies affect the efficacy of foreign aid. As previously mentioned Bourguignon and Sundberg (2007) Causality Chain – Inside the Black Box Model explains the complex process from aid to country outcomes. The first step involves aid agencies and international financial institutions (IFIs) that influence the local policy makers through providing financial resources, through their influence on policy debate and formulation, and through technical assistance. They also try to influence policy on aid conditionality but operate with imperfect knowledge of the local environment and imperfect control of the implementation of these policies.

Technical assistance and loan conditionality are 2 ways to influence policies. Then comes policy makers to policies which is basically governance relating to bureaucratic capability, institutional capacity, and checks and balance mechanism. Policies then translate to outcomes for a country. Development outcomes are determined by policies. Factors such as macroeconomic stability, tax structure or trade policies affect investment, production, growth or poverty. This report attempts to further understanding of this complex process through the completion of an empirical analysis and the creation of the *West Africa and Foreign Aid Model.* The next section uses 2 papers that followed this report's model and were subsequently unable to make a firm prediction on policy and country outcomes presented by The Causality Chain – Inside the Black Box.[2]

[2] This report followed Rajan and Subramanian (2008) and Minoiu and Reddy (2010) who estimated a standard cross country growth-aid model in a sample of developing countries over 1960-2000. As opposed to using this analysis on 6 different aid variables, Minoiu and Reddy (2010) used grants plus net loans with a grant element higher than 25 percent as the aid variable. Contrast to this report, they used both non-developmental and developmental aid measures. Control variables included varied: Initial per capita income, Initial level of life expectancy, institutional quality (World Bank Country Policy and Institutional Assessment, CPIA index averaged

Both Rajan and Subramanian (2008) and Minoiu and Reddy (2010) obtained the same result, which is foreign aid's lack of power in explaining subsequent growth the developing countries were facing. Both these papers utilized their cross country growth regressions and concluded that aid is more effective when specific macroeconomic policies are in place (Burnside and Dollar, 2000). To capture the policy environment, these papers utilized the original and updated Sachs-Warner policy variables and a policy index representing the weighted average of inflation, budget surplus and trade openness. They concluded that even Burnside and Dollar's (2000) paper recommending foreign aid in good policy environments to be inconclusive.[3]

III. Data

The following data has been taken from the World Bank Database, 2010. I credit all the information in this section to this resource unless otherwise specified.

The World Bank Database, 2010 is a division of the World Bank which operates a family of five international organizations that make leveraged loans to poor countries. World Development Indicators (WDI) is the primary World Bank database for development data from officially-recognized international sources. Global Development Finance (GDF) provides

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over 1960-1999), geography, and the growth rate of terms of trade and their standard deviation and country dummies. The long term effect of aid on growth was completed by allowing for deep lags on the aid variable. The dependent variable in these papers was average GDP per capita growth rate over the period of 1990-2000 while the aid variables, both non-developmental and developmental explanatory variables were averaged over the 1960-1990 period.

[3] Their interaction term coefficient was only significant in 4 out of 9 cases, and the level of statistical significance never reached 1 percent.

[4]The countries utilized in the West African and Foreign Aid Model are as follows: Benin, Burkina Faso, Cape Verde, The Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone, and Togo. Cote d'Ivoire was missing because there was inadequate information available on the World Development Indicators database.

external debt and financial flows statistics for countries that report public and publicly-guaranteed debt under the World Bank's Debtor Reporting System (DRS). The data corresponding to WDI and GDF began in 1960 and is calculated again in January of each progressive year. The data encapsulates as much information of a given country's population as statistically possible. This report uses WDI and GDF data from 15 of 16 West African nations covering 1960 to 2008 time period.[4] It consists of a balanced panel data as the same countries are being followed for this entire time period. The following table lists the summary of statistics for each of the variables used in the *West Africa and Foreign Aid* Model Analysis. GDP Growth and GDP Per Capita are the dependent variables. The remaining variables are both non-aid and aid explanatory variables. The mean value represented for all the variables is a pooled average value for all 15 countries involved in the analysis.

GDP growth and GDP per capita growth both expressed as annual percentages were used as dependent variables in this report. The per capita variable controlled for population dynamics over time. The dependent variables measure an annualized percentage growth in an economy. This controls for the different sizes of West African economies comparatively used in this balanced panel data analysis. All the data used in the report is annualized.

Prior to the explanation of the foreign aid variables the difference between Development Assistance Committee (DAC) and Official Development Assistance (ODA) needs to be completed. Development Assistance Committee (DAC) is a consortium for selected member countries that confronts the issues surrounding developing countries. The Official Development

Table 1. Summary of Statistics.

Variables	Mean	Standard Deviation
GDP growth (annual %)	2.94	7.34
GDP per capita growth (annual %)	0.52	6.65
Adjusted savings: education expenditure (% of GNI)	2.18	1.66
Age dependency ratio (% of working-age population)	88.97	8.35
Agriculture, value added (annual % growth)	1.93	8.09
Claims on governments and other public entities (current LCU)	1.52e+10	1.86e+11
Claims on governments, etc. (annual growth as % of M2)	13.04	144.40
Claims on private sector (annual growth as % of M2)	13.58	73.33
Crop production index (1999-2001 = 100)	66.06	32.57
Current account balance (% of GDP)	-4.18	9.54
Domestic credit to private sector (% of GDP)	12.17	13.26
Exports of goods and services (annual % growth)	3.91	17.10
Final consumption expenditure, etc. (annual % growth)	2.21	10.98
GDP deflator (base year varies by country)	9834.23	77660.50
Gross domestic savings (% of GDP)	4.98	12.33
Gross national expenditure (% of GDP)	84.56	49.99
Life expectancy at birth, total (years)	47.89	7.74
Manufacturing, value added (annual % growth)	1.54	7.53
Net bilateral aid flows from DAC donors, Total (% of GDP)	3.36	5.63
Net ODA received per capita (% of GDP)	2.80e-06	5.58e-06
Net ODA received (% of GNI)	1.26	3.67
Net ODA received (% of gross capital formation)	63.71	81.11
Net official flows from UN agencies, UNICEF (% of GDP)	0.06	0.12
Net official development assistance and official aid received (% of GDP)	4.52	8.33
Population growth (annual %)	2.55	1.02
Trade (% of GDP)	54.48	34.44
Workers' remittances received (% of GDP)	1.99	3.55
Observations	735	735

Assistance (ODA) is a statistic compiled by the Development Assistance Committee of the Organization for Economic Co-operation and Development (OECD) to measure aid. The DAC first compiled the statistic in 1969. It is widely used by academics and journalists as a convenient indicator of international aid flow. It includes some loans.[5]

[5] "Flows of official financing administered with the promotion of the economic development and welfare of developing countries as the main objective, and which are concessional in character with a grant element of at least 25 percent (using a fixed 10 percent rate of discount). By convention, ODA flows comprise contributions of

Twenty five explanatory variables were used in this analysis, 6 of the 25 were foreign aid data. Aid data consisted of: 1.) Net bilateral aid flows from DAC donors, Total (% of GDP) 2.) Net ODA received per capita (% of GDP) and 3.) Net ODA received (% of GNI) 4.) Net ODA received (% of gross capital formation) 5.) Net official flows from UN agencies, UNICEF (% of GDP) 6.) Net official development assistance and official aid received (% of GDP). Expressing foreign aid data as a percentage of various factors within an economy removes the problem of comparing the effect of aid on different size economies. The effectiveness of foreign aid on a small open economy can now be properly assessed against a larger counterpart.[6]

Net Bilateral Aid Flows from DAC donors are the net moneys paid to Sub-Saharan African countries. The funding comes from the Development Assistance Committee (DAC). The money paid to these economies gross amount of grants and loans subtracted by the repayment of principal on earlier loans made. The ODA issues loans made on concessional terms and the grants are made to promote economic development within the DAC list of ODA recipients.

Net official development assistance (ODA) per capita consists of loans made on concessional terms, grants, interest rates and economic policy assistance and to help poorer economies develop.[7] The Net ODA received also comes as a percent of both gross capital formation and gross national income. Both of these are documented in this report's analysis.

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donor government agencies, at all levels, to developing countries ("bilateral ODA") and to multilateral institutions. ODA receipts comprise disbursements by bilateral donors and multilateral institutions." *OECD, Glossary of Statistical Terms*

[6] All of the following information on the 6 foreign aid variables is taken from the World Bank Database, 2010. Please see appendix for a more in depth explanation on Development Assistance Committee (DAC) and Official Development Assistance (ODA).

[7] The amount of grant given to a country is calculated by dividing net ODA received by the midyear population estimate.

Net ODA and official aid received simply sums these 2 and takes a percentage of GDP for all the West African countries used in the analysis.[8]

Net official flows from UNICEF are net disbursements of total foreign aid money sent from the United Nations agencies. These agencies assist developing countries in total assistance which includes both: Official Development Assistance (ODA) and Other Official Flows (OOF) collectively make up the total aid given to the recipient nation. This aid is net in value, total of grants and loans minus repayments of principal on earlier public debt undertaken by a country. ODA consists of loans made on concessional terms (with a grant element of at least 25 percent, calculated at a rate of discount of 10 percent) and grants made to promote economic development and welfare in countries and territories in the DAC list of ODA recipients.

