Foreign Aid and African Exporters: Help or Harm?

*Paul Ojeaga[1], PhD Bergamo University, Bergamo Italy
Research Scholar Bentley University Boston 2011 to 2012
Note This Paper is part of my PhD Dissertation deposited on AISBERG repository Bergamo University Italy
I acknowledge the useful incites from members of faculty of Economics and Mathematics
The views expressed in the paper are solely those of the Author
* E-mail of the corresponding author: paul.ojeaga@unibg.it

Abstract
Export growth is pursued by many developing countries as a path to economic prosperity. Consistent with this goal, many foreign donors have attempted to use aid to promote African exporters. The relationship between foreign aid and exports is a complex one as aid comes from different sources and has varied destinations in the recipient country. In this paper, we utilize a panel data set of African countries from 1970-2008 to examine the impact of foreign aid on exports. The results find that aid designated for sectors such as infrastructure and education have a positive impact on exports while those going to agriculture and industry do not. Results also show that both multilateral and bilateral aid has a positive impact on exports. Also, less concessionary official development assistance does at least as well, if not better, in boosting exports as does more grant-based effective development assistance. There is significant evidence that natural resources and foreign aid are being viewed by donors, and functioning, as complements. Evidence finds that sound economic policy by the recipient to be an important factor in export growth and that better policy can act as a substitute for foreign aid. These results suggest the important of properly directing aid to the right sectors and promoting sound economic policies by recipient countries.
Keywords: Foreign Aid, Exports, Natural Resources, Africa

1.0 Introduction

Despite recent economic growth in many countries, Africa is still by far the poorest continent. Economic growth in Cameroon and Ghana have raised per capita GDP to $2,300 and $1,600, respectively (Central Intelligence Agency, 2011). In countries such as Cameroon this growth has been recapturing lost ground, allowing the nation to finally surpass its mid-1980s income level. While many African countries have low incomes, the continent is blessed with an abundance of natural resources.

Africa has the majority of the world's cobalt, gold, platinum, tantalite, chromium and manganese (Economy Watch, 2010).Natural resources can provide tremendous wealth to a country, as it has for Botswana, whose GDP per capita is now over $13,100 (Central Intelligence Agency, 2011). Resources can also fund destructive wars as in the Congo, Sierra Leone and Sudan. For African countries to positively gain from either their natural resources or economies of scale in manufacturing they must become an exporter and have good governance. Exports can generate employment and higher income, increase government revenue to provide more services to the poor contribute to women's economic empowerment and help deal with environmental challenges. Global markets are a powerful means of addressing poverty, raising livelihoods in a sustainable manner and promoting entrepreneurship. The MDG Gap Task Force Report 2010 confirmed that trade needs to be a key driver to reaching the MDGs by the 2015 deadline (United Nations, 2010).

Consistent with being the poorest continent, Africa is also the largest recipient of foreign aid. Given the small size of many countries' economies, foreign aid can often be a sizeable percentage of their GDP and/or government national budget.For example, foreign aid accounts approximately 1/3 of Ghana's government budget (World Bank, 2012). If well-motivated and utilized, foreign aid can have a positive impact on the recipient country's development. There are however numerous objectives and motivations for giving foreign aid. They include rewarding a government for behavior desired by the donor, to provide infrastructure needed by donor for the extraction of resource from the recipient country, to gain commercial access to market, etc. Aid is often classified into bilateral or multilateral, with bilateral aid being given from one country directly to another while multilateral aidgiven through intermediaries such as the World Bank. The objectives and reasons behind aid may vary significantly between bilateral and multilateral aid. There is another layer of complexity to aid as it may be given directly to government or funneled into specific sectors.

The primary goal of this study is to determine the impact of different types of aid on the export sector in five African countries over a 38 year period. We seek to address this complex issue by examining differences based

---

on bilateral versus multilateral and sectoral versus undirected aid. Our analysis also accounts for the quality of economic policies, institutions, natural resources and several other factors. We utilize panel data methodologies with instrumental variables to account for endogeneity to test our hypotheses.

The paper proceeds with a discussion of relevant literature in the next section. This is followed by a description of the data set then an explanation of the empirical methods. The empirical results are then discussed. The paper concludes with implications for policy arising from our results.

2.0 Literature Review

There is a significant literature investigating the impact of aid in developing countries. The purpose of this literature review is not to comprehensively survey the entire literature on foreign aid, only to discuss the subset of work relevant to this paper's analysis.[2] Much of this literature focused on trying to find connections between foreign aid and economic growth. Some scholars of development economics assert that development assistance has had a negative impact on growth (Djankov, 2006).

Others such as Jempa (1991) find that foreign aid has no significant impact on the recipient macroeconomic policy or economic growth.Boone (1994, 1996) employed a correction for the endogeneity of aid and also found foreign aid to have no significant effect on investment and growth in a large sample of developing countries. Other authors have found the similar inconclusive results regarding aid and growth (Bourguignon and Sundberg, 2008; Douclouliagos and Paldam, 2007). There is, however, conflicting evidence that aid may have a positive impact (Gormanee et al, 2003; McPherson and Rakowski, 2001).

In addition to endogeneity, there are other complexities in studying the impact of aid on developing countries such as the level of aggregation and institutions. Svensson (2000) finds that disaggregating aid into sectors a more promising route in trying to identify the effects that aid can have on a developing country. Clemens et al (2004) uses sectoral aid and finds a positive short-run effect on economic growth. Institutional factors may impact the effectiveness of aid. De Long and Eichengreen (1991) argue that one of the Marshall Plan's most important long-run contributions to Western Europe was the development of sound institutions.

