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THE EFFECTS OF FOREIGN DIRECT INVESTMENT AND OFFICIAL

DEVELOPMENT ASSISTANCE ON THE HUMAN DEVELOPMENT INDEX IN

AFRICA



A Thesis Presented

by

CHRISTINA R. TAMER



Submitted to the Office of Graduate Studies,
University of Massachusetts Boston,
in partial fulfillment of the requirements for the degree of

MASTER OF BUSINESS ADMINSTRATION



August 2013



Graduate Management Program

THE EFFECTS OF FOREIGN DIRECT INVESTMENT AND OFFICIAL

DEVELOPMENT ASSISTANCE ON THE HUMAN DEVELOPMENT INDEX IN

AFRICA


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ABSTRACT


THE EFFECTS OF FOREIGN DIRECT INVESTMENT AND OFFICIAL

DEVELOPMENT ASSISTANCE ON THE HUMAN DEVELOPMENT INDEX IN

AFRICA


August 2013

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Directed by Associate Dean Arthur Goldsmith

Africa is a changing continent. Although it is home to some of the world's most

impoverished nations, over the last ten years Africa has seen tremendous economic

growth and many organizations contributing to this change. International development

organizations and governments alike are seeking the best ways in which to accelerate

these accomplishments to achieve the Millennium Development Goals. As such, this

study seeks to update the literature on the effects that two of the largest foreign funding

mechanisms have on the development of the continent. Foreign direct investment (FDI)

inflows to the continent reached $42 billion dollars in 2011, while official development

assistance (ODA) amounted to approximately $50 billion. FDI, however, has seen rapid

growth since the early 2000s, while ODA has been climbing slowly since post-World

War II.

The study examines the effect that both FDI and ODA have on the United Nations Development Programme's Human Development Index. It finds significant differences between Low-income countries in Africa and Lower-middle, Upper-middle, or High income countries in Africa, as classified by the World Bank. In Low-income countries, ODA has a negative effect on the HDI, while FDI has an ambiguous effect. On the other hand, in Lower-middle, Upper-middle, or High income countries, FDI has a positive and significant impact on the HDI, while ODA's impact is negative. The results indicate that FDI has been more effective in achieving development, while Low-income countries require internal changes to benefit more from foreign capital of any type.

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CHAPTER 1

INTRODUCTION


Africa is a rapidly changing continent. Home to some of the globe's fastest

growing economies, the youngest population, and a booming private sector, much of the

literature and statistics on Africa have become outdated in the last decade. Annually,

almost $100 billion dollars flow in to the continent from foreign governments or

investors in the form of Official Development Assistance and Aid (ODA) and Foreign

Direct Investment (FDI).

ODA "consists of disbursements of loans made on concessional terms (net of

repayments of principal) and grants by official agencies of the members of the

Development Assistance Committee (DAC), by multilateral institutions, and by non-

DAC countries to promote economic development and welfare in countries and territories

in the DAC list of ODA recipients," (World Bank, 2013). ODA consists of three types of

capital: grants, concessional loans, and contributions to multilateral institutions including

the United Nations, the World Bank, the International Monetary Fund, and regional

development banks (Soubbotina, 2000).

"Official aid alone will not be adequate for funding efforts to accelerate economic growth and poverty alleviation and other Millennium Development Goals (MDGs) in Africa," (Ratha, Mohaptra, and Plaza, 2008, p. 2). As such, this study includes FDI as a primary independent variable in addition to ODA. Much of the literature indicates that it will be an important resource for Africa in order to meet development goals. This is explored further in the literature review.

FDI "are the net inflows of investment to acquire a lasting management interest (10 percent or more of voting stock) in an enterprise operating in an economy other than that of the investor. It is the sum of equity capital, reinvestment of earnings, other long-term capital, and short-term capital as shown in the balance of payments," (World Bank, 2013). FDI has grown on average 17% per year over the last 10 years, even when accounting for dramatic decline after the Global Financial Crisis. ODA, on the other hand, has grown at about 10% per year over the last 10 years. FDI is becoming a more popular and more common source of foreign capital for African governments.

With the United Nation's Millennium Development Goals (MDGs) to halve poverty drawing near the 2015 deadline, non-governmental organizations, development banks, development institutions, and governments are seeking to diversify their capital offerings and optimize them for results. As such, it's pertinent to understand the impact both FDI and ODA have on development and poverty alleviation in the African context, where over 400 million people continue to live in extreme poverty despite recent economic advances.

The goal of the study is to better understand the impact of each capital source and improve the decision-making of investors, development agencies, multilateral institutions, and other programs focused on providing capital to African nations. In the case of development agencies and other mission-driven organizations, improved decision-making for funding can create more successful program outcomes. For investors, improved decision-making can help companies enjoy the benefits of profitability and positive stakeholder impact. Furthermore, the results will also provide insight for African governments seeking to better understand what internal factors can increase the nation's ability to reap any benefits associated with FDI and ODA inflows.

The research questions are:

1. Does FDI increase development in Africa?

2. Does ODA increase development in Africa?

3. Are there differences in development outcomes based on national income classifications?

For the purposes of this study, poverty alleviation is synonymous with increases in development, both economic and human. These questions seek to understand the effects of FDI and ODA's impact on poverty alleviation and development increases, as measured by changes in the United Nation Development Programme's (UNDP) Human Development Index (HDI). The HDI is a composite, "single statistic which serves as a frame of reference for both social and economic development," according to the UNDP. It is a "new way of measuring development by combining indicators of life expectancy, educational attainment and income," (United Nations Development Programme, 2011).

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The study uses the UNDP's measurement of HDI as a proxy for development for many reasons. There have been previous studies on FDI and ODA's effects on development in Africa, but few have used the HDI. A study by Bezuidenhout (2009) analyzed the impact of FDI and ODA on development, but used GDP growth as a proxy. Due to income disparity, this is likely an unsuitable reflection of development in Africa, especially at the bottom of the economic pyramid. Bezuidenhout did not find significant results with regard to ODA's impact on GDP growth, but found that FDI has a negative impact on GDP growth (2009).

Masud and Yontcheva studied the effects of ODA in 2005, but used literacy and infant mortality as dependent variables. They found that ODA, when separated as NGO aid, reduces infant mortality (Masud and Yontcheva, 2005). Their results on ODA's impact on illiteracy were inconclusive. This does not provide enough insight in order to make a conclusive statement on ODA's impact on development. Further, the analysis was not exclusive to Africa.

The HDI, which captures quality of life, access to knowledge, and the standard of living, is an improved composite measure for all three of the dependent variables used by Bezuidenhout (2009) and Masud and Yontcheva (2005). The study conducted by Gohou and Soumaré was the first to use the UNDP's HDI as the dependent variable, however they did not include ODA data (2011). This thesis seeks to build on each of these by using FDI, ODA, and HDI data by contributing new findings to the literature.

This thesis addresses the following research question: Do FDI and ODA increase development in Africa, and how does the influence vary by national income

classification? The analysis tests the effects of the independent variables – FDI and ODA – on the dependent variable, a composite measure of development status, the UNDP's HDI. The thesis progresses with a detailed review of the relevant literature on FDI and ODA in the African context as well as reasoning for using the HDI. A description of the method and sample follows. Finally, a presentation of the results precedes the discussion of implications for practice, along with limitations of the study and suggestions for future research.

CHAPTER 2

LITERATURE REVIEW

*Africa: A Changing Continent*

In the past, researchers have analyzed the effects of foreign direct investment

(FDI) and official development assistance (ODA) independently on poverty reduction.

Few focus specifically on Africa, a continent that "remains underresearched" (Asiedu,

2004). Due to the speed at which the continent is growing and changing economically,

any existing research regarding development has become outdated over the last five to

ten years. For this reason, the study focuses specifically on FDI and ODA's impact on

development and poverty alleviation in Africa alone.