Economic Indicators

The economic relevance along with the consistency of data points within each of the explanatory variables describes how they were chosen for this report. Different economic categories are important to GDP Growth in an economy and were utilized within this report. Economic categories used were: Savings, Consumption, Life Expectancy and Population Dynamics, Manufacturing, Agriculture, Claims on Governmental and Private Sectors, Trade and Current Account Balances and Inflation. Nineteen explanatory variables remain and fall into one these 8 categories. See appendix for detailed explanation of each variable.

[8] Gross capital formation records the dollar amount spent on additions to the fixed assets plus the net change in the level of inventory. Fixed asset expenditures include land improvements, plant, and capital equipment purchases; and the construction of roads and railways. Gross national income (GNI) documents the sum of: total value produced within a country added to the income received from other countries in dividends and interest payments all subtracted by the payments owed to other countries. The GNI includes items such as: personal and government consumption, gross private investment, net income receipts, and the gross exports of goods and services less gross imports of goods and services.

Sample Restrictions

This report focuses its analysis on the effect of foreign aid on economic development to the impoverished region of West Africa. The World Bank Database, 2010 did not have any information on Cote d'Ivoire so this country was eliminated from the analysis. Also, considering how the country variables are measured within this database, only annual variables are used. The data begins in 1960 and continues to the fourth quarter of 2008. This was unfortunate because this analysis was not able to include most recent statistical information of 2009. The structure of the data corresponding the time and country in chronological order and each country is observed in each year so that the analysis s done on a balanced panel data.

IV. Empirical Analysis

This section describes the creation of the *West Africa and Foreign Aid Model.* The descriptive analysis and regression models are based on the 6 measures of foreign aid previously discussed regressed each on GDP growth and GDP per capita growth.[9] Three types of regressions were run: 1.) Basic OLS Regression and 2.) Basic OLS Regression with Fixed Effects and Time Dummy Variable. Running different regression types on various aid and dependent variables increased the robustness of the final determinations regarding foreign aid's effect on economic development in West African economies. As mentioned, 15 countries were selected and maintained to test this relationship over the entire 48 year period.[10]

[9] Both of these are expressed as an annual percentage growth.

[10] Utilizing a balanced panel data study allowed for increased data availability, greater capacity for modeling complex economic relationships, and the ability to observe long term trends and changes (Hsiao, 2007).

Economic research attempting to understand the effect of foreign aid on economic development suffers from the problem of endogeneity. An explanatory variable is deemed endogenous in the following equation if it is correlated with the error term. Within this study, there are many factors that can affect levels of foreign aid given to a specific country. Unfortunately, it is not possible to identify all these factors and they remain within the error term. This analysis attempted to include as many important independent variables as possible and include them in the regressions. This removed many biasing factors from the error term, but obviously many variables remain within the error term and continue to bias the results. However it is important to highlight that this problem is common among all aid and development literature. If aid is dependent on social indicators, then it may not be exogenous with respect to percentage GDP (Per Capita) Growth.

Endogeneity is a concern for this analysis for two reasons, omitted variables and simultaneity. Omitted variables occur because it not possible to control for all the variables that are relevant in the regression. Simultaneity happens when at least one of the explanatory variables is determined simultaneously along with the dependent variables. The following paragraph will cite a specific example of the omitted variable issue within the *West Africa and Foreign Aid Model.*

Ease of Doing Business Index, Corruption Index, and Gender Equality in the Workforce are all examples of important omitted social variables that could not be included due to lack of available data.[11] Civil unrest, includes a variable measuring political instability, is also an important variable that could have been captured. The variable is a simple average of

[11] Specifically on the World Bank Data Base 2010, Ease of Doing Business and Corruption Indices were available in category but contained no numerical data.

assassinations per capita and revolutions per year. A political instability variable has surfaced in a number of studies including Burnside and Dollar (2000) and Easterly and Levine (1997) and found to be negatively correlated with long-run economic growth. Similarly, it has been previously suggested that ethnic diversity influences economic performance (Easterly and Levine, 1997). A variable measuring ethnic fractionalization is thus added to the regressions.[12]

We now turn to the simultaneity issue. Adjusted savings: education expenditure (% of GNI) is determined partly by the %GDP Growth, in terms that higher economic growth allows for education expenditure and vice versa. The same follows in Age dependency ratio (% of working-age population) and Final consumption expenditure, etc. (annual % growth). As the economy grows, there is less dependency on child and senior aged workers; however when the economy allows children to be schooled this increases future skills and technological innovations spurring economic growth. In relation to consumption, when consumers spend more the level of aggregate demand rises which increases % GDP growth. Also, when an economy experiences growth, disposable incomes rise and thus more discretionary spending takes place.

As a result of missing, inconsistent, and inaccurate social data affecting countries, it is never possible to completely remove endogeneity from the regression. However, it is important to include as many important variables as possible within a wide range of economic disciplines to keep uncertainty within the error term at a minimum.[13] The usage of a fixed effect is an

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[13] Gross capital formation records the dollar amount spent on additions to the fixed assets plus the net change in the level of inventory. Fixed asset expenditures include land improvements, plant, and capital equipment purchases; and the construction of roads and railways. Gross national income (GNI) documents the sum of: total value produced within a country added to the income received from other countries in dividends and interest payments all subtracted by the payments owed to other countries. The GNI includes items such as: personal and

attempt to solve the endogeneity issue within the *West Africa and Foreign Aid Model* by assuming unobservable factors are held constant. However, with a T=48 year time period, the assumption that these unobservable factors do not change over such a long time period can be problematic.

Following Dalgaard, Hansen, and Tarp (2002), this report includes panel based regressions to test for aid effectiveness on economic development. The balanced panel data study for this report allowed for a large number of data points increasing the degrees of freedom and reducing the collinearity among independent variables. This type of study also assists in controlling for variables that are difficult to observe but hold an effect on the aid and development relationship. Cultural factors, ease of doing business, and religious practices are all examples of influential variables controlled for in this panel data study. Despite the notable advantages of utilizing a balanced panel data study; certain aspects of the given analysis may pose problems related to serial correlation and heteroskedasticity. To address this issue, robust standard errors were utilized allowing for a fitting of a model that does not contain heteroskedastic residuals. Robust standard errors also control for the problem of disturbances not being equivalently variant across all observation points.

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government consumption, gross private investment, net income receipts, and the gross exports of goods and services less gross imports of goods and services.

Model

As mentioned, this report examines the critical relationship between foreign aid on economic development in West Africa through a balanced panel data empirical analysis. The *West Africa and Foreign Aid* model built in this report attempt to examine the complex relationship between donors and country outcomes as specified by Bourguignon and Sundberg (2007). The explanatory variables chosen for this analysis were inspired by The Causality Chain Model. The explanatory variables were added in a 5 step sequence to identify their importance towards the aid – outcome relationship.[14]

Bourguignon and Sundberg (2007) attribute the complex relationship between aid and economic development towards Policy Makers and Policy Issues. By running the regressions in a sequence, it was easier to identify which variables had a significant effect on the economic development and aid relationship. Once these variables are identified, further research can be completed to fully understand the policy aspects behind their existence. For example, if export of goods and services (% of GDP) is identified to be a significant variable in this sequential process, further information can be acquired on the Policy and Policy Making decisions related to this variable. If exports have a correlation to growth it needs to be controlled for in order to isolate the main effect presented in the *West Africa and Foreign Aid Model.* Also, the initial regressions with just the foreign aid will assist in deciphering which measure of economic assistance is significant to country outcomes. The same analysis following Bourguignon and Sundberg (2007) can be followed to uncover ambiguity in Figure 1.

[14] This analysis looked at changes in significance of explanatory variables throughout the procedure. Close attention was given to how the aid variable coefficient changed in response to the sequential addition of explanatory variables.

West African and Foreign Aid Model[15]

$$\text{GDP Growth}_{it} = \alpha + \beta \text{Aid}_{it} + \gamma X_{it} + \delta d_t + c_i + \upsilon_{it}$$

Where i and t represent both the country and year, respectively. The dependent variable is GDP Growth_{it} for country i in year t, and it is measured on an annual basis. β is the key parameter of interest. X represents a vector of controls which includes d_t and c_i are time dummies and country fixed effects, respectively.

Specifically, I followed Masud and Yontcheva (2005) method of tracking whether foreign aid reduces poverty through their one way error component static panel model which contained no serial correlation. The last type of regression ran contained a fixed effects estimation which contrasted with Masud and Yontcheva (2005) who chose to run random effects regression instead. Masud and Yontcheva (2005) reason that a random effects regression allows for more efficient estimates and the exploration of time invariant variables such as the average poverty headcount in a country. This report chose the fixed effect regression because it sets a control of all possible characteristics within the 15 West African countries. This is under the assumption that these characteristics do not change over time. Also, if the dependent variable is quantitative then fixed effects method can easily be implemented using an OLS regression.

