Effects of Foreign Aid on Domestic Private Investment Growth

The case of Eastern African Countries (EACs)

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List of Acronyms

EACs	Eastern African Countries
DPI	Domestic Private Investment
ODA	Net Official Development Assistance
FDI	Foreign Direct Investment
LSDV	Least Square Dummy Variable
GDP	Gross Domestic Product
UNCTAD	United Nation Conference on Trade and Development
DOLS	Dynamic Ordinary Least Square
AIC	Akaike information criterion
BIC	Bayesian information criterion
DAC	Development Assistance Committee
GNI	Gross National Investment
IPS	Im-Pesaran-Shin
ADF	Augmented Dickey Fuller
GMM	Generalized Method of Moments
UNECA	United Nations Economic Commission for Africa
TNCs	Trans National Corporations
GFCF	Gross Fixed Capital Formation
UN	United Nations
WB	World Bank
IMF	International Monetary Fund
CSP	Center for Systematic Peace

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Abstract

The effect of foreign aid on domestic private investment has been a controversial issue. Many economists claim that aid has positive effect via relaxing saving gaps and trade gap of developing countries. Whereas, others took the position that aid is counterproductive effect by generating Dutch disease effect, by encouraging corruption, by rent seeking activities and by weakening institution. Moreover, others also contest that aid has a positive relation with domestic private investment in developing countries if it's conditioned with good policies and institutions.

This paper empirically investigated the effect of aid on domestic private investment in 9 Eastern African countries by using Dynamic OLS methodology, which assumed to detect omitted variable bias and endoginiety problems over the period 1971 to 2012. In addition, this study tried to investigate the co-movement characteristics and conditionality behavior of aid by interacting it with FDI and polity IV variable, respectively. The results clearly indicate that aid has a significant negative effect both at the panel and the individual country level (except one country, Kenya) but when it interacted with FDI it has significantly positive result. Moreover, its interaction with polity variable shows negative and significant effects. However, the interaction of both at the individual country level shows mixed result.

Relevance to Development Studies

Development has broad definition in different disciplines. It is not only restricted to economic development. It includes social change, human resource development, democracy, science and technological improvement, provision of human facility and many others. However, majority of the world population lives in poverty even without receiving basic necessities. Inequality persists between countries and populations of the world. Such variations may be narrow down by transferring capital from industrial countries to poor countries. Foreign aid is one form of capital transferring mechanism which presumed to reduce poverty and improve the economic performance of low income countries. Therefore, this study is very purposive for development studies because it indicated the importance of ODA on domestic private investment in low income countries.

Keywords:

Foreign aid, FDI, Domestic Private Investment and Dynamic OLS

Chapter 1: Introduction

1.1. Background

East African countries, here after called (EACs) composed of 14 countries[1] which have more or less similar socioeconomic, political and structural characteristics, and agricultural-based economic system (Morrissey 2001). Even though the region has good opportunities to boost domestic private investment, the growth of the private sector is too low for the long period of time. For this different factors are accounted. Economic and political shocks, religious tension and tribe conflicts, shortage of hard currency, trade imbalance, current account deficit and unemployment are some of the common constraints that hinder domestic private investment in the region. In addition, low development of financial institutions, shortage of hard currency to import capital goods and debt overhang for the long period of time retards investment growth (Herzer and Grimm 2011).

To reduce such constraints foreign financial assistance, considered as alternative source of financing development which premised to augmenting capital and foreign exchange gaps. Economists believe that investment in developing countries is low because of low domestic saving. They assume that as inflow of aid increases the national saving of capital shortage countries and hence promotes domestic investment growth (Dollar and Easterly 1999). By assuming this, economists suggest development financing to narrow capital gap between the rich and the poor countries, especially for Sub Saharan and other low income countries. However, the assumption of aid financing the investment needs of the recipient countries is a controversial issue since the second half of 20th century.

Basically economists dispute on three strands about the usefulness of foreign aid to the domestic investment growth as well as the economic development of the recipient countries. The first literature claims that aid is necessary and sufficient to boost the economy of low income countries. They argue that inflow of aid to these countries increases the economic growth by increasing domestic saving, relaxing foreign exchange constraint and providing access to modern technology (Dalgaard et al. 2001, Kargbo 2012). The second view asserts that foreign capital inflow deters the investment and economic growth of aid recipient countries. According to this perspective foreign aid harms investment growth of low income countries via promoting corruption and rent seeking activities of the government (Easterly 1999, Economides et al. 2013). Correspondingly Snyder (1996) supports the inefficiency of foreign aid to enhance private investment. He argued that instead of promoting domestic investment it creates foreign exchange appreciation and affects the competitiveness of DPI.