The continent as a whole has experienced astounding GDP growth rates: "a third

of countries in the region will be growing at or above six percent," (Chuhan-Pole*,*

Angwafo, Buitano, Dennis, Korman, and Sanoh, 2012). The International Monetary Fund

predicts that African nations will claim seven of the ten fastest growing economies

throughout the next decade (The Economist, 2011).

In addition to unprecedented economic growth, there are trends in culture and

business that affect the way the continent receives and uses foreign capital. Globalization,

privatization, and the liberalization of trade are trends in business that have dramatically increased the flow of FDI into the continent (Asiedu, 2004). An exceptional example is the rapid growth of the information and communication technology sector, largely due to the privatization of the industry. Since 2002, mobile phones per 100 inhabitants in Africa have increased from two to almost sixty by 2011 (World Bank, 2013).

The population is not only growing, but also shifting. By 2040, there will be 1.1 billion Africans of working age and 50% of the total population will be living in cities by 2030 (Roxburg, Dörr, Leke, Tazi-Riffi, van Wamelen, Lund, Chironga, Alatovik, Atkins, Terfous, Zeino-Mahmalat, 2010). As citizens move out of rural areas and away from agrarian lifestyles, employment in the industry and service sectors will rise and likely propel many families to middle class status.

The growing middle class market segment represents a potential spending power of $1.4 trillion by 2020, up from $860 billion in 2008 (Roxburg, *et al.*, 2010), piquing global interest in both public and private sectors. Telecommunications companies and consumer packaged goods retailers are eager to compete for a sizable portion of the potential market. Famously, Nokia and Coca-Cola are two of the best-recognized brands on the continent (Ledgard, 2011). Global consumer packed goods companies like Nielsen and IRI are competing to get a share of the consumer data and are investing heavily to do so.

*Looking Ahead*

Many global organizations are prioritizing poverty alleviation in Africa over the next decade. In 2001, the United Nations announced the Millennium Development Goals, which galvanize "unprecedented efforts to meet the needs of the world's poorest," (United Nations, 2001) with a set of eight time bound targets. The targets include the reduction of "poverty, hunger, disease, and lack of adequate shelter and exclusion – while promoting gender equality, health, education, and environmental sustainability," (United Nations, 2001). They are unlike any previous efforts to meet the needs of the world's poorest citizens and combine resources to do so effectively. The overarching goal is to: "Halve, between 1990 and 2015, the proportion of people whose income is less than $1 a day," (United Nations, 2001).

African leaders banded together in 2001 to launch NEPAD, the New Partnership for African Development, "to pursue new priorities' and approaches to the political and socio-economic transformation of Africa," (NEPAD, 2001; Asiedu, 2004). One of the primary objectives of NEPAD is to promote the private sector and foreign direct investment.

With these ambitious goals and initiatives laid out for the next decade, policy makers, investors, and donors are still speculating on what capital sources will have the biggest impact in Africa. In fact, much of the literature presents conflicting findings on the impact of various capital sources on African development. This research will focus on the impact of FDI and ODA on human development. These two capital sources are the main forms of financial flows to developing countries (Soubbotina, 2000).

*Foreign Direct Investment and Official Development Assistance in Africa*

For many decades, ODA was the primary source of capital that development agencies provided to developing countries. However, there has been a lack of obvious progress along with strong scrutiny of the use and management of aid dollars. Therefore, development agencies are looking to diversify how their dollars are spent, especially in Africa. National development aid organizations, as well as non-governmental organizations and multilateral organizations, are reconsidering traditional aid and development assistance and are diversifying their capital offerings, particularly with investment in the private sector. For example, members of the Inter-American Development Bank, such as the Multilateral Investment Fund and the Inter-American Investment Group, have been established to make direct equity investments in private business (Inter-American Development Bank, 2013).

In addition to the desire for diversification, an overall increase in capital is needed for the achievement of the Millennium Development Goals to be feasible. In order to halve poverty in Africa, NEPAD predicts that 7% annual growth in the region's GDP is required from 2001. Unfortunately, despite some impressive economic growth in some individual nations, the region as a whole is not growing fast enough. As such, there is a resource gap of 12% of the continent's GDP, about $64 billion, that is preventing the possibility of halving poverty by 2015 (NEPAD, 2001). It is predicted that much of that resource gap will be filled with foreign direct investment capital flows (Asiedu, 2004).

FDI brings many benefits, and due to its increasing presence in the African economy, will be a key player in Africa's economic growth. On the other hand, ODA,

popular since the 1970s, has slowly climbed over the past four decades but now risks

being outpaced by FDI permanently. See Figure 1 to compare the growth of the capital

flows since 1970.

*Figure 1: Foreign Direct Investment and Official Development Assistance and Aid to Africa, 1970-2011*
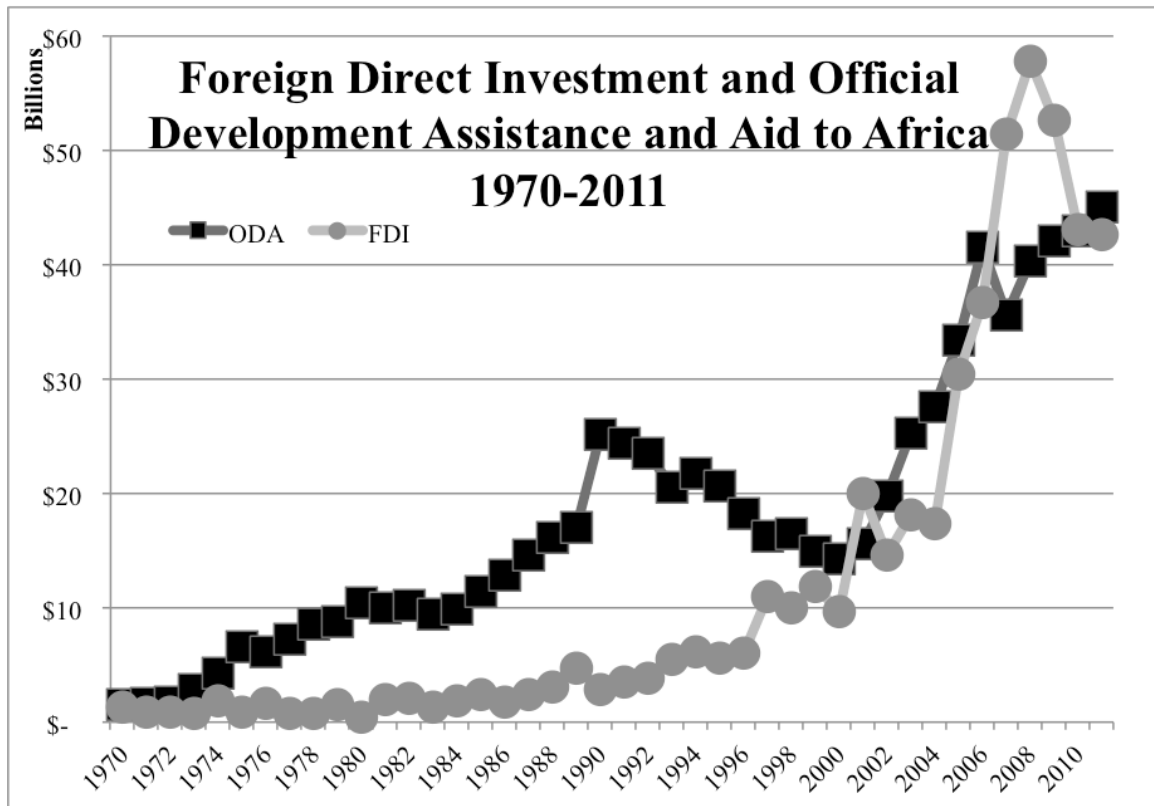


Official Development Assistance

ODA has been the "main source of external financing for developing countries"

since World War II (Soubbotina, 2000). For context, it's important to note that grants

make up the majority of aid capital flows (Soubbotina, 2000). This capital source

represents the contributions of public governments around the world to developing

countries. ODA inflows to Africa have been increasing slowly, almost reaching $50 billion in 2010 (World Bank, 2013).