Regression Analysis

The Creation of the West Africa and Foreign Aid Model

To make clear, the West African and Foreign Aid model consists of a total of 24 regressions with all 6 foreign aid explanatory variables run on each of the 2 dependent

[15] The decision to supply foreign aid is represented by donor (d) towards the recipient (r).

variables. The analysis focused on 2 types of regressions: 1.) Basic OLS Regression and 2.) Fixed Effects Regression with a Time Dummy. The sequential regression procedure discussed in this section was followed equivalently for both categories of regressions presented. The Basic OLS Regression is a reference point to effectively compare and contrast from the fixed effects with time dummy regression completed. The application of a time dummy on the fixed effects regression controlled for seasonality in time and internal unobservable differences within countries through fixed effects.[16]

Ekanayake and Chatrna (2009) conducted the same analysis among 85 countries that received foreign aid in Asia, Africa, Latin America, and the Caribbean. Similar to this analysis, Ekanayake and Chatrna (2009) controlled for factors that change over time and categories when comparing countries in a panel data form. This analysis attempted to introduce more dummy variables to control for other changing factors over time; however the data was inconsistent or not available. As a solution to this, the fixed effects regressions were introduced.

6 regressions for each foreign aid variable estimated will be completed within each of the 2 categories mentioned. Every regression will be duplicated to assess both dependent variables % GDP Growth (Annual%) and % GDP Growth Per Capita (Annual%).

Following, Masud and Yontcheva (2005), an in depth regression analysis was completed to assess the relationship of aid and economic development. For the 2 regression categories

[16] Originally, the *West African and Foreign Aid* model was going to include a third regression which includes a basic OLS with both time and country dummy variables. However, in this time and country regression, the coefficient on the independent variables would normally be identical with those in the fixed effects regression. From this, a time dummy was introduced into the fixed effects regression leaving only the Basic OLS and Fixed Effects with time dummy necessary. The dummies that were introduced are fixed effects but when the OLS regression was ran on these dummies, the coefficient was estimated as well.

mentioned the sequential procedure was as follows: A regression between the foreign aid and the dependent variable was completed. Exports of goods and services (annual % growth) was the first non-aid explanatory variable to be added to the regression. After the addition of explanatory variables to the previous regression were as follows: Claims on governments and other public entities (current LCU) and Claims on private sector (annual growth as % of M2) and then Population growth (annual %). Once these 4 regressions were completed separately, an entire regression was done with one aid variable and the remaining 19 non-aid related explanatory variables. All regressions contained the vce(robust) variable that set the robust standard errors.

Results

Tables 2 through 13 summarize the results of the 24 regressions ran for the analysis of the *West Africa and Foreign Aid Model.*[17] Each table consists of the coefficient and t-statistic results for the explanatory variables, time dummy, constant and foreign aid variable. All 24 regressions held the same non-aid explanatory variables; however each regression differed in the aid related explanatory variable. The only significant foreign aid variables were under the GDP Per Capita regression category. Net ODA Received (% of GNI) and Net Official flows from UN Agencies (% of GDP) were both significant at P=0.001 and P=0.05 levels, respectively. The first was significant for the Fixed Effects with Time Dummy Regression and the second for the Basic OLS Regression. Neither of these had significant aid coefficients on both regression categories. Negative impacts were experienced by both significant aid variables. A 1% increase in Net ODA received (% of GNI) decreases GDP per capita growth (annual %) by 0.332%, as seen

[17] 12 regressions were completed for the Basic OLS and Fixed Effects with Time Dummy regressions, comprising a total of 24.

by the FE with Time Dummy Regression. Turning to the Basic OLS Regression, Net Official flows from UN Agencies (% of GDP) showed to decline GDP per capita growth (annual %) by 7.124% based on a 1% increase of UN aid flows.

Age dependency ratio (% of working-age population), Agriculture, value added (annual % growth), Exports of goods and services (annual % growth), Gross national expenditure (% of GDP), and Population growth (annual %) were all significant for both the Basic OLS and Fixed Effects with Time Dummy Regressions for both categories of dependent variables regressed on all 6 foreign aid variables. The coefficients of the explanatory variables varied in their degrees of significance, P=0.05, P=0.001, and P=0.001 were used interchangeably. See tables 2 through 7 for details as to significance and t-statistic information. Exports did not yield statistical information for FE with Time Dummy Regression.

V. Discussion

The major challenge in this report's analysis was narrowing the ambiguity involved in attributing economic development to foreign aid inflows. The recognition of policy in relation to the economic development within Sub-Saharan African economies that receive aid inflows was influenced by Bourguignon and Sundberg (2007). As mentioned in Figure 1, they created a qualitative model known as: The Causality Chain – Inside the Black Box. This model exposed how the aid-country outcome process works. The *West Africa and Foreign Aid Model* created in this analysis attempted to reveal key empirical trends in the aid-outcome process using Figure 1 as a template.

The dependent variables chosen were in line with Bourguignon and Sundberg (2007) paper. Among the 24 regressions within the *West Africa and Foreign Aid Model*, only Net ODA

received (% of GNI) and Net official flows from UN agencies, UNICEF (% of GDP) were significant for the 2 categories of regressions ran under the GDP per capita growth (annual %).[18] None of the coefficients for foreign aid explanatory variables were significant under the GDP growth (annual %), which indicates the importance of controlling for population dynamics across the 15 countries. Without this control, the paper is assuming, under the fixed effects regression, that populations have not changed over the T=48 year time period. Considering the population growth rates in the region of West Africa, this false assumption most likely distorted the results. Based on both regression categories including the same exact variables and procedure, estimation through a per capita basis proved to be more accurate. The negative values for the 2 significant aid variables put both Figure 1 and Burnside and Dollar (2000)'s theory in question. If the highest policy variable is the most negative on its economic development affect it questions the importance of policy on positive long term sustainable development in developing countries. This may also show other researchers who mention aid's ability to weaken countries and create dependency to a more strengthened position. Separate analyses need to be completed, looking at policy on certain macroeconomic variables and use only the highest policy variables. This would isolate the aid-outcome relationship if Figure 1 and Burnside and Dollar (2000) are correct. If this analysis does not work, then more research needs to be completed on possibility of aid weakening development.

Despite the *West Africa and Foreign Aid Model's* inability to provide any foreign aid information with respect to GDP growth (annual %), the level of significance of non-aid

[18] Both of these foreign aid variable coefficients were significant at the P=0.05 level. Net ODA received (%of GNI) was significant in Table 4 and only for column 1. Net official flows from UN agencies, UNICEF (% of GDP) was significant in Table 6 for the Basic OLS Regression.

explanatory variables was equivalent for regressions under both dependent variables. Net ODA received (% of GNI) includes the same level of foreign aid as both the Net ODA received per capita (% of GDP) and Net ODA received (% of gross capital formation). This indicates that the controlling for population dynamics over time was not important for non-aid explanatory variables. This result also indicates that the metric system utilized in measuring aid to developing countries can alter the image of aid's effectiveness on country outcomes. This result helps researchers understand the importance of how the raw dollar amount of aid is measured between countries in order to properly asses the cause and effect on economic development. This is not implying that a certain economic foreign aid metric system is better, rather implies that researchers should take the conscious effort to run trials on numerous aid variables, even if they are measuring the same inflow amount but expressed as a percentage of a different economic variable.

Net official flows from UN agencies, UNICEF (% of GDP) being significant in Table 6 for the Basic OLS regression, relates to the key point presented by both Burnside and Dollar (2000) and Bourguignon and Sundberg (2007). Both sets of authors recognized the primary importance of sound economic policy upon a developing country receiving foreign aid inflows. The foreign aid variables received from a policy based organization is of few that are significant sheds light on Figure 1. The United Nations – Mandate program for developing nations holds a high ranking regulatory system for countries receiving aid. Coinciding with Figure 1, both policy and technical assistance are provided coming from Economic and Social Council (ECOSOC). This is the principal body coordinating the economic and social work of the United Nations. The entire family of United Nations organizations works for economic, social and sustainable

development. Coinciding with Burnside and Dollar (2000) the UN is successful in technical assistance, policy and policy making decisions that result in positive economic development outcomes. When focusing on significance of the variable, this result coincides with the case of the authors mentioned above and Figure 1. However the sign of this variable being negative at -7.214 for the basic OLS regression in Table 6, displays the hindering effect aid has on economic development. This displays the highest ranking policy organization having the most negative impact on development. Table 5 indicates Net ODA received (% of GNI) being significant for the fixed effects with time dummy regression at P=0.01 with a negative coefficient of -0.311.

For both categories of regressions, age dependency ratio (% of working-age population), agriculture, value added (annual % growth), population growth (annual %) and gross national expenditure (% of GDP) were significant. The significant and negative coefficient on the age dependency ratio (% of working age population) states that as this variable rises in value the GDP per capita growth (annual %) will fall. This was expected considering, age dependency ratio rising would mean more dependents needing assistance from working people. The negative impact of a larger dependency ratio also comes from higher government spending corresponding to health care and social security, which tend to respond to demographic structures (Remmer, 2004). Through an increase in government spending develops the possibility of public debt, inflation, higher taxes and a diversion of government resources from technological innovation, skills and research and development which leads to long term sustainable economic development.

The significant and positive explanatory coefficients for both population growth (annual %) and Gross national expenditure (% of GDP) indicates that as these 2 variables increased in

value the measure of economic development would rise as well.[19] The positive result for population growth (annual %) is contrary to some current research. Stern (2004) discuss the environmental Kuznets curve and the problem of rising populations mainly on environmental degradation leading to long term economic declines. It is difficult to pinpoint the specific effect population growth has on economic development.