On the other hand institutional economists also state that aid and investment has a negative relation, unless it supported by the right policies and institutions in aid recipient countries (Burnside and Dollar 1997, Burnside and Dollar 2000, Collier and Dollar 2004). According to these economists the quality of policy and institution matters for the economic transformation of low income countries. However, good policy and institution is also criticized by a number of economists due to its subjectivity. Chang and Ha Joon (2002) challenged, what is good policy and institution and

[1] Ethiopia, Uganda, Rwanda, Tanzania, Eritrea, Kenya, Mauritius, Seychelles, South Sudan, Somalia, Djibouti, Comoros, Madagascar and Burundi

for whom it's good. According to Chang and Ha Joon good policies and institutions is restricted macroeconomic policies based in Washington consensus, which is designed to sustain the economic and political supremacy of advanced countries not for the promotion of low income countries. From these we can understand that economist unable to come up with common consensus on the importance of foreign financial flow to the low income countries economy.

Having these contradictory views, the aim of this paper is to investigate the significance of net official development assistance on the domestic private investment growth in the eastern African countries over the period 1971 to 2012 by using dynamic OLS, which assumed to detect omitted variable bias and endoginiety problems. Moreover, interactive terms are used to analyze the complementarity/substitutability effect and conditionality behavior of aid with foreign direct investment (FDI) and polity IV variable, respectively.

1.2: Identification of the problem

Like sub Saharan and other developing countries of the world, EACs are confronted with many problems that affect their investments, economic growth and development. Even though there is slight improvement in recent years, the region is known by shortage of capital to finance investment. As prescribed in the introduction part structural weakness, climatic change, low level of economic and human development, poorly organized financial institutions and unemployment are the other common challenges which affect investment and economic growth. The sum of these difficulties and other problems forced the region to experienced low investment, low economic growth and development for a long period of time.

Ahead of financing budget deficit, foreign aid assumed to finance the above development gaps in recipient countries. However, the importance of foreign aid on the investment growth is controversial. A number of studies are undertaken on the area but the results are different. While, when we assess researches conducted in the past almost all are focused on the effect of aid on investment in general, which composes domestic private investment and foreign private investment, and demonstrate as aid has negative and positive results. But both foreign aid and foreign private investment are external source of finance or capital which inflows based on the socioeconomic and political conditions of the receipt countries. Estimating the impact of foreign aid on investment might give bias result due to the co-movement characteristics of aid and foreign private investment which conditional on policy. For instance, in the countries that have good policy there might be high inflow of aid and foreign private investment. In this case we might prove growth of investment is due to an increase in foreign aid and the other way around. Therefore to avoid such ambiguity and measure the effectiveness of aid alone, this paper aimed to examine the effect of foreign aid on the DPI by taking interactive term with FDI which has been given less emphasis in development researches. Moreover it also analyzes conditional behavior of aid in relation to governance structure by interacting aid with polity variable.

1.3: Research Question

The **main question** of the research is:

- Does foreign aid affect the domestic private investment growth in the East African countries?

The **Specific questions** to be addressed are:

- ✓ Does foreign aid have a significant impact on domestic private investment development in EACs?
- ✓ What is the relationship between foreign aid and domestic private investment in EACs especially in the long run?
- ✓ Does aid and foreign direct investment have complementary/substitutability effect on the investment growth in the region?

1.4: Objective of the study

General objective

- ❖ To investigate the effect of foreign aid on the growth of domestic private investment in EACs for the last 42 years.

Specific objective

- ✓ To assess whether foreign aid has a significant effect on the private investment growth or not in the region and each independent state.
- ✓ To investigate the relationship between aid and domestic private investment in the targeted countries.
- ✓ To assess the complementarity/substitutability effect of aid and foreign direct investment on domestic private investment.

1.5: Relevance of the Study

Like other sub Saharan countries, EACs also experienced high inflow of foreign capital like aid and FDI with the aim of assisting domestic financial constraints. But many scholars forward different views on the effectiveness of foreign aid. So this study will have various importances in indicating the possible effect of foreign aid on the DPI of the region. In addition, this study helps to analyze the complementarity/substitutability effect of aid and foreign direct effect on DPI.