Aid dollars are subject to scrutiny due to the reputation for corruption in recipient countries. Some say that ODA has largely been ineffective and has left billions remaining in abject poverty. The misallocation and misuse of development assistance funds is often the culprit. In recent decades, tying arrangements were introduced to prevent mismanagement. Tying arrangements are sets of conditions, such as those that require "recipients to purchase goods and services from the donor country or from a specific group of countries," (Soubotina, 2000). However, this "may reduce the value of aid if the arrangements are motivated by a desire to benefit suppliers of certain countries and that may prevent recipients from buying at the lowest price," (Soubbotina, 2000).

With a large number of caveats tied to ODA inflows, its effectiveness has been the topic of a number of studies. The literature finds conflicting evidence on the macroeconomic impact of ODA on economic and human development, and the literature is further muddied by the employment of different measurements for development gains or poverty reduction.

For example, the IMF published a study on the effects of official development assistance on infant mortality and literacy as proxies for human development (Masud and Yontcheva, 2005). Masud and Yontcheva found that ODA has no significant impact on gains in literacy, while some forms of segmented ODA reduce infant mortality in developing countries around the world (2005). On the other hand, Alvi and Senveta (2011) studied developing countries in different regions and found that "foreign aid is

associated with a decline in poverty as measured by the poverty rate." Unfortunately, poverty rate data are inconsistently available and are arguably a subjective measure. Meanwhile, Bezuidenhout found that ODA has no impact on GDP growth in Southern Africa (2009). A similar issue exists in the literature concerning FDI, which is discussed in the following section.

<u>Foreign Direct Investment</u>

Many agree that FDI will be crucial to the development of the African region. It "serves as a source of capital, stimulates domestic investment, creates employment, promotes the transfer of technology and enhances economic growth," (Asiedu, 2004). NEPAD considers FDI "an essential component of a sustainable long-term approach to filling the resource gap," (2001). Given the rapid rate of change and growth in Africa, there is a lot of promise for the continued increase of FDI. As mentioned before, the private sector is becoming increasingly interested in this new, multi-billion dollar market.

The data shows that FDI net inflows to Africa have doubled in the last five years. They are unlikely to slow down. It is important to note that there is an emerging trend that bodes well for an increase in net inflows of FDI to Africa. Investors, including development finance institutions and high-net worth individuals, are turning to market-based solutions on the principle that decades of donor aid has still left billions of people in abject poverty. J.P. Morgan deems "impact investing" to be "a new asset class," focused on both social and financial returns. Impact investing contributes to the inward flow of foreign direct investment.  J.P Morgan predicts that institutional and individual

investors will contribute 5-10% of their investment portfolios to impact investments over the next decade, (Saltuk, Bouri, and Leung, 2011). Within impact investing, Africa is the second largest recipient market, behind the United States (Saltuk, Bouri, and Leung, 2011).

However, just as with ODA, the research on the effectiveness of FDI is conflicting, frequently finding that certain conditions are necessary in order to allow effectiveness. Gohou and Soumaré found that FDI positively impacts development as measured by the HDI and as GDP per capita in Africa (2011). Bezuidenhout's results show the opposite: that FDI has a negative impact on growth in Southern Africa (2009). Lensink and Morrisey's results showed that FDI has a negative impact on GDP per capita growth, but the results were not robust nor did they focus exclusively on Africa (2006).

Measuring Development: Human Development Index

This study, as those before it, examines effects that FDI and ODA have on poverty reduction and development gains. However, many previous studies are conflicting in their measurements of development, and few have looked at ODA and FDI together in the pan-African context.

Some studies have examined the effects of capital on GDP growth. While a growing GDP per capita is a positive sign, it indicates economic growth rather than development and the achievement of poverty alleviation. The poverty headcount seems to be a logical substitute; however the data are few and prevent a robust study. Human development indicators are a better measure of the impact of the capital sources on

poverty, but employing them separately can lead to conflicting results (Masud and Yontcheva, 2005).

The Human Development Index (HDI) is a composite statistic designed by the United Nations Development Programme to measure the social and economic development of a country based on life expectancy, educational attainment, and income (UNDP, 2012). "The HDI sets a minimum and maximum for each dimension, called goalposts, and then shows where each country stands in relation to these goalposts, expressed as a value between 0 and 1," (UNDP, 2012). The statistic reflects GDP per capita, life expectancy at birth, adult literacy rates, and the combined gross educational enrollment ratio at the primary, secondary, and tertiary levels (UNDP, 2012). It's a statistic that is widely accessible and captures development beyond narrow economics.

*Building on Previous Work*

As described above, there are many studies that examine the effectiveness of ODA and FDI. The results of previous work are largely inconclusive and often carry a number of stipulations dependent on data. There are many studies on the effects of FDI and ODA on developing economies around the world, but very few that focus on the empirical effects in Africa alone. Finally, to the best of the author's knowledge, none compares both FDI and ODA in the context of the Human Development Index.

The key takeaway from this research will be recommendations for those looking to deploy capital to emerging African countries. Currently, there is no side-by-side comparison of the macroeconomic effects of FDI and ODA in Africa. This research will

close that gap and provide conclusions for the effectiveness of both public and private

sector funding solutions that promote economic development.

CHAPTER 3


DATA AND METHODOLOGY


The World Bank's African Development Indicators, the Human Development

Report of the UNDP, the United Nations Conference on Trade and Development, and the

Freedom House are the main data sources for this research to perform panel regression

analyses.

*Sample*

The sample is an unbalanced panel data set. It includes data for 52 African

countries for the years ranging from 1980-2011. The data are divided into two groups,

based on the World Bank's Income Classification Rankings as of June 30, 2012. Due to

the lower levels of development on the African continent, the countries are split into two

groups in order to maintain significance in the data. Twenty-six of the countries in the

sample are classified as Low-income, meaning that Gross National Income (GNI) per

capita is $1,025 or less as of 2012. The remaining portion of the sample are Lower-

middle-income, Upper-middle income, and in the case of Equatorial Guinea, High

income, all with GNI per capita of $1,206 or greater as of 2012 (World Bank, 2012).

Table 1 shows each of the countries in the sample.

| Table 1: Countries in the Sample, Shown by World Bank Income Group as of 2012 | | | |
|---|---|---|---|
| **Group 1 (GNI per capita $1,025 or less)** | | **Group 2 (GNI per capita $1,026 or greater)** | |
| **Country** | **World Bank Income Group (2012)** | **Country** | **World Bank Income Group (2012)** |
| Benin | Low | Cameroon | Lower-middle |
| Burkina Faso | Low | Cape Verde | Lower-middle |
| Burundi | Low | Congo, Rep. | Lower-middle |
| Central African Republic | Low | Cote d'Ivoire | Lower-middle |
| Chad | Low | Dijbouti | Lower-middle |
| Comoros | Low | Egypt, Arab Rep. | Lower-middle |
| Congo, Dem. Rep. | Low | Ghana | Lower-middle |
| Eritrea | Low | Lesotho | Lower-middle |
| Ethiopia | Low | Morocco | Lower-middle |
| The Gambia | Low | Nigeria | Lower-middle |
| Guinea | Low | Sao Tome & Principe | Lower-middle |
| Guinea-Bissau | Low | Senegal | Lower-middle |
| Kenya | Low | Sudan | Lower-middle |
| Liberia | Low | Swaziland | Lower-middle |
| Madagascar | Low | Zambia | Lower-middle |
| Malawi | Low | Algeria | Upper-middle |
| Mali | Low | Angola | Upper-middle |
| Mauritania | Low | Botswana | Upper-middle |
| Mozambique | Low | Gabon | Upper-middle |
| Niger | Low | Libya | Upper-middle |
| Rwanda | Low | Mauritius | Upper-middle |
| Sierra Leone | Low | Namibia | Upper-middle |
| Tanzania | Low | Seychelles | Upper-middle |
| Togo | Low | South Africa | Upper-middle |
| Uganda | Low | Tunisia | Upper-middle |
| Zimbabwe | Low | Equatorial Guinea | High |
| N.B. South Sudan and Somalia have been omitted due to insufficient data. | | | |