For example, changes in economic conditions have shown to affect fertility as well as be affected by fertility. Specifically by gaining a better understanding of the channels which the various factors interact can we hope to be able to make informed policy decisions, both concerning population and the economy (Porter, 1996). Gross national expenditure (% of GDP) includes all expenses within an economy public and private excluding imports. The positive significance of this explanatory variable describes the importance of expenditures on the creation of aggregate demand. Exports of goods and services (annual % growth) showed a positive and significant value on GDP per capita growth (annual %), which indicates the importance of exports in the development of West Africa. Villanueva (1993) claims the importance of exports of goods and services as a key determinant towards long term economic growth within many developing countries. Exports affect long-term economic growth through various production and demand linkages, learning effects and improvement of human resources, adoption of superior technology embodied in foreign produced capital goods, and the general easing of the foreign exchange constraint associated with the expansion of the

[19] The significance of Population growth (annual %) is not surprising especially considering 76.9% of the world's population in 1990 resided in developing countries and this value is estimated to grow towards 83.2% by 2025 (Portner, 1996).

export sector. Villanueva (1993) adds that both in the short and long run, increases in export activity will raise the growth rate of output within an economy.

With 4 of the 19 non-aid explanatory variables being significant, it is clear that enough controls were not introduced in the West African Foreign Aid model to effectively reduce the ambiguity that exist in the Causality Chain model of Figure 1. However, from the 4 that were significant, suggests the possibility that better policy is being implemented with respect to these specific aspects of the 15 West African economies that are measured. Aid organizations such as the World Bank and International Monetary Fund (IMF) have displayed a unique concentration towards age dependency ratio (% of working-age population), agriculture, value added (annual % growth), exports of goods and services (annual % growth), population growth (annual %) and gross national expenditure (% of GDP) (World Bank and IMF, 2010). Both these organizations have developed numerous regulatory programs to monitor factors such as trade, exports, population and fertility issues and programs to help farmers within these regions compete on the world markets.

This coincides with Bourguignon and Sundberg (2007) Policy and Policy Making steps that are critical to relating aid and country outcomes. Examining the heightened policies implemented by the World Bank and IMF with regard to these explanatory variables indicates that both Burnside and Dollar (2000) and Collier and Dollar (2004) are correct in their statements that aid, even if it does not unconditionally assist in economic growth can be helpful; in those countries or aid organizations that carry high quality policies. Examining the level of policy given towards certain significant explanatory variables within the entire *West Africa and Foreign Aid Model* can give insight into the aid-outcome relationship. Also, the

relevance of the Causality Chain model and the importance of Burnside and Dollar (2000) paper can be better understood if there is evidence that more policy was in fact allotted to certain aspects of the developing economies that were also found to be significant in this paper's empirical analysis.

VI. Conclusion

This paper's analysis utilized important economic indicators from the World Bank Database, 2010. The *West Africa and Foreign Aid Model* put forth interesting possibilities to help combat the ambiguity that exists between aid and country outcomes presented by Bourguignon and Sundberg (2007) Causality Chain model. The *West Africa and Foreign Aid Model* suggests that more research should be done on economic policy towards Sub-Saharan Africa in order to identify which aspects are more relevant for economic development. If this policy analysis is done, assuming that Figure 1 is correct, more successful results should be found. Uncertainty remains with the large negative coefficient on the UNICEF variable indicates that donors with the highest ranking enforced policy hinder economic development the most which is contrary to Burnside and Dollar (2000). Other uncertainties remain regarding Rajan and Subramanian (2007) work on policy levels and aid explained in the previous section. The final results do not show strong evidence for aid having a significant effect on economic development in the 15 West African countries tested. According to the *West Africa and Foreign Aid Model* predicts that aid having a debilitating effect on economic development. This result cannot be taken for certain as many unknown variables could be biasing the aid-economic development effect. Similar studies on developing regions should continue in the direction of policy, transparency and a steady path towards countries reducing dependence on aid.

Data Appendix

This entire section is taken directly from the World Bank, 2010 Database. [20]

Variables

The following explanation of the non-aid related explanatory variables is from the World Bank, 2010 Development Indicators Database.

Adjusted savings: education expenditure (% of GNI): Education expenditure refers to the current operating expenditures in education, including wages and salaries and excluding capital investments in buildings and equipment.

Age dependency ratio (% of working-age population): Age dependency ratio is the ratio of dependents--people younger than 15 or older than 64--to the working-age population--those ages 15-64. For example, 0.7 means there are 7 dependents for every 10 working-age people.

Agriculture, value added (annual % growth): Annual growth rate for agricultural value added based on constant local currency. Aggregates are based on constant 2000 U.S. dollars. Agriculture corresponds to ISIC divisions 1-5 and includes forestry, hunting, and fishing, as well as cultivation of crops and livestock production. Value added is the net output of a sector after adding up all outputs and subtracting intermediate inputs. It is calculated without making deductions for depreciation of fabricated assets or depletion and degradation of natural resources. The origin of value added is determined by the International Standard Industrial Classification (ISIC), revision 3.

[20] World Bank Development Indicators. (2010). http://data.worldbank.org/indicator

Claims on governments and other public entities (current LCU): Claims on governments and other public entities (IFS line 32an + 32b + 32bx + 32c) usually comprise direct credit for specific purposes such as financing of the government budget deficit or loans to state enterprises, advances against future credit authorizations, and purchases of treasury bills and bonds, net of deposits by the public sector. Public sector deposits with the banking system also include sinking funds for the service of debt and temporary deposits of government revenues. Data are in current local currency.

Claims on governments, etc. (annual growth as % of M2): Claims on governments and other public entities (IFS line 32an + 32b + 32bx + 32c) usually comprise direct credit for specific purposes such as financing of the government budget deficit or loans to state enterprises, advances against future credit authorizations, and purchases of treasury bills and bonds, net of deposits by the public sector. Public sector deposits with the banking system also include sinking funds for the service of debt and temporary deposits of government revenues. Data are in current local currency.

Claims on private sector (annual growth as % of M2): Claims on private sector (IFS line 32d) include gross credit from the financial system to individuals, enterprises, nonfinancial public entities not included under net domestic credit, and financial institutions not included elsewhere. Money and quasi money (M2) comprise the sum of currency outside banks, demand deposits other than those of the central government, and the time, savings, and foreign currency deposits of resident sectors other than the central government.

Crop production index (1999-2001 = 100): Crop production index shows agricultural production for each year relative to the base period 1999-2001. It includes all crops except

fodder crops. Regional and income group aggregates for the FAO's production indexes are calculated from the underlying values in international dollars, normalized to the base period 1999-2001.

Current account balance (% of GDP): Current account balance is the sum of net exports of goods, services, net income, and net current transfers.

Domestic credit to private sector (% of GDP): Domestic credit to private sector refers to financial resources provided to the private sector, such as through loans, purchases of nonequity securities, and trade credits and other accounts receivable, that establish a claim for repayment. For some countries these claims include credit to public enterprises.

Exports of goods and services (annual % growth): Annual growth rate of exports of goods and services based on constant local currency. Aggregates are based on constant 2000 U.S. dollars. Exports of goods and services represent the value of all goods and other market services provided to the rest of the world. They include the value of merchandise, freight, insurance, transport, travel, royalties, license fees, and other services, such as communication, construction, financial, information, business, personal, and government services. They exclude labor and property income (formerly called factor services) as well as transfer payments.

Final consumption expenditure, etc. (annual % growth): Average annual growth of final consumption expenditure based on constant local currency. Aggregates are based on constant 2000 U.S. dollars. Final consumption expenditure (formerly total consumption) is the sum of household final consumption expenditure (formerly private consumption) and general government final consumption expenditure (formerly general government consumption). This

estimate includes any statistical discrepancy in the use of resources relative to the supply of resources.

GDP deflator (base year varies by country): The GDP implicit deflator is the ratio of GDP in current local currency to GDP in constant local currency. The base year varies by country.

Gross domestic savings (% of GDP): Gross domestic savings are calculated as GDP less final consumption expenditure (total consumption). Data are in current U.S. dollars. Per $ GDP figures expressed per 1,000 $ gross domestic product.

Gross national expenditure (% of GDP): Gross national expenditure (formerly domestic absorption) is the sum of household final consumption expenditure (formerly private consumption), general government final consumption expenditure (formerly general government consumption), and gross capital formation (formerly gross domestic investment). Data are in current U.S. dollars. Per $ GDP figures expressed per 1 $ gross domestic product.

Life expectancy at birth, total (years): The average number of years to be lived by a group of people born in the same year, if mortality at each age remains constant in the future. Life expectancy at birth is also a measure of overall quality of life in a country and summarizes the mortality at all ages. It can also be thought of as indicating the potential return on investment in human capital and is necessary for the calculation of various actuarial measures.

Manufacturing, value added (annual % growth): Annual growth rate for manufacturing value added based on constant local currency. Aggregates are based on constant 2000 U.S. dollars. Manufacturing refers to industries belonging to ISIC divisions 15-37. Value added is the net output of a sector after adding up all outputs and subtracting intermediate inputs. It is calculated without making deductions for depreciation of fabricated assets or depletion and

degradation of natural resources. The origin of value added is determined by the International Standard Industrial Classification (ISIC), revision 3.