Burnside and Dollar (2000) find that countries with sound policies can yield positive benefits from aid while others may not. Burnside and Dollar (2000) also point to the importance of donor strategic interests in attracting aid flows. The measure of what is strategic interest has been found to vary from study to study.Mosley et al (2004), study aid and poverty reduction, and find out that conditionality eradicates moral hazard problem, and that conditionality greatly increased aid effectiveness in the presence of good policies.

Much of this significant body of literature seeking to determine the impact of aid on economic growth does not model the intermediate steps connecting these two factors. Specifically, economic growth can come from either the export or non-tradeable sectors. When testing the impact of aid on economic growth, one is actually testing the impact of aid on overall growth across all sectors. However, there is insight to be gained by delving deeper into the impact of aid on developing countries' economies. Not all sectors are equally important to growth. For example, Cali and Verde (2011) and Karingi and Leyaro (2009) both find that aid to trade assistance has a positive impact on exports. On the other hand, Pettersson (2004) found no significant difference between aid tied to sectors versus non-tied aid. Growth in the export sector is crucial for most developing countries' economic growth, especially for small African countries such as those in our sample (which lack a large domestic market). The topic of aid and exports has been widely debated. Johnson (1967) argued that aid was more effective than import absorption as a way of increasing income in developing countries. He viewed exports as an indirect way of providing assistance. He states that the only gain from exporting widgets is the ability to fund lower cost importation of other goods and that aid can be used in a much more flexible way, therefore can be applied in a manner that it will yield the greatest benefit at the margin. Thirlwall (1976) points out that one of the problems with ODA is donor country requirements on how the funds can be spent which may make it less effective. There has been empirical analysis on this issue.   For example, Yeats (1982) found that exports were more than twice as effective as aid in promoting economic growth, and that EDA had more impact than ODA. This issue is discussed further in Osborne (2002).

Considering the debates on this topic, we seek to shed light on several of these questions. This paper focuses on the debate on how aid impacts exports, multilateral versus bilateral aid, the importance of institutions and differential impacts of aid by sector. For the sake of brevity, we have omitted the theoretical model which

---

[2]Readers interested in a more general survey of the foreign aid literature are directed to de Renzio (2006) or Jensen (2008).

formalizes many of these concepts in a more mathematical manner. This model is available on request. The paper'sconceptual framework yields several empirically testable hypotheses which will be included in the next section.

3.0 Data and Variables

We use a panel data set five African countries over a 38 year time period, 1970-2008. The countries are Botswana, Cameroon, Egypt, Ghana, and Kenya. This yields a usable data set of 140 observations, although some of the analyses are run with fewer depending on the variables they use. Our first dependent variable is exports, measured in constant US dollars and then converted to logs obtained from World Development Indicators. The second dependent variable is foreign aid received, also from WDI. We have two different measures of aid. The first aid measure is termed effective aid. This is "pure aid", which consist of grants and grants component of loans, initially constructed by Chang, Fernandez- Arias, and Serven (1999). Unfortunately, this effective aid is only available from 1975-1985. The second aid measure is official aid, which is available for the entire sample. This consists of grants and loans whose grants component is at least 25% according to World Bank data.   In addition to being less grant-based than effective aid, official aid can often have conditions from donors that require recipients to use a sizable portion of the aid to import goods from the donor country. This condition of tied import purchasing is relatively common in bilateral aid but not so in multilateral aid. In addition to having total effective aid and total official aid, we also have the variables broken down into their bilateral and multilateral components.

The sectoral destinations of aid is available for official but not for effective aid. Previous papers have asserted that sectors that affect trade are in fact those sectors that address inequality in a society see Gomanee et al (2003) as well as those sectors that are likely to empower people through employment etc. We obtain official aid to sectors from www.aiddata.org for five the sectors that we wish to consider their effect on trade, the sectors are education, infrastructure, industry, agriculture and trade and business support services.

There are several control variables in the analysis. We also obtain data for gross domestic product (GDP) per capita, population, exchange rates and inflation from WDI. GDP is real purchasing power parity dollars converted to logs. Exchange rates are quoted in local currency units per U.S. dollar. We create a variable for country landlocked status by assigning a value of 2 if a country is not landlocked and 1 if a country is landlocked but uses the seaport of another. We also construct two index variables.

Construction of economic policy and institutional quality indexes

We develop government economic policy index, to capture the effect that government responses to economic conditions have on trade in a single variable. We identify inflation and trade openness as factors that capture the behavior of economic policy based on previous studies such as Burnside and Dollar (2000). At first, we included government consumption as a third factor but later dropped it as we found it to have no significant impact on trade. We utilize monetary policy (inflation) and trade variable in the presence of other variables to capture the weights that they assert on trade. We obtained inflation from World development indicator data of the World Bank and trade openness from the Penn World tables. Using a simple component approach we regress trade on inflation and openness and other variables that affect trade, using coefficients from this regression to construct the index. These regression results are available on request.

We use a similar method to contrast the institutional quality index. We start with 4 use political variables from the Cingranelli- Richards (CIRI) dataset: rate of torture, a measure of electoral self determination rate, freedom of movement and political imprisonment rate. Institutional measures such as these may be important as they represent the overall quality of governance. We regressed trade on these institutional factors and other variables that capture the effect of trade, while holding economic factors constant using a simple component approach. We use only freedom of movement and right to electoral self determination as variables in constructing our index for institutions because torture and political imprisonment have no significant effect on trade. These regression results are available on request. Descriptive statistics for the variables used in the analysis are in Table 1 below. This includes instruments which will be discussed in the next section.