| *Table 2: Variable abbreviations, descriptions, and data sources* | | |
|---|---|---|
| **Variable Abbreviation** | **Variable Description** | **Data Source** |
| *Dependent Variable* | | |
| hdi | Human Development Index | United Nations Development Program |
| *Independent Variables* | | |
| fdi | Foreign Direct Investment in current USD at current exchange rates | United Nations Conference on Trade and Development |
| pop | Country population, total | World Bank African Development Indicators |
| fdipop | Calculated by dividing fdi by the respective population | Calculated with UNCTAD and World Bank data |
| aid | Net official development assistance and official aid received (current US$) | World Bank African Development Indicators |
| aidpop | Calculated by dividing aid by the respective population | Calculated with World Bank data |
| fdigdp | FDI calculated as a ratio of GDP (current USD) | Calculated with UNCTAD and World Bank data |
| aidgdp | Aid calculated as a ratio of GDP (current USD) | Calculated with World Bank data |
| *Control Variables* | | |
| debtgdp | Debt outstanding and disbursed, Total to GDP (% of GDP) | World Bank African Development Indicators |
| govspend | General government final consumption expenditure/GDP (both current US) | World Bank African Development Indicators |
| inflation | Inflation, GDP deflator (annual %) | World Bank African Development Indicators |
| phone | Fixed and mobile subscribers per 100 inhabitants | World Bank African Development Indicators |
| open | Imports + Exports / GDP | World Bank African Development Indicators |
| credit | Domestic credit to private sector (% of GDP) | World Bank African Development Indicators |
| pr | Political rights | Freedom House |
| cl | Civil liberties | Freedom House |

Table 2 describes each of the variables, including the data source or how it was calculated as well as the abbreviation used for each.

Dependent Variable

The main dependent variable employed in this study is the UNDP's Human Development Index (HDI). As mentioned above, it is a composite statistic developed by the UNDP to capture the income, life expectancy, and educational attainment of individual nations. Poverty incidence data is not used due to the low number of observations available from the World Bank. By employing a lag on the HDI variable, the results show the effect that FDI and ODA in their various forms have over time. It is reasonable to expect that impact would not be reflected in the data in the same year that the capital entered the respective country.

Independent Variables

To accurately capture the effects of FDI and ODA on the HDI, two different variables are employed for each:

- FDI flows per capita

- FDI as a percentage of GDP

- ODA flows per capita

- ODA as a percentage of GDP

This is consistent with the methodology used in previous literature.

While inflows of FDI and ODA create an impact on an individual nation's economy, there are several other factors that impact HDI. Using control variables in a multiple regression analysis will reduce the risk for omitted variable bias and provide more accurate insight into the effects that FDI and ODA have on national development.

First, individual national economies have a significant impact on the welfare of the people. To control for this, the regression includes the following economic and policy variables. As specified by Gohou and Soumaré, "citizens' basic needs are principally ensured by government spending," (2011). This is captured in the variable for government expenditure as a percentage of GDP ("govspend") and it is expected that this capital source will positively impact the HDI. On the contrary, the ratio of national debt as a percentage of GDP ("debtgdp") is expected to have a negative impact on welfare as high levels of debt constrain internal spending. Inflation is also used to capture volatility, and it is expected that high levels of inflation will negatively impact the HDI.

In addition, good infrastructure generally improves national welfare and living conditions. The best-known change in African infrastructure over the last decade has been the massive surge in mobile phone subscribers. To control for infrastructure gains, the study employs a variable for the log of mobile phone subscribers per 100 inhabitants ("logphone"), which is expected to positively impact the HDI. Although kilometers of paved roads per 100 inhabitants and internet subscribers per 100 inhabitants capture infrastructure, a single infrastructure variable is used to avoid high levels of correlation.

In addition, regardless of the nominal amount of FDI and ODA inflows, there are certain factors that will either inhibit or assist the effective use of the capital, particularly for FDI. These business environment variables include: openness to trade ("open"), measured by imports plus exports as a percentage of GDP, and domestic credit available to the private sector ("credit"). The analysis should show that these positively impact the HDI as they evidence a sound business environment and would allow capital, particularly FDI, to be effective.

Finally, it's important to control for the unique and volatile political and civil environments in Africa. For each capital source, political risk will have a significant impact on the effectiveness of increasing development. To control for this, the study employs two measures developed to capture political rights ("pr") and civil liberties ("cl"). These data are developed by the Freedom House, which evaluates the state of global freedom. These data are rankings on a scale of 1 to 7, where "1 indicates the highest degree of freedom and 7 the lowest level of freedom," (Freedom House, 2012). Higher degrees of freedom should positively impact the HDI.

*Summary Statistics*

Table 3 shows the key summary statistics for the data set, representing the years 1980-2011 and 52 African nations.

*Table 3: Summary Statistics*

| Variable | N | Mean | Std. Dev. | Min | Max |
|---|---|---|---|---|---|
| | | *Development* | | | |
| lag_hdi | 1091 | 0.4168248 | 0.1281429 | 0.174 | 0.775 |
| | | *Foreign Direct Investment and Official Development Assistance* | | | |
| fdi | 1141 | 4.00E+08 | 1.09E+09 | -5.59E+09 | 1.16E+10 |
| aid | 1084 | 5.06E+08 | 7.14E+08 | 5270000 | 1.14E+10 |
| pop | 1092 | 1.46E+07 | 1.87E+07 | 81131 | 1.58E+08 |
| fdipop | 1090 | 57.96561 | 202.0703 | 0 | 2806.03 |
| aidpop | 1084 | 53.94953 | 58.759 | 1.3438 | 688.7694 |
| fdigdp | 1137 | 0.0382084 | 0.0740683 | -0.0553077 | 0.9100733 |
| aidgdp | 1082 | 0.1090342 | 0.1233403 | 0.0002703 | 1.470542 |
| | | *Controls* | | | |
| debtgdp | 1090 | 0.850031 | 1.124573 | 0.0303205 | 18.23434 |
| govspend | 1053 | 0.1531498 | 0.0642828 | 0.0204712 | 0.4595933 |
| inflation | 1139 | 49.13981 | 814.0862 | -33.78553 | 26762.02 |
| phone | 1073 | 14.23219 | 26.33785 | 0.0388188 | 190.8432 |
| logphone | 1073 | 0.9419391 | 2.040673 | -3.248852 | 5.251452 |
| open | 1084 | 0.7349987 | 0.3655485 | 0.0632034 | 2.453525 |
| credit | 1045 | 21.14307 | 21.60811 | 0.6827951 | 161.9804 |
| pr | 1141 | 4.767748 | 1.79777 | 1 | 7 |
| cl | 1141 | 4.531113 | 1.423378 | 1 | 7 |

In addition, correlation data will indicate the strength of the regression models. The correlation table follows.