Population growth (annual %): Annual population growth rate. Population is based on the de facto definition of population, which counts all residents regardless of legal status or citizenship--except for refugees not permanently settled in the country of asylum, which are generally considered part of the population of the country of origin.

Trade (% of GDP): Trade is the sum of exports and imports of goods and services measured as a share of gross domestic product.

Workers' remittances and compensation of employees, received (% of GDP): Workers' remittances and compensation of employees comprise current transfers by migrant workers and wages and salaries earned by nonresident workers. Workers remittances are classified as current private transfers from migrant workers who are residents of the host country to recipients in their country of origin. They include only transfers made by workers who have been living in the host country for more than a year, irrespective of their immigration status. Compensation of employees is the income of migrants who have lived in the host country for less than a year. Migrants' transfers are defined as the net worth of migrants who are expected to remain in the host country for more than one year that is transferred from one country to another at the time of migration. Per $ GDP figures expressed per 1,000 $ gross domestic product.

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Table 2. Regression results from GDP Per Capita (dependent variable) on the Net bilateral aid flows from DAC donors, total (% of GDP) (aid related independent variable).

Variables	Column 1	Column 2
	GDP Per Capita	GDP Per Capita
Adjusted savings: education expenditure (% of GNI)	0.16 (-0.64)	-0.164 (-0.60)
Age dependency ratio (% of working age pop)	-0.100*** (-3.73)	-0.153*** (-4.81)
Agriculture, value added (annual % growth)	0.221*** (-6.59)	0.235*** (-7.14)
Claims on governments and other public entities (current LCU)	-1.69E-13 (-0.15)	3.5E-13 (-0.38)
Claims on governments (annual growth % of M2)	0.0014 (-0.8)	0.00117 (-0.44)
Claims on private sector (annual growth as a % of M2)	0.000393 (-0.28)	-0.00138 (-1.05)
Crop production index (1999-2001 = 100)	-0.00105 (-0.18)	-0.00796 (-0.78)
Current account balance (% of GDP)	-0.0418 (-1.57)	-0.0438 (-1.63)
Domestic credit to private sector (% of GDP)	-0.0447 (-1.17)	-0.0114 (-0.27)
Exports of goods and services (annual % growth)	0.0449** (-3.17)	
Final consumption expenditure (annual % growth)	0.0746 (-1.12)	0.0719 (-1.17)
GDP deflator (base year varies by country)	0.000398** (-2.94)	1.49E-06 (-0.87)
Gross domestic savings (% of GDP)	0.00682 (-0.31)	0.0267 (-1.11)
Gross national expenditure (% of GDP)	-0.0188* (-2.31)	-0.0233* (-2.27)

Life expectancy at birth, total (years)	-0.00165 (-0.04)	-0.186 (-1.14)
Manufacturing, value added (annual % growth)	0.0524 (-1.67)	0.0627 (-1.88)
Net bilateral aid flows from DAC donors, total (% of GDP)	-0.0478 (-1.03)	-0.0424 (-0.47)
Population growth (annual %)	2.331** (-2.58)	2.961** (-2.61)
Trade (% of GDP)	-0.0115 (-1.45)	0.0222 (-1.49)
Workers' remittances (% of GDP)	0.244*** (-3.72)	0.103 (-1.39)
Time	0.0593 (-0.77)	
Constant	4.628 (-1.95)	-101.5 (-0.69)
Country Fixed Effects	No	Yes
Observations	**735**	**735**

Source: World Bank Development Indicators Database, 2010.

t-statistics are shown in parentheses

*p<0.05, **p<0.01, ***p<0.001

Table 2 summarizes the results of the regression relating GDP Per Capita on Net bilateral aid flows from DAC donors, total (% of GDP). Column 1 and 2 represent the Basic OLS Regression and Fixed Effects with Time Dummy, respectively. In column 2, both the time dummy and exports of goods and services regression results were dropped by STATA. No variables were omitted in this regression. This occurred because of the similar impact of the fixed effects and time dummy with respect to these variables. Both columns represent the results of the 1960 to 2008 timeline on 15 West African countries.

Table 3. Regression results from GDP Per Capita (dependent variable) on Net ODA received per capita (% of GDP) (aid related independent variable).

Variables	Column 1	Column 2
	GDP Per Capita	GDP Per Capita
Adjusted savings: education expenditure (% of GNI)	0.186 (-0.76)	-0.114 (-0.47)
Age dependency ratio (% of working age pop)	0.0963*** (-3.70)	-0.141*** (-4.33)
Agriculture, value added (annual % growth)	0.222*** (-6.58)	0.230*** (-6.82)
Claims on governments and other public entities (current LCU)	-6.51E-14 (-0.06)	3.37E-13 (-0.35)
Claims on governments (annual growth % of M2)	0.0014 (-0.79)	0.00128 (-0.52)
Claims on private sector (annual growth as a % of M2)	0.000424 (-0.3)	-0.00107 (-0.81)
Crop production index (1999-2001 = 100)	-0.00238 (-0.39)	-0.00654 (-0.69)
Current account balance (% of GDP)	-0.0282 (-1.24)	-0.0397 (-1.51)
Domestic credit to private sector (% of GDP)	-0.0437 (-1.13)	-0.0113 (-0.25)
Exports of goods and services (annual % growth)	0.0436** (-3.02)	0.0340* (-2.31)
Final consumption expenditure (annual % growth)	0.0752 (-1.12)	0.0686 (-1.05)
GDP deflator (base year varies by country)	0.000425** (-2.84)	0.0000018 (-1.05)
Gross domestic savings (% of GDP)	0.0131 (-0.62)	0.024 (-1.16)
Gross national expenditure (% of GDP)	-0.0184* (-2.29)	-0.0247* (-2.45)

Life expectancy at birth, total (years)	-0.00743 (-0.19)	-0.165 (-1.05)
Manufacturing, value added (annual % growth)	0.0534 (-1.68)	0.0598 (-1.86)
Net ODA received per capita (% of GDP)	3333.4 (-0.07)	-10661.8 (-0.15)
Population growth (annual %)	2.325* (-2.57)	2.913** (-2.65)
Trade (% of GDP)	-0.0131 (-1.59)	0.0196 (-1.28)
Workers' remittances (% of GDP)	0.238*** (-3.41)	0.107 (-1.49)
Time	0.045 (-0.68)	
Constant	4.495 (-1.88)	-75.15 (-0.61)
Country Fixed Effects	No	Yes
Observations	**735**	**735**

Source: World Bank Development Indicators Database, 2010.

t-statistics are shown in parentheses

*p<0.05, **p<0.01, ***p<0.001

Table 3 summarizes the results of the regression relating GDP Per Capita on Net ODA received per capita (% of GDP). Column 1 and 2 represent the Basic OLS Regression and Fixed Effects with Time Dummy, respectively. In column 2, the time dummy regression results were dropped by STATA. No variables were omitted in this regression. This occurred because of the similar impact of the fixed effects and time dummy. Both columns represent the results of the 1960 to 2008 timeline on 15 West African countries.

Table 4. Regression results from GDP Per Capita (dependent variable) on Net ODA received (% of GNI) (aid related independent variable).

Variables	Column 1	Column 2
	GDP Per Capita	GDP Per Capita
Adjusted savings: education expenditure (% of GNI)	0.183 (-0.74)	-0.0943 (-0.39)
Age dependency ratio (% of working age pop)	-0.0947*** (-3.67)	-0.116*** (-3.85)
Agriculture, value added (annual % growth)	0.222*** (-6.55)	0.233*** (-6.86)
Claims on governments and other public entities (current LCU)	-1.02E-13 (-0.10)	-2.46E-13 (-0.26)
Claims on governments (annual growth % of M2)	0.00138 (-0.77)	0.00114 (-0.46)
Claims on private sector (annual growth as a % of M2)	0.000411 (-0.29)	-0.00148 (-1.26)
Crop production index (1999-2001 = 100)	-0.0023 (-0.38)	-0.0033 (-0.40)
Current account balance (% of GDP)	-0.0277 (-1.33)	-0.0395 (-1.53)
Domestic credit to private sector (% of GDP)	-0.0435 (-1.13)	-0.00962 (-0.22)
Exports of goods and services (annual % growth)	0.0438** (-3.07)	0.0350* (-2.37)
Final consumption expenditure (annual % growth)	0.0752 (-1.12)	0.0693 (-1.05)
GDP deflator (base year varies by country)	0.0000042 (-3.01)	2.34E-06 (-1.32)
Gross domestic savings (% of GDP)	0.0125 (-0.58)	0.0245 (-1.16)
Gross national expenditure (% of GDP)	-0.0179* (-2.27)	-0.0275* (-2.51)

Life expectancy at birth, total (years)	-0.0071 (-0.18)	-0.151 (-0.97)
Manufacturing, value added (annual % growth)	0.0542 (-1.7)	0.0615 (-1.89)
Net ODA received (% of GNI)	-0.0259 (-0.62)	-0.311** (-2.65)
Population growth (annual %)	2.337* (-2.57)	3.003** (-2.71)
Trade (% of GDP)	-0.0139 (-1.63)	0.0173 (-1.12)
Workers' remittances (% of GDP)	0.243*** (-3.75)	0.134 (-1.85)
Time	0.0418 (-0.65)	
Constant	4.337 (-1.79)	-71.61 (-0.59)
Country Fixed Effects	No	Yes
Observations	**735**	**735**

Source: World Bank Development Indicators Database, 2010.

t-statistics are shown in parentheses

*p<0.05, **p<0.01, ***p<0.001

Table 4 summarizes the results of the regression relating GDP Per Capita on Net ODA received (% of GNI). Column 1 and 2 represent the Basic OLS Regression and Fixed Effects with Time Dummy, respectively. In column 2, the time dummy regression results were dropped by STATA. No variables were omitted in this regression. This occurred because of the similar impact of the fixed effects and time dummy. Both columns represent the results of the 1960 to 2008 timeline on 15 West African countries.