Table 1. Descriptive Statistics

	Observations	Mean	Std.Dev	Min	Max
Exports (logs)	140	3.28726	0.496983	1.20546	4.31921
Bilateral EDA/GDP	72	2.6552	1.720197	0.42	10
Multilateral EDA/GDP	72	1.5724	1.571733	0.11	6.4
Bilateral ODA/GDP	72	4.014945	2.424938	0.075	11.8919
Multilateral ODA/GDP	72	1.680882	1.755894	0.0272	8.2759
Aid to Trade/GDP (logs)	127	-6.90524	1.86463	-13.2849	-3.2256
Aid to Infrastructure/GDP (logs)	140	-4.77681	1.31525	-10.0778	-2.18648
Aid to Education/GDP (logs)	140	-6.33191	1.719756	-14.8098	-2.99148
Aid to Agriculture/GDP (logs)	140	-6.14669	1.782647	-10.68	-3.45999
Aid to Industry/GDP (logs)	140	-6.85281	1.82917	-13.4101	-3.04134
Economic Policy Index	140	4.702168	0.184556	3.782375	5.159994
Institutional Quality Index	140	3.099475	0.250842	2.729761	3.472829
GDP per capita (logs)	140	13.58057	0.784441	12.3223	15.6515
Natural Resources	140	2	1.099379	0	3
Exchange rate (LCU per $)	140	1.18914	1.981658	0.0004	7.0322
Landlocked	140	1.8	0.401436	1	2
Health Access	140	74.45255	21.36998	15	99
Life Expectancy	140	56.41506	5.020723	48.231	68.408

This data set is used to address several empirically testable hypotheses. The methodologies used to test these predictions are discussed in the next section. The hypotheses tested are

H1.) The impact of aid on exports should vary based on whether it is multilateral or bilateral. There is no expected sign as there are conflicting effects. Bilateral aid suffers more from the donor's strategic interests (which may not be aligned with the recipient country's) but may be used to foster MNCs from the donor country which would be export oriented.

H2.) Effective development assistance (EDA) is expected to have a more positive impact on exports than official development assistance (ODA) because the recipient country will not be constrained by as much additional debt.

H3.) Aid focused on export promotion (extensions of trade credit, etc) or infrastructure is expected to have a positive impact on exports as these types of aid should lower exporting firms' costs.

H4.) Aid focused on education is weakly expected to have a positive impact on exports by raising the productivity of workers across sectors (including in the export sector).

H5.) Aid focused on agriculture or industry does not have an expectation regarding exports. This is because increasing industry or agriculture could also be used for supplying the domestic market.

H6.) The positive impact of aid on exports will be reduced if the country has lower quality institutions (more corruption).

H7.) The positive impact of aid on exports will be reduced if the country has lower quality economic policies.

H8.) It is expected that natural resources will affect the impact of aid on exports. However, there is no sign predicted here as there are conflicting effects. On one hand, the impact of aid on exports could be smaller for countries abundant in natural resources. In these cases, natural resources are a major export and these are less impacted by aid. On the other hand, aid might be used to finance infrastructure and other projects necessary to take advantage of the presence of natural resources, making aid and natural resources complements rather than substitutes.

4.0 Empirical Methodology

The analyses can be separated into three groupings. The first set test hypotheses 1 and 2 by examining Effective Development Assistance (EDA) and Official Development Assistance (EDA) in aggregate, multilateral and bilateral contexts. The second grouping tests hypotheses 3-5 with data on sectoral aid. The final analyses test hypotheses 6-8 through the usage of interaction variables.

All of the analyses utilize instrumental variables with random effects. As the data set is panel in nature, the choice needs to be made between fixed and random effects estimators. Fixed effects estimators are less efficient than random effects and lose all time invariant variables (as the country level fixed effect would negate them). However, random effects can produced biased results if the error terms are not orthogonal to the covariates. A Hausman specification test is run to choose between fixed and random effects. Results fall to reject the null hypothesis that the random effects estimator is not biased (p-values are all considerably higher than .10). More information on the random effects method can be found in Baltagi (2005), Baltagi and Wu (2010), and Wooldrige (2010).

The use of an instrumental variables approach is because of the endogeneity of the aid variables. A Hausman-Wu test rejected the null hypothesis that aid was exogenous, with a p-value of 0.00. Therefore, using aid as an independent variable could lead to biased results. The instrumental variables methodology is a two equation approach. In the first equation, the endogenous variable (aid) is the dependent variable. This equation is estimated and a predicted aid variable is created to use in the second (exports) equation instead of the actual values of the aid variable. One of the most important aspects of this approach is having a variable (or variables) in the aid equation which is not included in the export equation, these variables are referred to as the "instruments". Instruments should fulfill certain conditions. First, instruments should have a significant impact on the variable they are predicting, in this case the aid variable. The second condition is that the instrument should not have an impact on the dependent variable in the second equation, exports. While often this is tested empirically, Wooldridge (2010) and others have pointed out that this also needs to be done on the theoretical level as testing the impact of the instrument on the dependent variable in the second equation (exports) with a full model could be biased as the instrumental correction has not been made for the endogenous variable (aid). The third condition for testing the validity of instruments is the Sargan over-identification test which is necessary if there are more instruments than endogenous variables being estimated (which is not the case in our analysis).