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*Table 4: Correlation Matrix*

| | hdi | fdipop | fdigdp | aidpop | aidgdp | debtgdp | govspend | inflation | logphone | internet | open | credit | pr | cl |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| hdi | 1 | | | | | | | | | | | | | |
| fdipop | 0.358 | 1 | | | | | | | | | | | | |
| fdigdp | 0.00981 | 0.328 | 1 | | | | | | | | | | | |
| aidpop | 0.167 | 0.296 | 0.200 | 1 | | | | | | | | | | |
| aidgdp | -0.471 | -0.138 | 0.177 | 0.346 | 1 | | | | | | | | | |
| debtgdp | -0.239 | 0.000045 | 0.333 | 0.0409 | 0.432 | 1 | | | | | | | | |
| govspend | 0.259 | -0.0301 | -0.0228 | 0.284 | 0.0423 | -0.0942 | 1 | | | | | | | |
| inflation | -0.0565 | -0.0127 | 0.00784 | -0.0366 | -0.0178 | 0.0654 | -0.0555 | 1 | | | | | | |
| logphone | 0.683 | 0.319 | 0.168 | 0.244 | -0.246 | -0.271 | 0.104 | -0.118 | 1 | | | | | |
| internet | 0.517 | 0.397 | 0.0673 | 0.312 | -0.192 | -0.180 | 0.107 | -0.0395 | 0.587 | 1 | | | | |
| open | 0.462 | 0.416 | 0.328 | 0.353 | -0.0148 | 0.0555 | 0.414 | -0.0410 | 0.362 | 0.262 | 1 | | | |
| credit | 0.513 | 0.0404 | -0.0867 | 0.0266 | -0.257 | -0.217 | 0.265 | -0.0450 | 0.362 | 0.395 | 0.0836 | 1 | | |
| pr | -0.271 | -0.0389 | -0.0329 | -0.0418 | -0.297 | -0.268 | 0.110 | 0.0460 | -0.137 | -0.206 | -0.251 | | 1 | |
| cl | -0.352 | -0.0574 | -0.0321 | -0.312 | 0.0179 | 0.153 | -0.263 | 0.0412 | -0.423 | -0.217 | -0.255 | -0.270 | 0.883 | 1 |

*Method*

  To study the impact of both FDI and ODA on development, as measured by the

Human Development Index, the analysis employs the following panel regression:

$$Development = \propto\ + \beta_{Foreign\ Direct\ Investment}\ +$$

$$\beta_{Official\ Development\ Assistance}\ + \beta_{Controls} + u$$

In this case, development is represented by the HDI on a lag, as it is reasonable to assume

that it will take time for the capital sources to take effect. FDI and ODA are measured in

two ways. First, they are measured per capita; in other words, the amount of capital

inflow into the respective nation as divided by its total population. Secondly, the capital

sources will be measured by dividing the respective nation's GDP. Finally, the controls

refer to the control variables listed in Table 2.

  The analysis employs the specified model for Africa as a whole, and then further

investigates the impact of the capital sources by looking at Low-income countries and

Middle-income or higher countries separately. By breaking the African nations into two

groups, the results will demonstrate the effects that each capital source has in nations

with varying levels of economic development.

CHAPTER 4


RESULTS


The aim of the empirical analysis is to understand the difference in effectiveness

that ODA and FDI have in increasing the UNDP's HDI. The first analysis studies the

African continent as a whole and the results are summarized in Table 5. The results show

that ODA calculated as ODA per capita ("aidpop)" has a negative impact, significant at

the 0.1% level when including control variables. Using ODA as a percentage of GDP

("aidgdp") shows that the capital has a negative impact on the HDI, a finding that is

significant at the 0.1% level, both with and without controls. This adds to the robustness

of the finding.

The study of FDI, however, is not as robust for Africa as a whole. The analysis

shows that FDI per capita ("fdipop") has a positive impact on the HDI, with and without

controls. However, the ratio of FDI to GDP ("fdigdp") shows inconclusive results due to

inconsistency. FDI as a percentage of GDP has a positive impact on the HDI when

excluding control variables, but is negative when including controls. For this reason, it is

pertinent to conduct further analysis by separating the sample by income classification,

and the summary of these results are shown in Table 6.

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| *Table 5: Panel regression results for FDI and ODA's impact on the HDI (1-year lag) in Africa, 1980-2011* | | | | |
| | lag_hdi | lag_hdi | lag_hdi | lag_hdi |
| fdipop | 0.000215*** | | 0.000123*** | |
| | (11.53) | | (6.15) | |
| aidpop | 0.000110 | | -0.000218*** | |
| | (1.69) | | (-4.22) | |
| fdigdp | | 0.181*** | | -0.218*** |
| | | (3.91) | | (-3.90) |
| aidgdp | | -0.509*** | | -0.310*** |
| | | (-18.28) | | (-14.26) |
| debtgdp | | | -0.0241*** | 0.0000829 |
| | | | (-5.31) | (0.02) |
| govspend | | | 0.0775 | 0.0657 |
| | | | (1.53) | (1.46) |
| inflation | | | 0.0000295 | 0.00000727 |
| | | | (0.92) | (0.25) |
| logphone | | | 0.0252*** | 0.0261*** |
| | | | (14.60) | (16.40) |
| cl | | | -0.0129** | -0.00987** |
| | | | (-3.17) | (-2.69) |
| pr | | | 0.00916** | 0.00518 |
| | | | (3.02) | (1.89) |
| open | | | 0.0857*** | 0.105*** |
| | | | (8.96) | (12.49) |
| credit | | | 0.00159*** | 0.00129*** |
| | | | (11.98) | (10.63) |
| _cons | 0.395*** | 0.462*** | 0.322*** | 0.337*** |
| | (78.82) | (97.48) | (22.60) | (26.25) |
| N | 1032 | 1030 | 886 | 886 |

See Table 2 for abbreviations.
t statistics in parentheses
* $p<0.05$      ** $p<0.01$      *** $p<0.001$

| | | ODA | | FDI | |
|---|---|---|---|---|---|
| | | *odapop* | *odagdp* | *fdipop* | *fdigdp* |
| *Low* | *Sign* | negative | negative | positive | inconclusive |
| | *Significance* | 0.10% | 0.10% | 1% | 0 |
| | *Controls* | with | with and without | without | neither |
| *Middle+* | *Sign* | negative | negative | positive | positive |
| | *Significance* | 5% | 0.10% | 0.10% | 1% |
| | *Controls* | with | with and without | with and without | without |

*Table 6: Summary of panel regression results for FDI and ODA's impact on the HDI in Low-income Africa and Lower-middle, Upper-middle, and High income Africa.*

*Note: See full results in Tables 7 and 8 in Appendix A.*

*Low-income Countries in Africa*

Low-income countries in Africa, as classified by the World Bank, include those with $1,205 or less in GNI per capita as of 2012. The full results are shown in Table 7 in Appendix A. The analysis of the Low-income countries shows that ODA has a significant, negative impact on the HDI. ODA as a percentage of GDP ("aidgdp") shows a negative impact both with and without controls, significant at the 0.1% level. ODA per capita ("aidpop") show a negative impact when including control variables, also significant at the 0.1% level.

However, the results for FDI's impact on Low-income countries are insignificant and inconclusive. The exception is the regression of FDI per capita ("fdipop") on the HDI without controls, which shows a positive impact, significant at the 1% level. However, this finding is not robust enough to make a strong conclusion on FDI's impact on Low-income countries.

It is important to note, however, that the control variables provide useful insight. In particular, national indebtedness (measured as the ratio of the country's debt to its GDP ["debtgdp"]) has a negative impact on the HDI. Further, the national level of civil liberties, the Freedom House measure of citizens' freedom of expression and belief, negatively impacts the HDI. On the other hand, if a nation is more open and to trade ("open") and provides credit to the private sector ("credit"), we see a positive impact on the HDI.

*Lower-middle, Upper-middle, and High Income Countries in Africa*

The second segment of the sample includes countries that the World Bank had designated as Lower-middle, Upper-middle, and High income countries in Africa as of 2012. According to the World Bank's classification categories, these countries have a GNI per capita of $1,206 or greater as of 2012. Table 8 in Appendix A shows full results for this analysis.

Unlike the previous analysis for the Low-income countries, there are robust results of FDI's impact on the HDI in Middle to High income countries. The analysis shows that FDI per capita ("fdipop") has a positive impact on HDI, both with and without controls, and it is significant at the 0.1% level. To add to the robustness of the finding, FDI as a percentage of GDP ("fdigdp") also has a positive impact on HDI, albeit without controls variables. This finding is significant at the 1% level.