Table 5. Regression results GDP Per Capita (dependent variable) on Net ODA received (% of gross capital formation) (aid related independent variable).

Variables	Column 1	Column 2
	GDP Per Capita	GDP Per Capita
Adjusted savings: education expenditure (% of GNI)	0.192 (-0.78)	-0.144 (-0.58)
Age dependency ratio (% of working age pop)	-0.0981*** (-3.71)	-0.121*** (-3.55)
Agriculture, value added (annual % growth)	0.220*** (-6.54)	0.227*** (-6.75)
Claims on governments and other public entities (current LCU)	1.36E-13 (-0.12)	9.21E-13 (-0.8)
Claims on governments (annual growth % of M2)	0.00142 (-0.8)	0.00116 (-0.47)
Claims on private sector (annual growth as a % of M2)	0.000396 (-0.28)	-0.000868 (-0.68)
Crop production index (1999-2001 = 100)	-0.00138 (-0.23)	-0.00742 (-0.80)
Current account balance (% of GDP)	-0.0311 (-1.43)	-0.0416 (-1.63)
Domestic credit to private sector (% of GDP)	-0.0448 (-1.18)	-0.0136 (-0.32)
Exports of goods and services (annual % growth)	0.0441** (-3.1)	0.0351* (-2.38)
Final consumption expenditure (annual % growth)	0.0751 (-1.12)	0.0685 (-1.05)
GDP deflator (base year varies by country)	0.00396** (-3)	1.48E-06 (-0.86)
Gross domestic savings (% of GDP)	0.00727 (-0.32)	0.0133 (-0.58)
Gross national expenditure (% of GDP)	-0.0178* (-2.28)	-0.0206* (-2.23)

Life expectancy at birth, total (years)	-0.0105 (-0.26)	-0.231 (-1.29)
Manufacturing, value added (annual % growth)	0.0525 (-1.69)	0.0579 (-1.87)
Net ODA received (% of gross capital formation)	-0.00267 (-0.61)	-0.00655 (-1.11)
Population growth (annual %)	2.321* (-2.58)	2.957** (-2.68)
Trade (% of GDP)	-0.0116 (-1.44)	0.0203 (-1.34)
Workers' remittances (% of GDP)	0.246*** (-3.71)	0.111 (-1.53)
Time	0.0731 (-0.98)	
Constant	4.800* (-2.05)	-129.5 (-0.91)
Country Fixed Effects	No	Yes
Observations	**735**	**735**

Source: World Bank Development Indicators Database, 2010.

t-statistics are shown in parentheses

*p<0.05, **p<0.01, ***p<0.001

Table 5 summarizes the results of the regression relating GDP Per Capita on Net ODA received (% of gross capital formation). Column 1 and 2 represent the Basic OLS Regression and Fixed Effects with Time Dummy, respectively. In column 2, the time dummy regression results were dropped by STATA. No variables were omitted in this regression. This occurred because of the similar impact of the fixed effects and time dummy. Both columns represent the results of the 1960 to 2008 timeline on 15 West African countries.

Table 6. Regression results from GDP Per Capita (dependent variable) on Net official flows from UN agencies, UNICEF (% of GDP) (aid related independent variable).

Variables	Column 1	Column 2
	GDP Per Capita	GDP Per Capita
Adjusted savings: education expenditure (% of GNI)	0.041 (-0.19)	-0.242 (-0.97)
Age dependency ratio (% of working age pop)	-0.104*** (-4.10)	-0.125*** (-3.59)
Agriculture, value added (annual % growth)	0.221*** (-6.68)	0.231*** (-6.91)
Claims on governments and other public entities (current LCU)	-4.28E-13 (-0.35)	3.64E-14 (-0.04)
Claims on governments (annual growth % of M2)	0.00183 (-0.99)	0.00117 (-0.49)
Claims on private sector (annual growth as a % of M2)	0.0000971 (-0.07)	-0.000582 (-0.43)
Crop production index (1999-2001 = 100)	0.00419 (-0.71)	-0.00933 (-0.99)
Current account balance (% of GDP)	-0.0441 (-1.94)	-0.0393 (-1.53)
Domestic credit to private sector (% of GDP)	-0.0238 (-0.69)	0.00591 (-0.13)
Exports of goods and services (annual % growth)	0.0455** (-3.26)	0.0361* (-2.44)
Final consumption expenditure (annual % growth)	0.0729 (-1.11)	0.0685 (-1.06)
GDP deflator (base year varies by country)	0.000370** (-2.59)	1.95E-06 (-1.11)
Gross domestic savings (% of GDP)	0.000352 (0.02)	0.0171 (-0.73)
Gross national expenditure (% of GDP)	-0.0187* (-2.33)	-0.0204* (-2.02)

Life expectancy at birth, total (years)	0.0058 (-0.15)	-0.202 (-1.21)
Manufacturing, value added (annual % growth)	0.0507 (-1.64)	0.0583 (-1.83)
Net official flows from UN agencies, UNICEF (% of GDP)	-7.124* (-2.07)	-6.821 (-1.54)
Population growth (annual %)	2.213* (-2.39)	2.876** (-2.65)
Trade (% of GDP)	-0.0121 (-1.46)	0.0132 (-0.77)
Workers' remittances (% of GDP)	0.242*** (-3.92)	0.0978 (-1.36)
Time	0.0873 (-1.12)	
Constant	4.891* (-2.05)	-158.1 (-1.07)
Country Fixed Effects	No	Yes
Observations	**735**	**735**

Source: World Bank Development Indicators Database, 2010.

t-statistics are shown in parentheses

*p<0.05, **p<0.01, ***p<0.001

Table 6 summarizes the results of the regression relating GDP Per Capita on Net official flows from UN agencies, UNICEF (% of GDP). Column 1 and 2 represent the Basic OLS Regression and Fixed Effects with Time Dummy, respectively. In column 2, the time dummy regression results were dropped by STATA. No variables were omitted in this regression. This occurred because of the similar impact of the fixed effects and time dummy. Both columns represent the results of the 1960 to 2008 timeline on 15 West African countries.

Table 7. Regression results from GDP Per Capita (dependent variable) on Net official development assistance and official aid received (% of GDP) (aid related independent variable).

Variables	Column 1	Column 2
	GDP Per Capita	GDP Per Capita
Adjusted savings: education expenditure (% of GNI)	0.159 (-0.64)	-0.134 (-0.48)
Age dependency ratio (% of working age pop)	-0.0996*** (-3.69)	-0.139*** (-4.49)
Agriculture, value added (annual % growth)	0.222*** (-6.59)	0.231*** (-6.83)
Claims on governments and other public entities (current LCU)	-1.45E-13 (-0.13)	2.95E-13 (0.31)
Claims on governments (annual growth % of M2)	0.00142 (-0.8)	0.00122 (-0.47)
Claims on private sector (annual growth as a % of M2)	0.000395 (-0.28)	-0.00103 (-0.77)
Crop production index (1999-2001 = 100)	-0.00127 (-0.22)	-0.00703 (-0.68)
Current account balance (% of GDP)	-0.0396 (-1.51)	-0.0441 (-1.65)
Domestic credit to private sector (% of GDP)	-0.0442 (-1.15)	-0.0121 (-0.29)
Exports of goods and services (annual % growth)	0.0446** (-3.16)	0.0344* (-2.36)
Final consumption expenditure (annual % growth)	0.0746 (-1.12)	0.0684 (-1.05)
GDP deflator (base year varies by country)	0.00400** (-2.92)	1.78E-06 (-1.04)
Gross domestic savings (% of GDP)	0.0061 (-0.26)	0.0202 (-0.78)
Gross national expenditure (% of GDP)	-0.0186* (-2.30)	-0.0244* (-2.38)

Life expectancy at birth, total (years)	-0.00181 (-0.05)	-0.168 (-1.04)
Manufacturing, value added (annual % growth)	0.0525 (-1.67)	0.0595 (-1.86)
Net official development assistance and official aid received (% of GDP)	-0.0288 (-0.80)	-0.0203 (-0.32)
Population growth (annual %)	2.323* (-2.58)	2.925** (-2.61)
Trade (% of GDP)	-0.0114 (-1.39)	0.0199 (-1.33)
Workers' remittances (% of GDP)	0.240*** (-3.71)	0.103 (-1.34)
Time	0.0506 (-0.66)	
Constant	4.577 (-1.93)	-86.13 (-0.59)
Country Fixed Effects	No	Yes
Observations	**735**	**735**

Source: World Bank Development Indicators Database, 2010.

t-statistics are shown in parentheses

*p<0.05, **p<0.01, ***p<0.001

Table 7 summarizes the results of the regression relating GDP Per Capita on Net official development assistance and official aid received (% of GDP). Column 1 and 2 represent the Basic OLS Regression and Fixed Effects with Time Dummy, respectively. In column 2, the time dummy regression results were dropped by STATA. No variables were omitted in this regression. This occurred because of the similar impact of the fixed effects and time dummy. Both columns represent the results of the 1960 to 2008 timeline on 15 West African countries.