We utilize two instrumental variables in the analyses. For the EDA and ODA analyses we use health access as an instrument. Life expectancy is used in the other analyses (as health access did not have a significant impact on sectoral aid). These instruments passed all tests and conditions. It is reasonable to assume that donors would consider the health of a recipient country's people in determining aid decisions. One could look at the Millennium Development Goals, World Health Organization and many other sources to find evidence that donors care about health in African countries. And first stage results in the appendix show the significant impact of the instruments on the aid variables. Also, it is unlikely from a theoretical perspective that a country's volume of exports would be directly impacted by either health access or life expectancy; the literature does not suggest this to be the case and we also did not find it in our testing of the instruments. The Sargan test is unnecessary as we are using one instrument per endogenous variable.

Effective and Official Development Assistance

The first two hypotheses tested involve the differential impact of EDA versus ODA and bilateral versus multilateral aid. This is tested using six regressions. All six of these are Generalized Least Squares (GLS) using instrumental variables and random effects. The dependent variable of interest in each case is exports. The variable being instrumented in the first three regressions are EDA (combined bilateral and multilateral), bilateral EDA, and multilateral EDA. The variables instrumented in the last three regressions are the same measurements but for ODA instead: combined, bilateral, multilateral The explanatory variables in the equations (the vector $X_{i,t}$) are lagged GDP per capita, natural resources, exchange rates, lagged economic policy index,

institutional index, landlocked, and year dummies (to take account of time effects).The instrument variable ($I_{i,t}$) is health access. The country specific random effect is $v_i$and the error term is $\varepsilon_{i,t}$. Subscripts i and t refer to country and time period, respectively. To avoid unnecessary repetition, we will show only one set of equations for the EDA and one for the ODA below. The three sets of EDA regressions and three ODA regressions involve only a change in dependent variable (bilateral, multilateral or both). The equations representing these equations are below.

(1a)$EDA_{i,t} = \alpha_0 + \alpha_1 X_{i,t} + \alpha_2 I_{i,t} + v_i + \varepsilon_{i,t}$

(1b)$Exports_{i,t} = \beta_0 + \beta_1 X_{i,t} + \beta_2 \widehat{EDA}_{i,t} + v_i + \varepsilon_{i,t}$

The ODA versions of these equations are

(2a) $ODA_{i,t} = \alpha_0 + \alpha_1 X_{i,t} + \alpha_2 I_{i,t} + v_i + \varepsilon_{i,t}$

(2b) $Exports_{i,t} = \beta_0 + \beta_1 X_{i,t} + \beta_2 \widehat{ODA}_{i,t} + v_i + \varepsilon_{i,t}$

Sectoral Aid

The second set of analyses tests the differential impact of aid based on the destination sector. There are five different sectors, each of which is a separate GLS regression with instrumental variables and random effects. The dependent variable of interest in each case is exports. The variables being instrumented in the five sets of regressions are aid to trade assistance, aid to infrastructure, aid to education, aid to agriculture and aid to industry. The explanatory variables in the equations are the same as in the EDA and ODA equations: lagged GDP per capita, natural resources, exchange rates, lagged economic policy index, institutional index, landlocked and year dummies (to take account of time effects).[3] In these cases, the instrument is life expectancy, rather than health access (as health access proved insignificant regarding sectoral aid). The country specific random effect is $v_i$and the error term is $\varepsilon_{i,t}$. Subscripts i and t refer to country and time period, respectively. The variable $AID_{j,t}$ refers to aid to sector j in country i in time t. The equations representing these regressions are

(3a) $AID_{i,t}^j = \alpha_0 + \alpha_1 X_{i,t} + \alpha_2 I_{i,t} + v_i + \varepsilon_{i,t}$

(3b) $Exports_{i,t} = \beta_0 + \beta_1 X_{i,t} + \beta_2 \widehat{AID_{i,t}^j} + v_i + \varepsilon_{i,t}$

Interactions with Policy and Natural Resources

The final set of analyses assesses how changes in institutions, economic policy and natural resources affect how aid impacts exports. This is performed through the introduction of interaction variables into the regressions utilized in the sectoral aid analyses. In each case, a regression was run with random effects GLS and instrumental variables. The predicted value for the instrumented variable (sectoral aid) was then interacted with either institutional quality, economic policy or natural resources. The second equation (with exports as the dependent variable) then included the predicted aid variable, one of the interaction variables and the other explanatory variables used in all regressions except for the in the regression with the aid*policy interaction variable included on the right hand side, the policy variable is excluded. Life expectancy was used as the instrument, similar to the sectoral aid equations previously discussed. The institutional quality interaction will not be modeled in the equations or discussed in the results section. The institutional quality interaction variable was consistently insignificant and therefore not worth including in the paper. Both the economic policy and natural resource interaction analyses also contain an interaction term for aid and GDP per capita. This interaction term is not directly of interest to our hypotheses but is meant to control for how the impact of aid on exports may change at different income levels. The equations for the regressions with the policy index and natural resource interactions are below. The interaction variable (*interact*) is aid*policy in the first set of regressions and aid*natural resources in the second set.