On this area similar studies have been carried out on cross country level like Snyder (1996) on 36 countries, Herzer and Grimm (2011) on 39 countries, Munemo (2011) on African countries, Herzer and Morrissey (2013) on 59 countries, Mosley et al. (1987) on 8 countries, Mahdavi (1990) on 8 countries and Dollar and easterly (1999) on 49 countries but found different mixed results. This indicates that the debate is still going on. So this paper adds to the existing knowledge by analyzing the conditional effect of aid with policy environment. It also contributes to the academic sector by examining the co-movement characteristics of aid and FDI, and measuring each individual effect on the DPI of the region.

1.6: Limitation of the Study

Since the data is inconsistent and unavailable for some countries (Eritrea, Somalia, Seychelles, Tanzania and South Sudan), the study is unable to include these in the estimation procedure. As a result, this paper is restricted to use only 9 countries that have consistent data. Moreover, using a

panel data aggregated at national level inhibits to control unobserved heterogeneity. DPI data is not presented directly in the data base so the researcher used proxy variable to resolve such issue. This might have a bit problem on the quality of this paper. In addition, the shortage of time has its own negative impact on the quality of the paper. It's very difficult to accomplish this study within this short time frame.

1.7: Organization of the Paper

The rest of the paper is organized as follows: In chapter two, literature review regarding with the flow of aid and its effect on the DPI is reviewed in a detailed manner. In this section the theoretical and empirical evidences of financial flow are presented. In section three, the data and methodology part of the paper are employed. In section four description of variables and data analysis part are presented. Under this section trends of aid, FDI and domestic private investment are analyzed. In section five, results and discussions of an econometric analysis is presented to investigate the effects of foreign financial flow in the form of aid on DPI in the EACs. Conclusions and further research questions are discussed in section six.

Chapter 2: Literature Review and Empirical Evidences

2.1: Eastern African countries (EACs) Context and Foreign Aid

As expressed so far EACs more or less share similar socioeconomic and political difficulties which factors DPI growth.

a, Development of Financial Institutions: Financial institutions are poorly organized in EACs to provide loan and saving facilities. This affects the domestic investment growth of private sector. Low level of saving and absence of credit availability badly dampens private investment in Africa (see Mlambo and Oshikoya 2001). The availability of insufficient resources to finance investment and development needs in capital shortage countries is the basic reason why they continue to receive foreign aid.

b, Import and Foreign Exchange: Almost all investment inputs in EACs are imported from industrialized countries. Private investors consider the cost of capital and cost of laborers, the availability of foreign exchange and industrial goods and services before they decided to import capital goods and services. Above all the availability of hard currency and value of it determines the import capacity of these countries. Currency devaluation promotes the export sector and makes the export country more competitive and the vice versa. At the same time, depreciation causes the domestic industry to bear high cost to import capital goods and services. The net effect will depend up on the capacity of the domestic manufacturing firms. However when we assess the EACs economy it experienced trade deficit i.e. since the export sector is uncompetitive in the international market decreasing the value of money costs the economy. Thus, foreign aid is able to sustain the exchange price and relaxes such difficulty and may promote DPI theoretically, in the sense that the accessibility of foreign exchange facilitates the level of investment growth in the Eastern African region.

c, Economic and Political Shocks: Apart from profit investment decisions are influenced by other factors, such as, rule of law or property right and stable political and socioeconomic environment. Most countries in East Africa however, experience socioeconomic and political shocks which affect investment growth badly. Religious tension and tribe conflicts, frequent drought and rain feed economy and others cause the region to have low investment growth. The availability of such shock gives the birth of low national saving and low GDP growth. Therefore, foreign financial flows may help to finance DPI and stabilize the economy as a whole in each country.

d, Public Investment and Private Investment: In relative terms, EACs have high public investment growth rate, which might have a substitutability and/or complementarities effect on private investment. According to previous studies public and private investment has ambiguous relationship. If investment is on infrastructure development and provision of public goods and services, it expands the productivity of the private capital, while if it uses limited resources it affects the expansion of private investment. Here you may ask how aid impends on public and private investment relationship because most of public investment in developing countries is financed by foreign aid. Thus, if aid is used to expand schools, roads, telecommunications, etc it increases private sector development otherwise it "crowds out" private investment growth. Moreover, the inflow of aid may also create incentive for the government and this in return relaxes tax effort. The reduction

of tax increases the net return of private investment and further encourages private investment growth.