Table 8. Regression results from GDP Growth (dependent variable) on Net bilateral aid flows from DAC donors, total (% of GDP) (aid related independent variable).

Variables	Column 1	Column 2
	GDP Per Capita	GDP Per Capita
Adjusted savings: education expenditure (% of GNI)	0.185 (-0.71)	-0.129 (-0.45)
Age dependency ratio (% of working age pop)	-0.0879** (-3.08)	-0.132*** (-3.95)
Agriculture, value added (annual % growth)	0.227*** (-6.59)	0.236*** (-6.84)
Claims on governments and other public entities (current LCU)	-1.50E-13 (-0.13)	3.17E-13 (-0.33)
Claims on governments (annual growth % of M2)	0.00213 (-1.14)	0.00159 (-0.56)
Claims on private sector (annual growth as a % of M2)	0.000247 (-0.16)	-0.000879 (-0.61)
Crop production index (1999-2001 = 100)	0.00184 (-0.3)	-0.00785 (-0.72)
Current account balance (% of GDP)	-0.0317 (-1.16)	-0.0439 (-1.55)
Domestic credit to private sector (% of GDP)	-0.0334 (-0.81)	-0.00532 (-0.12)
Exports of goods and services (annual % growth)	0.0460** (-3.16)	0.0376* (-2.48)
Final consumption expenditure (annual % growth)	0.0777 (-1.13)	0.073 (-1.09)
GDP deflator (base year varies by country)	0.00409** (-2.9)	1.58E-06 (-0.91)
Gross domestic savings (% of GDP)	0.0116 (-0.51)	0.0244 (-1.02)
Gross national expenditure (% of GDP)	-0.0156 (-1.79)	-0.0195 (-1.84)

Life expectancy at birth, total (years)	-0.0164 (-0.40)	-0.114 (-0.66)
Manufacturing, value added (annual % growth)	0.0545 (-1.7)	0.0613 (-1.89)
Net bilateral aid flows from DAC donors, total (% of GDP)	-0.0273 (-0.57)	-0.0698 (-0.70)
Population growth (annual %)	3.317*** (-3.41)	3.940** (-3.19)
Trade (% of GDP)	-0.00665 (-0.78)	0.0231 (-1.5)
Workers' remittances (% of GDP)	0.238*** (-3.59)	0.0997 (-1.26)
Time	0.0508 (-0.61)	
Constant	3.141 (-1.24)	-90.64 (-0.58)
Country Fixed Effects	No	Yes
Observations	**735**	**735**

Source: World Bank Development Indicators Database, 2010.

t-statistics are shown in parentheses

*p<0.05, **p<0.01, ***p<0.001

Table 8 summarizes the results of the regression relating GDP Per Capita on Net bilateral aid flows from DAC donors, total (% of GDP). Column 1 and 2 represent the Basic OLS Regression and Fixed Effects with Time Dummy, respectively. In column 2, the time dummy regression results were dropped by STATA. No variables were omitted in this regression. This occurred because of the similar impact of the fixed effects and time dummy. Both columns represent the results of the 1960 to 2008 timeline on 15 West African countries.

Table 9. Regression results from GDP Growth (dependent variable) on Net ODA received per capita (% of GDP) (aid related independent variable).

Variables	**Column 1**	**Column 2**
	GDP Per Capita	GDP Per Capita
Adjusted savings: education expenditure (% of GNI)	0.202 (-0.79)	-0.0882 (-0.34)
Age dependency ratio (% of working age pop)	-0.0848** (-3.09)	-0.131*** (-3.85)
Agriculture, value added (annual % growth)	0.228*** (-6.59)	0.236*** (-6.81)
Claims on governments and other public entities (current LCU)	-8.07E-14 (-0.07)	4.34E-13 (-0.43)
Claims on governments (annual growth % of M2)	0.00212 (-1.13)	0.00178 (-0.67)
Claims on private sector (annual growth as a % of M2)	0.000264 (-0.17)	-0.00107 (-0.77)
Crop production index (1999-2001 = 100)	0.00108 (-0.17)	-0.00649 (-0.64)
Current account balance (% of GDP)	-0.0225 (-0.97)	-0.0297 (-1.10)
Domestic credit to private sector (% of GDP)	-0.0328 (-0.79)	-0.00384 (-0.08)
Exports of goods and services (annual % growth)	0.0451** (-3.03)	0.0361* (-2.36)
Final consumption expenditure (annual % growth)	0.0781 (-1.14)	0.0733 (-1.09)
GDP deflator (base year varies by country)	0.00432** (-2.75)	1.79E-06 (-1.01)
Gross domestic savings (% of GDP)	0.0157 (-0.73)	0.0307 (-1.46)
Gross national expenditure (% of GDP)	-0.0153 (-1.78)	-0.0206* (-1.97)

Life expectancy at birth, total (years)	-0.0209 (-0.52)	-0.106 (-0.64)
Manufacturing, value added (annual % growth)	0.0551 (-1.71)	0.0621 (-1.89)
Net ODA received per capita (% of GDP)	9960.1 (-0.21)	339.9 (0)
Population growth (annual %)	3.317*** (-3.39)	3.890** (-3.25)
Trade (% of GDP)	-0.00768 (-0.87)	0.0225 (-1.44)
Workers' remittances (% of GDP)	0.231** (-3.28)	0.101 (-1.32)
Time	0.0361 (-0.52)	
Constant	3.032 (-1.18)	-61.92 (-0.47)
Country Fixed Effects	No	Yes
Observations	**735**	**735**

Source: World Bank Development Indicators Database, 2010.

t-statistics are shown in parentheses

*p<0.05, **p<0.01, ***p<0.001

Table 9 summarizes the results of the regression relating GDP Per Capita on Net ODA received per capita (% of GDP). Column 1 and 2 represent the Basic OLS Regression and Fixed Effects with Time Dummy, respectively. In column 2, the time dummy regression results were dropped by STATA. No variables were omitted in this regression. This occurred because of the similar impact of the fixed effects and time dummy. Both columns represent the results of the 1960 to 2008 timeline on 15 West African countries.

Table 10. Regression results from GDP Growth (dependent variable) on Net ODA received (% of GNI) (aid related independent variable).

Variables	Column 1	Column 2
	GDP Per Capita	GDP Per Capita
Adjusted savings: education expenditure (% of GNI)	0.2 (-0.76)	0.076 (-0.29)
Age dependency ratio (% of working age pop)	-0.0853* (-3.11)	-0.0790* (-2.54)
Agriculture, value added (annual % growth)	0.228*** (-6.57)	0.240*** (-6.82)
Claims on governments and other public entities (current LCU)	-1.03E-13 (-0.09)	-9.33E-13 (-0.78)
Claims on governments (annual growth % of M2)	0.00212 (-1.13)	0.00688*** (-3.99)
Claims on private sector (annual growth as a % of M2)	0.000262 (-0.17)	-0.00127 (-1.06)
Crop production index (1999-2001 = 100)	0.00111 (-0.18)	0.00817 (-0.93)
Current account balance (% of GDP)	-0.024 (-1.12)	-0.0295 (-1.01)
Domestic credit to private sector (% of GDP)	-0.0328 (-0.79)	-0.0967* (-2.22)
Exports of goods and services (annual % growth)	0.0454** (-3.1)	0.0471*** (-3.41)
Final consumption expenditure (annual % growth)	0.078 (-1.13)	0.0748 (-1.09)
GDP deflator (base year varies by country)	0.0000042 (-2.87)	2.47E-06 (-1.55)
Gross domestic savings (% of GDP)	0.0149 (-0.68)	0.027 (-1.13)
Gross national expenditure (% of GDP)	-0.0152 (-1.81)	0.00286 (-0.31)

Life expectancy at birth, total (years)	-0.0194 (-0.47)	0.367* (-2.17)
Manufacturing, value added (annual % growth)	0.0553 (-1.7)	0.0567 (-1.73)
Net ODA received (% of GNI)	-0.00769 (-0.18)	-0.0612 (-0.79)
Population growth (annual %)	3.317*** (-3.38)	
Trade (% of GDP)	-0.00775 (-0.85)	
Workers' remittances (% of GDP)	0.236*** (-3.62)	
Time	-0.0827 (-1.29)	
Constant	3.023 (-1.17)	155.5 (-1.29)
Country Fixed Effects	No	Yes
Observations	**735**	**735**

Source: World Bank Development Indicators Database, 2010.

t-statistics are shown in parentheses

*p<0.05, **p<0.01, ***p<0.001

Table 10 summarizes the results of the regression relating GDP Per Capita on Net ODA received (% of GNI). Column 1 and 2 represent the Basic OLS Regression and Fixed Effects with Time Dummy, respectively. In column 2, the time dummy, population growth (annual %), trade (% of GDP), and workers' remittances (% of GDP) regression results were dropped by STATA. No variables were omitted in this regression. This occurred because of the similar impact of the fixed effects and time dummy. Both columns represent the results of the 1960 to 2008 timeline on 15 West African countries.