---

[3]The industry sectoral aid equation uses a year timetrend instead of dummies as the chi-squared was not viable with the dummies for that equation.

$$(4a) \; AID_{i,t}^{j} = \alpha_0 + \alpha_1 X_{i,t} + \alpha_2 I_{i,t} + v_i + \varepsilon_{i,t}$$

$$(4b) \; Exports_{i,t} = \beta_0 + \beta_1 X_{i,t} + \beta_2 \widehat{AID_{i,t}^{j}} + \beta_3 interact_{i,t} + v_i + \varepsilon_{i,t}$$

Results

The empirical results shed considerable light on the hypotheses. All second stage results are in the main tables with the first stage instrument equation results in the Appendix. The second stage EDA and ODA results are in Tables 2 and 3 respectively. Contrary to expectations, the effect of overall aid on exports was slightly stronger for ODA than for EDA. However, some caution should be taken with this as the ODA data was available for a larger sample (137 versus 72 observations) so that could be affecting the results. The results did not show a significant difference between bilateral and multilateral aid. For both EDA and ODA, bilateral and multilateral aid had a significant, positive impact on exports. We should note that this does not imply the same effect of bilateral and multilateral aid on "native" exporters in the recipient country. Bilateral aid which benefits MNCs from the donor country operating in the recipient country would also show up as an increase in exports. There are a few other interesting results from the ODA/EDA analyses. First, as one would expect, there does seem to be some significant positive effects on exports from having better economic policies. Institutional quality does not seem to have a significant effect on exports, at least not directly.Natural resources has a significant negative effect on exports. This suggests that relying on natural resources has not fueled export growth in these countries.

The sectoral analysis, in Table 4, provides an interesting insight into how the impact of aid varies based on destination in the economy. As expected, aid to the trade assistance and infrastructure areas has a significant positive impact on exports. Furthermore, aid to the education also has a positive, significant impact on exports. This suggests that exporters are in a position to take advantage of the higher productivity workers from the increased education expenditures. Aid destined for the agriculture and industry sectors had no significant impact on exports, either positive or negative. This does not imply that this aid is not benefiting these sectors merely that it is neither boosting nor reducing exports. The sectoral analysis also provides some evidence that good economic policy may boost exports. Natural resource is again found to be generally negative and significant.

These results regarding the impact of economic policy and natural resources naturally leads to the interaction analyses, found in Tables 5 and 6. In both the economic policy and natural resource interaction equations, we find that the aid*GDP per capita interaction term is positive and significant. This suggests that as income levels increase, aid has more of a positive impact on exports. This is logical as at very low income levels aid may be spent more on fulfilling basic needs rather than investment in export-capable operations. The aid*policy interaction variable is consistently negative and significant. This is interesting as it suggests that either better economic policy reduces the impact of aidon exports or that more aid reduces the impactof good economic policy on exports. Under either interpretation of the interaction variable, the implication is that good economic policy and aid may be substitutes. The aid*natural resources interaction term, on the other hand, finds the opposite result. The natural resource interaction variable is consistently positive and significant. This suggests that natural resources and aid are making each other more effective, that they are complements. The case for natural resources and foreign aid as complements is supported by an examination of the first stage EDA/ODA results in Table A1. These results show that the presence of natural resources has a positive impact on the amount of foreign aid received. This is also seen in the first stage results of the infrastructure sectoral aid equation in Table A2. Infrastructure is particularly important in natural resource extraction so it is not surprising that natural resources would lead to more infrastructure aid. Multilateral donors may view natural resources as an aid project with a more direct, certain payoff. And bilateral donors may have a strategic interest in funding aid going to natural resource based projects. One need only look to China's involvement across Africa to see evidence of this phenomenon.

5.0 Discussion and Conclusions

This paper's results provide some insights into the complex relationship between foreign aid and exports. The overarching goal of foreign aid is prosperity and export growth is often a path taken to achieve this goal. The statistical results suggest that donors seeking to achieve export growth in recipient countries need to better focus the destination of this aid. Beyond aid to trade assistance efforts, which one should hope would boost exports, promoting better infrastructure and education appears to have positive benefits to exporters. Infrastructure may

also be important to increasing natural resource exports. While simply having natural resources does not make a country into a major exporter (as evidenced in the analyses), this is one area where aid can make a significant impact. Indeed, results suggest that donors are attracted by the presence of natural resources and that aid is increasing the benefits of these resources to exporting. There is significant evidence supporting the notion that natural resources and foreign aid are complements, with respect to exports.

Interestedly, the paper does not support the argument that the concessionary terms of aid makes a significant difference as the EDA and ODA results are quite similar. In fact, official development assistance, which contains EDA and less concessionary loans, seems to have a slightly larger positive impact on exports than EDA alone. The paper's results also suggest that bilateral and multilateral aid have very similar positive impacts on exports. While the motives behind these types of aid may differ, both seem to increase the recipient country's exports. Of course, bilateral aid may provide more benefit to one particular country's trade relationship including the provision of natural resources.

Some additional knowledge is also gained in terms of the relationships between policy, institutions, aid and exports. There is considerable evidence that governments pursuing sound economic policies have better success as exporters. The evidence in favor of institutions is more limited; however, having good policies and institutions often goes hand in hand. So, institutions may be having an indirect effect on exports. The paper's empirical work suggests that sound economic policy and foreign aid can act as substitutes. Countries' can increase their exports through either better economic policy or the receipt of foreign aid.

This paper and its insights have direct implications on policy making on behalf of aid donors. Perhaps the most important implication is that finding that more careful thought needs to be given to the sectoral destination of foreign aid. Aid to sectors such as infrastructure and education may be of considerable benefit to exporters while others may not. There may be additional gains to funding infrastructure projects if natural resources are present; however, this may not provide a long-run high rate of export growth to the recipient country. Multilateral and bilateral donors may have far different motives for aid projects, especially involving natural resources, but their impact on aggregate exports appear to be similar. Another important implication of this paper is the importance of sound economic policy by the recipient country. Foreign aid must have a long-run goal of promoting better economic policies. Evidence suggests that better economic policies by recipient countries can replace foreign aid as a driver of exports.