Similar to the finding for Africa as a whole and in Low-income countries, ODA has a negative impact on HDI. ODA per capita ("aidpop") has a negative impact on the

HDI, significant at the 5% level. ODA as a percentage of GDP ("aidgdp") shows a very robust, negative impact on the HDI, both with and without controls. Each of the findings is significant at the 0.1% level.

As with the findings for Low-income countries, national indebtedness negatively impacts the HDI, while openness to trade and availability of credit to the private sector positively impact the HDI.

<u>Other results</u>

The analysis called for a variety of different tests and experimentation with different lags on the dependent variable. The results in this section are based on the sample including all African countries for which data were available. Tests were conducted dropping North African countries and oil-exporting countries, but dropping these countries did not impact the outcome and the results are omitted from the following section. The regressions employ a one-year lag on the dependent variable. A five-year lag was also used, but this did not change the significance or outcome of the results. The results of the analysis using a five-year lag are shown in Tables 11, 12, and 13 in Appendix A. Finally, it is interesting to note that the results do not change significantly when only including FDI or ODA variables. That is to say, the success is of each capital source is not affected by the other. These results are summarized in Tables 9 and 10 in Appendix A.

*Note on reverse causality of ODA and the HDI*

The results clearly show that ODA has a negative impact on the HDI, but there is a question of reverse causality. Many assume that ODA levels are high in the Low-income segment of Africa *because* the HDI is low. Due to this concern, the analysis employed two different measurements of ODA: on a per capita basis and as a percentage of GDP. On comparing the means of these two variables between the Low-income countries sample and the Lower-middle, Upper-middle, and High income countries sample, it's clear that ODA contributes to a higher percentage of GDP for the former. Interestingly, however, the "richer" segment of the sample has a higher level of ODA per capita than the Low-income segment. Tables 14 and 15 in Appendix B show the two sets of summary statistics and how they vary.

Further, the results show that regardless of the level of ODA, whether per capita or as a percentage of GDP, ODA has a negative impact in both Low-income Africa and in Lower-middle, Upper-middle, and High income Africa. ODA, whether in large or small quantities, does not improve the HDI in Africa, regardless of national income level. For perspective, ODA accounts for higher portions of national GDP than FDI in both segments. Although the latter segment is "richer," it's important to keep in mind that it is still among the world's poorest countries with few exceptions.

CHAPTER 5

DISCUSSION

The results provide interesting insight into the effects that FDI and ODA have had

on the HDI, and the difference across national income level classifications. The results

for Africa alone provide evidence that FDI is more effective than ODA in increasing

development. In order to gain deeper insight into how the capital sources affect African

development, the split between Low-income countries and those of higher development

levels shows a noteworthy story that has strong policy implications.

*Official Development Assistance*

Regardless of the nominal levels of ODA, the capital source creates a negative

impact in Africa in both segments. This could be due to the "curse of aid" that many have

referred to in the past. For example, Djankov, Montalvo, and Reynal-Querol found that

ODA has a negative impact on poor countries because of the large dependency

governments have on the capital (2008). In this study, the Low-income countries

displayed an average ODA as a ratio of GDP of 16%, (see Table 14 in Appendix B) and

it's likely a much higher percentage of the respective government budget as well. This lack of diversification in the GDP is ultimately a curse.

*Foreign Direct Investment*

In general, FDI is better suited to the Lower-middle, Upper-middle, and High income countries. It has a strong, positive impact on the HDI. It's likely that FDI is more suitable to the needs of rapidly growing countries than ODA. Since FDI provides benefits such as increased employment and technology transfer, it has been more effective in countries with comparatively better economies, infrastructure, and business environments.

FDI's impact is insignificant in Low-income countries. This is attributable to other factors, such as national indebtedness, availability of credit, and openness to trade. FDI per capita is much lower in Low-income countries opposed to the higher-income counterparts. However, FDI as a percentage of GDP is similar in both segments. If Africa's poorest nations can follow policy recommendations laid out in former research (Asiedu, 2004) to become more attractive to FDI, there will be potential to further diversify its GDP and increase FDI per capita.

*Implications for Investors, Donors, and Policy-Makers*

Low-income Countries in Africa

The results suggest that something must change internally in order for foreign capital to be effective in increasing development, whether it is ODA or FDI. Because of the significant constraint that national indebtedness has, increasing loan forgiveness

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could be a more effective use of ODA. Currently grants make up the majority of ODA (Soubottina, 2000); this study shows that current deployments of ODA are ineffective. In addition, implementing policies that promote globalization could help Low-income countries increase their openness to trade and create a better business environment and potentially capitalize on some of the positive impact FDI can bring.

Lower-Middle, Upper-Middle, and High income Countries in Africa

Although these countries represent the richer half of Africa, it's important to keep relativity in perspective. In other words, there is still much work to be done in these nations, and this study shows that FDI has played a significant role in the HDI gains, and can continue to do so. As such, the recommendation for development organizations focusing on Lower-middle, Upper-middle, and High income countries in Africa is to focus on policy development for attracting and maintaining healthy levels of FDI. This includes increasing openness to trade, reducing debt, and increasing the availability of credit to the private sector, all of which significantly impact growth in the HDI as well.

CHAPTER 6

CONCLUSION

This thesis sought to answer the questions of FDI and ODA's impact on poverty

alleviation and increases in development in Africa. In short, FDI is related to

improvements in development outcomes in Africa, but ODA is not. FDI's impact in

Lower-middle, Upper-middle, and High income countries in Africa is positive and

significant. Unfortunately, its impact in Low-income countries is ambiguous, but as more

countries move up in income level classifications, it's reasonable to assume that FDI will

be a powerful tool in closing the resource gap required to achieve the Millennium

Development Goals. On the other hand, this study shows that ODA has become an

ineffective tool at reducing poverty in Africa, no matter the income level.

The research makes two important recommendations for those deploying capital

in Africa. Those focused on funding Lower-middle, Upper-middle, and High income

countries in Africa should direct resources to FDI, including private companies, projects,

and other programs that stimulate employment and technology transfer. On the other

hand, those focused on funding Low-income countries should promote public debt

forgiveness and creating a more transparent business environment to allow for openness to trade as well as credit for the private sector. These internal changes will allow Low-income countries to reach their potential in attracting and benefitting from FDI. It's unlikely that ODA will be a positive force in the future given the negative impact it has even on the higher income countries.

*Limitations*

The research, however, is not without limitations. First, the panel dataset is unbalanced, meaning that data are missing for some years. Further, the HDI, although a good reflection of income, knowledge, and health, does not necessarily capture income disparity. Finally, the types of FDI or ODA are not disaggregated by sector. A sectorial analysis could provide further recommendations for multilateral organizations and policy-makers on where to make or stimulate investments.

*Suggestions for Future Research*

In addition to compensating for the above limitations where possible, there are many paths for future research. First, future research should explore the implications of national indebtedness in both the public and private sectors. This is especially important as the research showed that national debt levels greatly impact development. Further, future researchers should explore why exactly Low-income countries are unable to reap the benefits of FDI. The preliminary results in this study indicate that openness to trade, national indebtedness, and the availability of credit impact this, but a deeper exploration would provide insight on how to appropriately attract and direct FDI.