Table 11. Regression results from GDP Growth (dependent variable) on Net ODA received (% of gross capital formation) (aid related independent variable).

Variables	Column 1	Column 2
	GDP Per Capita	GDP Per Capita
Adjusted savings: education expenditure (% of GNI)	0.205 (-0.79)	-0.121 (-0.46)
Age dependency ratio (% of working age pop)	-0.0868** (-3.08)	-0.111** (-3.12)
Agriculture, value added (annual % growth)	0.226*** (-6.57)	0.231*** (-6.72)
Claims on governments and other public entities (current LCU)	4.67E-14 (-0.04)	1.04E-12 (-0.86)
Claims on governments (annual growth % of M2)	0.00214 (-1.14)	0.00165 (-0.62)
Claims on private sector (annual growth as a % of M2)	0.000246 (-0.16)	-0.000814 (-0.59)
Crop production index (1999-2001 = 100)	0.00176 (-0.28)	-0.00761 (-0.76)
Current account balance (% of GDP)	-0.0259 (-1.15)	-0.0329 (-1.24)
Domestic credit to private sector (% of GDP)	-0.0336 (-0.82)	-0.00575 (-0.13)
Exports of goods and services (annual % growth)	0.0456** (-3.12)	0.0375* (-2.45)
Final consumption expenditure (annual % growth)	0.078 (-1.14)	0.0732 (-1.09)
GDP deflator (base year varies by country)	0.000405** (-2.96)	1.41E-06 (-0.79)
Gross domestic savings (% of GDP)	0.0112 (-0.48)	0.0194 (-0.82)
Gross national expenditure (% of GDP)	-0.015 (-1.78)	-0.016 (-1.69)

Life expectancy at birth, total (years)	-0.0218 (-0.52)	-0.174 (-0.91)
Manufacturing, value added (annual % growth)	0.0544 (-1.71)	0.06 (-1.9)
Net ODA received (% of gross capital formation)	-0.00182 (-0.40)	-0.00684 (-1.10)
Population growth (annual %)	3.311*** (-3.41)	3.939** (-3.28)
Trade (% of GDP)	-0.00652 (-0.77)	0.0233 (-1.5)
Workers' remittances (% of GDP)	0.239*** (-3.58)	0.106 (-1.37)
Time	0.0659 (-0.82)	
Constant	3.272 (-1.3)	-119.6 (-0.79)
Country Fixed Effects	No	Yes
Observations	**735**	**735**

Source: World Bank Development Indicators Database, 2010.

t-statistics are shown in parentheses

*p<0.05, **p<0.01, ***p<0.001

Table 11 summarizes the results of the regression relating GDP Per Capita on Net ODA received (% of gross capital formation). Column 1 and 2 represent the Basic OLS Regression and Fixed Effects with Time Dummy, respectively. In column 2, the time dummy regression results were dropped by STATA. No variables were omitted in this regression. This occurred because of the similar impact of the fixed effects and time dummy. Both columns represent the results of the 1960 to 2008 timeline on 15 West African countries.

Table 12. Regression results from GDP Growth (dependent variable) on Net official flows from UN agencies, UNICEF (% of GDP) (aid related independent variable).

Variables	Column 1	Column 2
	GDP Per Capita	GDP Per Capita
Adjusted savings: education expenditure (% of GNI)	0.0788 (-0.34)	-0.224 (-0.85)
Age dependency ratio (% of working age pop)	-0.0923*** (-3.40)	-0.115** (-3.18)
Agriculture, value added (annual % growth)	0.227*** (-6.67)	0.236*** (-6.89)
Claims on governments and other public entities (current LCU)	-3.95E-13 (-0.31)	1.09E-13 (-0.1)
Claims on governments (annual growth % of M2)	0.00248 (-1.26)	0.00165 (-0.64)
Claims on private sector (annual growth as a % of M2)	-9.5E-06 (-0.01)	-0.000509 (-0.35)
Crop production index (1999-2001 = 100)	0.0066 (-1.09)	-0.00963 (-0.95)
Current account balance (% of GDP)	-0.0372 (-1.60)	-0.0305 (-1.15)
Domestic credit to private sector (% of GDP)	-0.0161 (-0.43)	0.0148 (-0.3)
Exports of goods and services (annual % growth)	0.0468** (-3.25)	0.0386** (-2.52)
Final consumption expenditure (annual % growth)	0.0761 (-1.12)	0.0732 (-1.1)
GDP deflator (base year varies by country)	0.000380* (-2.5)	0.0000019 (-1.04)
Gross domestic savings (% of GDP)	0.00455 (-0.2)	0.0233 (-0.98)
Gross national expenditure (% of GDP)	-0.0156 (-1.81)	-0.0157 (-1.52)

Life expectancy at birth, total (years)	-0.0087 (-0.23)	-0.144 (-0.82)
Manufacturing, value added (annual % growth)	0.0528 (-1.68)	0.0605 (-1.86)
Net official flows from UN agencies, UNICEF (% of GDP)	-5.983 (-1.68)	-7.206 (-1.62)
Population growth (annual %)	3.220** (-3.22)	3.853** (-3.27)
Trade (% of GDP)	-0.00672 (-0.76)	0.0158 (-0.91)
Workers' remittances (% of GDP)	0.237*** (-3.76)	0.0921 (-1.2)
Time	0.0813 (-0.99)	
Constant	3.394 (-1.32)	-150.5 (-0.97)
Country Fixed Effects	No	Yes
Observations	**735**	**735**

Source: World Bank Development Indicators Database, 2010.

t-statistics are shown in parentheses

*p<0.05, **p<0.01, ***p<0.001

Table 12 summarizes the results of the regression relating GDP Per Capita on Net official flows from UN agencies, UNICEF (% of GDP). Column 1 and 2 represent the Basic OLS Regression and Fixed Effects with Time Dummy, respectively. In column 2, the time dummy regression results were dropped by STATA. No variables were omitted in this regression. This occurred because of the similar impact of the fixed effects and time dummy. Both columns represent the results of the 1960 to 2008 timeline on 15 West African countries.

Table 13. Regression results from GDP Growth (dependent variable) on Net official development assistance and official aid received (% of GDP) (aid related independent variable).

Variables	Column 1	Column 2
	GDP Per Capita	GDP Per Capita
Adjusted savings: education expenditure (% of GNI)	0.188 (-0.72)	-0.115 (-0.39)
Age dependency ratio (% of working age pop)	-0.0872** (-3.06)	-0.130** (-4.00)
Agriculture, value added (annual % growth)	0.228*** (-6.59)	0.236*** (-6.82)
Claims on governments and other public entities (current LCU)	-1.29E-13 (-0.11)	3.72E-13 (-0.38)
Claims on governments (annual growth % of M2)	0.00214 (-1.14)	0.0017 (-0.6)
Claims on private sector (annual growth as a % of M2)	0.000251 (-0.17)	-0.000959 (-0.67)
Crop production index (1999-2001 = 100)	0.00161 (-0.26)	-0.00734 (-0.66)
Current account balance (% of GDP)	-0.0295 (-1.10)	-0.0367 (-1.34)
Domestic credit to private sector (% of GDP)	-0.0331 (-0.80)	-0.00424 (-0.09)
Exports of goods and services (annual % growth)	0.0458** (-3.15)	0.0369* (-2.45)
Final consumption expenditure (annual % growth)	0.0778 (-1.13)	0.0731 (-1.09)
GDP deflator (base year varies by country)	0.000412** (-2.88)	1.71E-06 (-0.97)
Gross domestic savings (% of GDP)	0.0118 (-0.5)	0.0258 (-0.95)
Gross national expenditure (% of GDP)	-0.0154 (-1.79)	-0.0198 (-1.86)

Life expectancy at birth, total (years)	-0.017 (-0.42)	-0.109 (-0.64)
Manufacturing, value added (annual % growth)	0.0546 (-1.7)	0.0616 (-1.88)
Net official development assistance and official aid received (% of GDP)	-0.0136 (-0.38)	-0.0255 (-0.37)
Population growth (annual %)	3.313*** (-3.41)	3.908** (-3.2)
Trade (% of GDP)	-0.00671 (-0.77)	0.023 (-1.5)
Workers' remittances (% of GDP)	0.235*** (-3.6)	0.0972 (-1.18)
Time	0.0437 (-0.53)	
Constant	3.106 (-1.22)	-76.92 (-0.49)
Country Fixed Effects	No	Yes
Observations	**735**	**735**

Source: World Bank Development Indicators Database, 2010.

t-statistics are shown in parentheses

*p<0.05, **p<0.01, ***p<0.001

Table 13 summarizes the results of the regression relating GDP Per Capita on Net official development assistance and official aid received (% of GDP). Column 1 and 2 represent the Basic OLS Regression and Fixed Effects with Time Dummy, respectively. In column 2, the time dummy regression results were dropped by STATA. No variables were omitted in this regression. This occurred because of the similar impact of the fixed effects and time dummy. Both columns represent the results of the 1960 to 2008 timeline on 15 West African countries.