Table 2. Impact of EDA on Exports

	(1)	(2)	(3)
Bilateral EDA	0.19	-	-
	(0.09)*		
Multilateral EDA	-	0.29	-
		(0.11)***	
Total EDA	-	-	0.23
			(0.14)*
Policy Index	0.81	1.17	0.62
	(0.43)*	(0.34)***	-0.59
Institution Index	0.63	0.5	0.55
	(0.37)*	(0.38)	(0.43)
Natural Resources	-0.13	-0.28	-0.25
	(0.06)**	(0.06)***	(0.07)
Exchange rate (LCU per $)	0.17	0.08	0.11
	(0.04)***	(0.04)**	(0.04)**
Landlocked	-0.75	-0.28	-0.07
	(0.26)***	(0.33)	(0.55)
GDP per capita	0.07	0.59	0.91
	(0.19)	(0.29)**	(0.67)
Chi^2 (p-value)	0.00	0.00	0.00
# of observations	72	72	72

Notes: Coefficients listed with standard errors in parentheses. *, ** and *** refers to significance at the 1%, 5% and 10% levels, respectively. First stage results in Appendix.

Table 3. Impact of ODA on Exports

	(1)	(2)	(3)
Bilateral ODA	0.09	-	-
	(0.04)**		
Multilateral ODA	-	0.24	-
		(0.09)**	
Total ODA	-	-	0.09
			(0.04)**
Policy Index	0.98	1.28	1.12
	(0.27)***	(0.24)***	(0.24)***
Institution Index	0.38	0.32	0.38
	(0.23)	(0.24)	(0.23)*
Natural Resources	-0.11	-0.21	-0.16
	(0.03)***	(0.05)***	(0.05)***
Exchange rate (LCU per $)	0.03	0.05	0.03
	(0.02)	(0.02)***	(0.02)***
Landlocked	-0.45	-0.32	0.19
	(0.21)**	(0.19)*	(0.28)
GDP per capita	0.18	0.44	0.43
	(0.15)	(0.20)**	(0.26)
Chi^2 (p-value)	0.00	0.00	0.00
# of observations	137	137	137

Notes: Coefficients listed with standard errors in parentheses. *, ** and *** refers to significance at the 1%, 5% and 10% levels, respectively. First stage results in Appendix.

Table 4 Impact of Sectoral Aid on Exports

	(1)	(2)	(3)	(4)	(5)
Aid to trade	0.15 (.05)***				
Aid to infrastructure		0.32 (.10)***			
Aid to agriculture			0.62 (.44)		
Aid to Education				0.23 (.08)***	
Aid to industry					0.68 (.73)
Natural resource	-0.10 (.03)***	-0.15 (.04)***	0.03 (.13)	-0.08 (.04)**	-0.18 (.13)
Exchange rate	0.07 (.02)***	0.02 (.02)	0.22 (0.14)	0.01 (0.02)	0.17 (.16)
Economic policy	0.82 (0.22)***	0.37 (0.30)	0.11 (.84)	0.13 (.43)	1.41* (.76)
Institutional quality	0.35* (.20)	0.52 (.22)**	-0.05 (.66)	0.28 (.29)	-0.23 (.95)
Landlocked	-1.01 (.20)***	-0.57 (.19)***	-1.13 (.55)**	-0.49 (.24)**	-1.94 (1.44)
GDP per capita	-0.04 (.08)	0.34 (.15)**	0.56 (.49)	0.21 (.15)	0.01 (.27)
Chi^2 (p-value)	0.00	0.00	0.00	0.00	0.00
# of observations	127	140	140	140	139

Notes: Coefficients listed with standard errors in parentheses. *, ** and *** refers to
significance at the 1%, 5% and 10% levels, respectively. First stage results in Appendix.

Table 5. Impact of Sectoral Aid on Exports with Policy*Aid Interaction

	Trade	Infrastructure	Agriculture	Education	Industry
Policy Index*Aid to sector	-0.13	-0.25	-0.13	-0.06	-0.16
	(.03)***	(.05)***	(.05)***	(.04)	(.04)***
GDP per capita*Aid to sector	0.78	1.39	0.98	0.46	1.03
	(.14)***	(.24)***	(.18)***	(.16)***	(.16)***
Institution Index	0.27	0.49	0.55	0.21	0.61
	(.19)	(.20)**	(.20)***	(.22)	(.20)***
Natural Resources	-0.09	-0.14	-0.05	-0.07	-0.11
	(.02)***	(.03)***	(.03)*	(.03)**	(.03)***
Exchange Rate	0.08	0.03	0.16	0.02	0.08
	(.02)***	(.01)**	(.03)***	(.02)	(.02)***
Landlocked	-1.09	-0.39	-0.45	-0.61	-0.78
	(.21)***	(.17)**	(.17)***	(.16)***	(.18)***
GDP per Capita	-0.09	0.27	0.49	0.10	0.16
	(.07)	(.11)**	(.17)***	(.09)	(.09)*
Chi^2 (p-value)	0.00	0.00	0.00	0.00	0.00
# of observations	127	140	140	140	140

Notes: Coefficients listed with standard errors in parentheses. *, ** and *** refers to significance at the 1%, 5% and 10% levels, respectively.