FULL RESULTS TABLES

| Table 7: Panel regression results for FDI and ODA's impact on the HDI (1-year lag) in Low-income countries in Africa, 1980-2011 | | | | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| | lag_hdi | lag_hdi | lag_hdi | lag_hdi |
| fdipop | 0.000361** | | -0.000223 | |
| | (3.08) | | (-1.63) | |
| aidpop | 0.0000415 | | -0.000678*** | |
| | (0.42) | | (-7.35) | |
| fdigdp | | 0.0638 | | -0.0822 |
| | | (1.88) | | (-1.54) |
| aidgdp | | -0.154*** | | -0.174*** |
| | | (-7.11) | | (-9.01) |
| debtgdp | | | -0.0127** | -0.00320 |
| | | | (-3.05) | (-0.76) |
| govspend | | | 0.228*** | 0.213*** |
| | | | (3.99) | (3.87) |
| inflation | | | 0.0000116 | 0.00000766 |
| | | | (0.51) | (0.35) |
| logphone | | | 0.0207*** | 0.0200*** |
| | | | (11.65) | (11.80) |
| cl | | | -0.0111** | -0.00788* |
| | | | (-2.94) | (-2.16) |
| pr | | | 0.00377 | 0.00168 |
| | | | (1.30) | (0.60) |
| open | | | 0.0701*** | 0.0505*** |
| | | | (4.80) | (3.76) |
| credit | | | 0.00137*** | 0.00118*** |
| | | | (4.55) | (4.02) |
| _cons | 0.318*** | 0.347*** | 0.309*** | 0.309*** |
| | (56.59) | (74.59) | (23.28) | (24.25) |
| | | | | |
| N | 519 | 519 | 439 | 439 |
| See Table 2 for abbreviations. | | | | |
| t statistics in parentheses | | | | |
| * p<0.05          ** p<0.01          *** p<0.001 | | | | |

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| *Table 8: Panel regression results of FDI and ODA's impact on the HDI (1-year lag) in Lower-middle, Upper-middle, and High income countries in Africa, 1980-2011* | | | | |
| | lag_hdi | lag_hdi | lag_hdi | lag_hdi |
| fdipop | 0.000127*** | | 0.000121*** | |
| | (7.90) | | (6.29) | |
| aidpop | 0.0000390 | | -0.000104* | |
| | (0.65) | | (-2.06) | |
| fdigdp | | 0.257** | | -0.177 |
| | | (3.16) | | (-1.67) |
| aidgdp | | -0.665*** | | -0.408*** |
| | | (-10.61) | | (-7.05) |
| debtgdp | | | -0.0317*** | -0.00720 |
| | | | (-4.41) | (-0.95) |
| govspend | | | -0.0502 | -0.0398 |
| | | | (-0.85) | (-0.68) |
| inflation | | | -0.0000249 | 0.000216 |
| | | | (-0.13) | (1.17) |
| logphone | | | 0.0174*** | 0.0200*** |
| | | | (7.23) | (8.18) |
| cl | | | -0.0268*** | -0.0224*** |
| | | | (-4.82) | (-4.09) |
| pr | | | 0.0174*** | 0.0122** |
| | | | (4.25) | (3.01) |
| open | | | 0.0479*** | 0.0821*** |
| | | | (4.37) | (7.91) |
| credit | | | 0.00103*** | 0.000915*** |
| | | | (7.32) | (6.55) |
| _cons | 0.487*** | 0.531*** | 0.463*** | 0.448*** |
| | (86.37) | (87.52) | (21.79) | (21.60) |
| N | 513 | 511 | 447 | 447 |

See Table 2 for abbreviations.
t statistics in parentheses
* $p<0.05$      ** $p<0.01$      *** $p<0.001$

*Table 9: Panel regression results for FDI's impact on the HDI (1-year lag) in Africa, 1980-2011*

|  | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
|  | lag_hdi | lag_hdi | lag_hdi | lag_hdi |
| fdipop | 0.000223*** | | 0.000105*** | |
|  | (12.38) | | (5.33) | |
| fdigdp | | 0.0101 | | -0.419*** |
|  | | (0.20) | | (-6.99) |
| debtgdp | | | -0.0262*** | -0.0199*** |
|  | | | (-5.75) | (-4.35) |
| govspend | | | 0.0438 | -0.0146 |
|  | | | (0.87) | (-0.29) |
| inflation | | | 0.0000329 | 0.0000330 |
|  | | | (1.01) | (1.03) |
| logphone | | | 0.0246*** | 0.0294*** |
|  | | | (14.18) | (16.86) |
| cl | | | -0.0122** | -0.0117** |
|  | | | (-2.96) | (-2.88) |
| pr | | | 0.00998** | 0.0102*** |
|  | | | (3.27) | (3.37) |
| open | | | 0.0821*** | 0.117*** |
|  | | | (8.53) | (12.58) |
| credit | | | 0.00168*** | 0.00157*** |
|  | | | (12.62) | (11.79) |
| _cons | 0.401*** | 0.416*** | 0.313*** | 0.304*** |
|  | (104.06) | (95.55) | (22.00) | (21.70) |
| N | 1039 | 1086 | 886 | 886 |

See Table 2 for abbreviations.
t statistics in parentheses
* p<0.05        ** p<0.01        *** p<0.001

*Table 10: Panel regression results for ODA's impact on the HDI (1-year lag) in Africa, 1980-2011*

|  | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
|  | lag_hdi | lag_hdi | lag_hdi | lag_hdi |
| aidpop | 0.000334*** |  | -0.000150** |  |
|  | (5.03) |  | (-2.91) |  |
| aidgdp |  | -0.490*** |  | -0.332*** |
|  |  | (-17.72) |  | (-15.62) |
| debtgdp |  |  | -0.0235*** | -0.00107 |
|  |  |  | (-5.07) | (-0.25) |
| govspend |  |  | 0.0320 | 0.0845 |
|  |  |  | (0.63) | (1.87) |
| inflation |  |  | 0.0000350 | 0.00000739 |
|  |  |  | (1.07) | (0.25) |
| logphone |  |  | 0.0269*** | 0.0243*** |
|  |  |  | (15.50) | (15.81) |
| cl |  |  | -0.0126** | -0.00994** |
|  |  |  | (-3.03) | (-2.69) |
| pr |  |  | 0.00945** | 0.00476 |
|  |  |  | (3.06) | (1.72) |
| open |  |  | 0.104*** | 0.0958*** |
|  |  |  | (11.21) | (11.77) |
| credit |  |  | 0.00165*** | 0.00134*** |
|  |  |  | (12.17) | (10.99) |
| _cons | 0.395*** | 0.467*** | 0.312*** | 0.340*** |
|  | (74.38) | (101.25) | (21.57) | (26.35) |
|  |  |  |  |  |
| N | 1033 | 1031 | 886 | 886 |

See Table 2 for abbreviations.

t statistics in parentheses

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

*Table 11: Panel regression results for FDI and ODA's impact on the HDI (5-year lag) in Africa, 1980-2011*

|  | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
|  | lag5_hdi | lag5_hdi | lag5_hdi | lag5_hdi |
| fdipop | 0.000210*** |  | 0.000126*** |  |
|  | (10.31) |  | (6.15) |  |
| aidpop | -0.0000246 |  | -0.000312*** |  |
|  | (-0.32) |  | (-5.36) |  |
| fdigdp |  | 0.194*** |  | -0.159* |
|  |  | (3.75) |  | (-2.21) |
| aidgdp |  | -0.495*** |  | -0.311*** |
|  |  | (-17.47) |  | (-13.53) |
| debtgdp |  |  | -0.0174*** | 0.00583 |
|  |  |  | (-3.50) | (1.22) |
| govspend |  |  | 0.112* | 0.0970 |
|  |  |  | (1.98) | (1.92) |
| inflation |  |  | 0.0000286 | 0.0000105 |
|  |  |  | (0.89) | (0.36) |
| logphone |  |  | 0.0209*** | 0.0218*** |
|  |  |  | (10.58) | (11.55) |
| cl |  |  | -0.0146** | -0.00944* |
|  |  |  | (-3.24) | (-2.32) |
| pr |  |  | 0.0129*** | 0.00750* |
|  |  |  | (3.88) | (2.48) |
| open |  |  | 0.0955*** | 0.108*** |
|  |  |  | (8.95) | (11.57) |
| credit |  |  | 0.00177*** | 0.00152*** |
|  |  |  | (12.70) | (11.94) |
| _cons | 0.392*** | 0.451*** | 0.285*** | 0.295*** |
|  | (70.18) | (90.54) | (18.47) | (21.28) |
| N | 833 | 831 | 726 | 726 |