Table 6. Impact of Sectoral Aid on Exports with Natural Resource*Aid Interaction

	Trade	Infrastructure	Agriculture	Education	Industry
Policy Index*Aid to sector	0.01	0.03	0.01	0.01	0.02
	(.004)***	(.007)***	(.01)**	(.005)***	(.005)***
GDP per capita*Aid to sector	0.14	0.13	0.30	0.18	0.24
	(.05)***	(.07)**	(.11)***	(.07)**	(.09)***
GDP per capita	-0.07	0.21	0.43	0.14	0.15
	(.07)	(.12)*	(.17)***	(.09)	(.09)
Institution Index	0.30	0.53	0.54	0.24	0.60
	(.20)	(.20)**	(.20)***	(.23)	(.20)***
Policy Index	0.85	0.96	0.77	0.22	0.97
	(.22)***	(.22)***	(.24)***	(.37)	(.22)***
Exchange Rates	0.07	0.03	0.14	0.01	0.08
	(.02)***	(.01)**	(.03)***	(.02)	(.02)***
Landlocked	-1.14	-0.49	-0.52	-0.59	-0.84
	(.22)***	(.17)***	(.17)***	(.16)***	(.18)***
Chi^2 (p-value)	0.00	0.00	0.00	0.00	0.00
# of observations	127	140	140	140	140

Notes: Coefficients listed with standard errors in parentheses. *, ** and *** refers to significance at the 1%, 5% and 10% levels, respectively.

Appendix

All of the results shown in the body of the paper are for the second stage of the regression, as exports is the primary focus of the paper. However, as some readers may find the first stage results of interest (as it models factors impacting the receiving of aid), they are included here below. The first stage results for the interaction regressions are the same as the sectoral aid first stage. In the interests of brevity, t-statistics are shown in the tables below rather than the full coefficients and standard errors. Those are available on request.

Table A1. First Stage: EDA Regressions

	Bilateral EDA	Multilateral EDA	Total EDA
Health Access	0.06	0.01	0.05
	(.02)**	(.02)	(.03)*
Policy Index	1.22	0.64	1.92
	(1.52)	(1.06)	(1.85)
Institution Index	-0.83	0.49	-0.37
	(1.58)	(1.10)	(1.92)
Natural Resources	0.49	0.42	0.91
	(.37)	(.26)	(.45)**
Landlocked	-0.04	-3.03	-3.08
	(1.11)	(.77)	(1.34)**
GDP per capita	-1.94	-3.39	-5.33
	(.61)***	(.43)***	(.74)
Chi^2 (p-value)	0.00	0.00	0.00
# of observations	72	72	72

Notes: Coefficients listed with standard errors in parentheses. *, ** and *** refers to

significance at the 1%, 5% and 10% levels, respectively. First stage results in Appendix.

Table A2. First Stage: ODA Regressions

	Bilateral ODA	Multilateral ODA	Total ODA
Health Access	0.06 (.02)***	0.03 (.01)***	0.06 (0.02)***
Policy Index	0.92 (1.37)	-1.88 (.85)**	-0.64 (1.81)
Institution Index	0.54 (1.27)	0.47 (.77)	0.52 (1.68)
Natural Resources	0.57 (.21)**	0.65 (.14)	1.20 (0.27)***
Landlocked	-2.14 (1.00)**	-1.56 (.59)	-5.09 (1.32)***
GDP per capita	-3.51 (.44)***	-2.47 (.28)***	-6.46 (.59)***
Chi^2 (p-value)	0.00	0.00	0.00
# of observations	137	137	137

Notes: Coefficients listed with standard errors in parentheses. *, ** and *** refers to
significance at the 1%, 5% and 10% levels, respectively. First stage results in Appendix.

Table A3. First Stage:Sectoral Aid egressions

	Aid to Trade	Aid to Infrastructure	Aid to Agriculture	Aid to Education	Aid to Industry
Life Expectancy	0.17 (.04)***	0.08 (.12)***	0.06 (.03)*	0.14 (.03)***	0.03 (.04)
Policy Index	-0.23 (1.15)	1.78 (.67)**	0.47 (.88)	2.51 (1.03)**	-0.43 (1.09)
Institution Index	0.95 (1.07)	0.07 (.62)	1.14 (.82)	1.38 (.96)	0.86 (1.03)
Natural Resou.	0.001 (.15)	0.14 (.09)	-0.20 (.11)*	-0.10 (.13)	-0.13 (.14)
Landlocked	-0.52 (1.00)	-1.33 (.55)**	0.27 (.72)	-2.41 (.85)	1.48 (1.00)
GDP per capita	-1.47 (.41)***	-1.81 (.23)***	-1.50 (.31)***	-1.94 (.35)***	-0.32 (.38)
Chi^2 (p-value)	0.00	0.00	0.00	0.00	0.97
# of observation	132	140	140	139	140

Notes: Coefficients listed with standard errors in parentheses. *, ** and *** refers to significance at the
1%, 5% and 10% levels, respectively. First stage results in Appendix.

References

Baltagi, B.H. 2005.*Econometric Analysis of Panel Data.*3rd edition. New York: John Wiley and Sons.

Baltagi, B.H., and Wu, P.X. 1999. "Unequally Spaced Panel Data Regressions with AR(1) Disturbances." *Econometric Theory,* 15:814-823.

Boone, P. 1994. *The impact of foreign aid on savings and growth*. Mimeo, London School of Economics.

Boone, P. 1996. "Politics and the effectiveness of foreign aid."*European Economic Review,* 40:289–329.

Bourguignon F. and Sundberg M. 2008 "Aid Effectiveness – Opening the Black Box".*American Economic Review*, 97(2) pp. 316 – 321

Burnside C. and Dollar D., 2000."Aid, Policies and Growth".*American Economic Review*, 90 (4), pp. 847 - 868.

Cali, M. and D. W. Velde. 2011. "Does Aid For Trade Really Improve Trade Performance?",*World Development,* 39(5):725-740.

Central Intelligence Agency.2011. *CIA World Factbook, 2011.*Accessed online February 11, 2012 at http://cia.gov/library/publications/the-world-factbook.

Chang, C. C.; Fernandez-Arias, E., and Serven, L. 1999.*Measuring Aid Flows: A New Approach*. Washington: World Bank, Development Economics Research Group.

Clemens, M.A.; C.J. Kenny & T.J. Moss. 2004. *The trouble with the MDGs: confronting expectations of aid and developments success*. Working Papers no. 40. Center for Global Development.

De Long, B. and B.Eichengreen.1991. "The Marshall Plan: History of the Most Successful Structural Adjustment Program", NBER Working Paper 3899.

De Renzio, Paolo. 2006. "Aids, Budgets and Accountability: A Survey Article" *Development Policy Review,* 24(6): 627-645.

Douclouliagos H. and Paldam M., 2007 "A meta-analysis of development aid allocation: The effects ofIncome level and population size" University of Arhus Denmark Working Paper.

Djankov et al., 2006. "Does Foreign Aid Help?" *Cato Journal*, 26 (1): 1-28.

Easterly W., 2003. "Can Foreign Aid Buy Growth?" *Journal of Economic Perspective* 17 (3) pp. 23 – 48

EconomyWatch. 2010. *Africa Economy*, accessed online February 28, 2012 at http://www.economywatch.com/world_economy/africa/

Gormanee, K., Morrissey, O., Mosley, P. and A.Verschoor. 2003. "Aid,Pro-Poor Government Spending, and Welfare."*CREDIT Research Paper.*No 03/03.

Jempa, C.1991. *The Tying of Aid,* OECD Development Center, Paris

Jensen, T.M. 2008. *How Does Aid Work? A Literature Review of Aid Effectiveness and Welfare Studies.*DIIS Working Paper, 2008/29.

Johnson, H. G. 1967. Economic Policies toward Less Developed Countries.Washington: Brookings Institution.

Karingi, S.N. and V. Leyaro. 2009. "Monitoring Aid for Trade in Africa: An Assessment of the Effectiveness of the Aid for Trade." *African Trade Policy Centre,* Working Paper No.83.

Knack S., 2001. "Aid Dependence And The Quality of Governance: Cross Country Empirical Test". *Southern Economic Journal*

McPherson, M.F. and T. Rakovski. 2001. "Understanding the Growth Process in Sub-Saharan Africa: Some Empirical Estimates," *African Economic Policy Discussion Paper*.

Morrissey O., Osei R., McGillvray M., Lloyd T., 1992. "Investigating the Relationship between Aid and Trade Flows". A CREDIT (Centre for Research in Economic Development and International Trade) Research Paper, 38 (10), pp

Morrissey O., Osei R., Lloyd T., 2004. "The Nature of Aid and Trade Relationships". European *Journal of Economic Research*, 16 (2), pp. 354 -374.

Mosley P., Hudson J., Vershoor A., 2004. "Aid Poverty Reduction and The New Conditionality". *The Economic Journal*, 114(496), pp. 217- 243.

Osborne E., 2002. "Rethinking Foreign aid" *Cato Journal*. 22(2): 297-316.

Pettersson J., 2004. "Foreign Sectoral Aid Fungibility, Growth, and Poverty Reduction".*Journal of Economic Literature*, 68(2), pp. 310- 329

Svensson J., 2000. "When Is Foreign Aid Policy Credible? Dependence and Conditionality" *Journal of Development Economics*, 61(2000), pp. 61- 84.

Thirlwall, A. P. 1976. "When Is Trade More Valuable than Aid?" *Journal of Development Studies* 13: 35–41.

United Nations, 2010.*MDG Gap Task Force Report: The Global Partnership for Development at a Critical Juncture,* United Nations: New York.

Wooldridge, J.M. 2010.*Econometric Analysis of Cross Section and Panel Data,* MIT Press: Cambridge, MA.

World Bank. 2012. *World Development Indicators*. Accessed online February 11, 2012 at http://data.worldbank.org.

Yeats, A. 1982. "Development Assistance: Trade vs. Aid and the RelativePerformance of Industrial Countries." *World Development* 10: 863–69.

The IISTE is a pioneer in the Open-Access hosting service and academic event management. The aim of the firm is Accelerating Global Knowledge Sharing.

More information about the firm can be found on the homepage:
http://www.iiste.org

CALL FOR JOURNAL PAPERS

There are more than 30 peer-reviewed academic journals hosted under the hosting platform.

Prospective authors of journals can find the submission instruction on the following page: http://www.iiste.org/journals/ All the journals articles are available online to the readers all over the world without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself. Paper version of the journals is also available upon request of readers and authors.

MORE RESOURCES

Book publication information: http://www.iiste.org/book/

IISTE Knowledge Sharing Partners

EBSCO, Index Copernicus, Ulrich's Periodicals Directory, JournalTOCS, PKP Open Archives Harvester, Bielefeld Academic Search Engine, Elektronische Zeitschriftenbibliothek EZB, Open J-Gate, OCLC WorldCat, Universe Digtial Library , NewJour, Google Scholar