See Table 2 for abbreviations.
t statistics in parentheses
* p<0.05       ** p<0.01       *** p<0.001

*Table 12: Panel regression results for FDI and ODA's impact on the HDI (5-year lag) in Low-income countries in Africa, 1980-2011*

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| | lag5_hdi | lag5_hdi | lag5_hdi | lag5_hdi |
| fdipop | 0.000394** | | -0.000173 | |
| | -3.12 | | (-1.05) | |
| aidpop | -0.000161 | | -0.000713*** | |
| | (-1.55) | | (-7.02) | |
| fdigdp | | 0.0804* | | -0.0689 |
| | | -2.27 | | (-0.91) |
| aidgdp | | -0.167*** | | -0.175*** |
| | | (-7.68) | | (-8.00) |
| debtgdp | | | -0.0106* | -0.000946 |
| | | | (-2.31) | (-0.20) |
| govspend | | | 0.203** | 0.216** |
| | | | -2.77 | -3.01 |
| inflation | | | 0.0000167 | 0.000015 |
| | | | -0.72 | -0.67 |
| logphone | | | 0.0154*** | 0.0154*** |
| | | | -7.2 | -7.29 |
| cl | | | -0.0121** | -0.00757 |
| | | | (-2.73) | (-1.77) |
| pr | | | 0.00950** | 0.00649* |
| | | | -2.81 | -1.99 |
| open | | | 0.0880*** | 0.0643*** |
| | | | -5.05 | -4.08 |
| credit | | | 0.00187*** | 0.00164*** |
| | | | -5.58 | -5 |
| _cons | 0.317*** | 0.340*** | 0.258*** | 0.254*** |
| | -51.97 | -69.38 | -16.85 | -17.19 |
| N | 420 | 420 | 353 | 353 |

See Table 2 for abbreviations.

t statistics in parentheses

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

*Table 13: Panel regression results for FDI and ODA's impact on the HDI (5-year lag) in Lower-middle, Upper-middle, and High income countries in Africa, 1980-2011*

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| | lag5_hdi | lag5_hdi | lag5_hdi | lag5_hdi |
| fdipop | 0.000123*** | | 0.000122*** | |
| | -7.25 | | -6.51 | |
| aidpop | -0.000023 | | -0.000190*** | |
| | (-0.34) | | (-3.43) | |
| fdigdp | | 0.495*** | | -0.111 |
| | | -4.16 | | (-0.98) |
| aidgdp | | -0.648*** | | -0.403*** |
| | | (-9.96) | | (-6.62) |
| debtgdp | | | -0.0211** | 0.00318 |
| | | | (-2.71) | -0.37 |
| govspend | | | -0.0176 | -0.0235 |
| | | | (-0.30) | (-0.39) |
| inflation | | | -0.0000642 | 0.000165 |
| | | | (-0.34) | -0.85 |
| logphone | | | 0.0131*** | 0.0154*** |
| | | | -4.79 | -5.46 |
| cl | | | -0.0276*** | -0.0230*** |
| | | | (-4.77) | (-3.98) |
| pr | | | 0.0165*** | 0.0121** |
| | | | -3.97 | -2.86 |
| open | | | 0.0488*** | 0.0785*** |
| | | | -4.23 | -7.05 |
| credit | | | 0.00114*** | 0.00109*** |
| | | | -8.13 | -7.71 |
| _cons | 0.481*** | 0.511*** | 0.450*** | 0.429*** |
| | -80.55 | -75.95 | -20.65 | -19.96 |
| N | 413 | 411 | 373 | 373 |

See Table 2 for abbreviations.

t statistics in parentheses

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

SUPPLEMENTARY SUMMARY STATISTICS

*Table 14: Summary statistics for Low-income Countries in Africa*

| Variable | Obs | Mean | Std. Dev. | Min | Max |
|---|---|---|---|---|---|
| *Development* | | | | | |
| hdi | 572 | 0.3297163 | 0.0738947 | 0.174 | 0.509 |
| *lag_hdi* | *546* | *0.3272339* | *0.0735663* | *0.174* | *0.505* |
| *lag5_hdi* | *445* | *0.317039* | *0.0721961* | *0.174* | *0.474* |
| *Foreign Direct Investment and Official Development Assistance* | | | | | |
| fdi | 570 | 1.52E+08 | 3.42E+08 | 0.00E+00 | 2.93E+09 |
| aid | 546 | 5.14E+08 | 5.95E+08 | 22800000 | 5.42E+09 |
| pop | 546 | 1.36E+07 | 1.50E+07 | 629786 | 8.29E+07 |
| fdipop | 544 | 12.24122 | 27.12239 | 0 | 303.8257 |
| fdigdp | 570 | 0.039516 | 0.0913394 | 0 | 0.9100733 |
| aidpop | 546 | 46.954 | 32.83366 | 2.648311 | 355.3372 |
| aidgdp | 546 | 0.1596456 | 0.1430803 | 0.0166066 | 1.470542 |
| *Controls* | | | | | |
| debtgdp | 571 | 1.019589 | 1.443248 | 0.1080612 | 18.23434 |
| govspend | 517 | 0.1390811 | 0.0547435 | 0.0204712 | 0.4595933 |
| inflation | 572 | 84.11566 | 1147.9 | -27.04865 | 26762.02 |
| logphone | 532 | 0.1412719 | 1.926229 | -3.248852 | 4.481364 |
| internet | 361 | 1.301405 | 2.463446 | 0 | 14 |
| open | 532 | 0.5957862 | 0.2638983 | 0.1432573 | 1.78982 |
| credit | 510 | 13.67712 | 9.879051 | 0.6827951 | 103.6323 |
| pr | 572 | 5.042832 | 1.584569 | 1 | 7 |
| cl | 572 | 4.777098 | 1.273349 | 2 | 7 |

*Table 15: Summary statistics for Lower-middle, Upper-middle, and High income countries in Africa*

| Variable | Obs | Mean | Std. Dev. | Min | Max |
|---|---|---|---|---|---|
| *Development* | | | | | |
| hdi | 571 | 0.5091665 | 0.1073871 | 0.264 | 0.775 |
| *lag_hdi* | *545* | *0.50658* | *0.1065494* | *0.264* | *0.775* |
| *lag5_hdi* | *441* | *0.4956164* | *0.1018088* | *0.264* | *0.77* |
| *Foreign Direct Investment and Official Development Assistance* | | | | | |
| fdi | 571 | 6.49E+08 | 1.46E+09 | -5.59E+09 | 1.16E+10 |
| aid | 538 | 4.99E+08 | 8.18E+08 | 5270000 | 1.14E+10 |
| pop | 546 | 1.56E+07 | 2.18E+07 | 81131 | 1.58E+08 |
| fdipop | 546 | 103.5225 | 276.9312 | 0 | 2806.03 |
| fdigdp | 567 | 0.0368939 | 0.0511901 | -0.0553077 | 0.5418665 |
| aidpop | 538 | 61.04907 | 75.95223 | 1.3438 | 688.7694 |
| aidgdp | 536 | 0.0574785 | 0.0678726 | 0.0002703 | 0.5839215 |
| *Controls* | | | | | |
| debtgdp | 519 | 0.6634846 | 0.5478129 | 0.0303205 | 3.384584 |
| govspend | 536 | 0.1667197 | 0.0697091 | 0.022877 | 0.4295028 |
| inflation | 567 | 13.85553 | 26.44418 | -33.78553 | 418.233 |
| logphone | 541 | 1.729287 | 1.834624 | -1.666786 | 5.251452 |
| internet | 360 | 5.236225 | 8.124359 | 0 | 49 |
| open | 552 | 0.8691673 | 0.3984764 | 0.0632034 | 2.453525 |
| credit | 535 | 28.26015 | 26.75494 | 1.542268 | 161.9804 |
| pr | 569 | 4.491213 | 1.951866 | 1 | 7 |
| cl | 569 | 4.283831 | 1.521218 | 1 | 7 |

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