e, Debt and Debt Relief: Since from the past, alike other low income countries, EACs are also badly affected by debt overhang which adversely affects domestic private investment growth. Recently, aid used as debt relief. This might have positive effect on the private investment growth of the region.

f, Institution and Governance: The other characteristics of EACs is weak institutional development or nonexistence of it. Strong institutions facilitate the private sector investment by reducing transaction costs and help to reallocate resources from non-efficient to efficient and effective use. Weak institutional development grab individuals confidence to invest, implying it factors resource misallocation and unexploited of investment opportunities. It strongly affects private investment (Herzer and Grimm 2011). Therefore foreign aid might have positive influence indirectly through its effect on institution. However, weak institutional set up is the characteristics of poor governance system, which is related with misuse of resources, rent seeking activities and autocratic type of government. It implies that aid could affect negatively the growth of investment if it promotes such activities which extremely harm the economy of EACs.

2.2: Foreign Aid and Domestic Private Investment

Investment is the basic factor for economic growth. Countries that have better investment growth rate can improve their economic performance. When we say investment, it is private investment which stimulates economic growth and development of low income countries. However, it does not mean that public investment has no contribution to growth. It's obvious that public investment encourages private investment and enhances economic efficiency. This is to denote that private investment contributes more to the improvement of the economy through stabilizing macroeconomic variables in low income countries. But the problem is private investment in the developing world inhibited by various factors. For example, see Dollar and Easterly (1999) private investment is caused by low levels of saving especially in Africa. Foreign exchange and capital are the other factors that hinder investment growth and economic development (Sachs 2005).

To minimize such problems foreign aid seen as an alternative source of financing domestic private investment, which assumed to bridge saving and capital shortage as well as hard currency problems of aid recipient countries (Morrissey 2004). Beyond this, according to Dollar and Easterly (1999) additional aid flow can generate additional investment. However, empirical studies indicated that aid and investment have confusing or ambiguous relationships since the second half of 20th century.

Basically, economists have three controversial approach on the usefulness of aid for the developing countries economy, such as, positivist approach, pessimist approach and conditionality approach.

2.2.1: Aid Positivist Approach

This approach focuses on aid positivist theory, which argues that aid is important for poverty reduction and development of developing countries by relaxing saving and foreign exchange

problems. According to the "big bush" theory analysis aid is a catalyst for investment and in turn promotes economic growth and development in capital shortage countries (Abuzeid 2009, Sachs 2005). It's true that investment in low income countries suffered by capital shortage and hard currency barriers. Investment is financed by either saving or profit. But the level of saving and profit are very low in most developing countries. Capital inflow in the form of aid helps to enhance investment via providing capital and increasing the availability of hard currency to import investment inputs. So, official aid might have positive influence on the private investment which limited by these constraint. Hansen and Tarp (2001) supports this argument as foreign aid promotes private investment and economic growth via relaxing saving and hard currency complications of developing countries.

Moreover, empirical evidences indicated that more inflow of aid reduces the level of tax that is imposed on private investors (Herzer and Morrissey 2009). The main argument here is that a low level of tax increases the net return of investment and facilitates domestic private investment in developing countries. In addition, aid inflow increases government revenue and helps to expand infrastructure development which also facilitates private sector growth. Besides provision of infrastructure facilities and increasing government income foreign aid, as explained above, assumes to fill foreign exchange and saving problems of the recipient countries.

The saving and foreign exchange problems explained in two gap model which is an extension of Harrod-Domar model (Doucouliagos and Paldam 2006 and 2008). Lensink and Bergeijk (1991) also used saving and trade gap model to estimate official finance requirement for low income countries. This model is somehow old but still it is used for MDG calculation (Atisophon et al. 2011). Two gap models show DPI relationship with financial and foreign exchange gaps in the national accounting model;

$$\mathbf{Y= C+ I+ (X-M)} \qquad \mathbf{(1)}$$

Where, income or output is the function of consumption, investment and net export (X-M). Rearranging the equation gives Y+M (source of resources used in the economy) equals C+I+X (uses of resource in the economy). The mathematical manipulation of the above equation results in;

$$\mathbf{M-X = I - S} \qquad \mathbf{(2)}$$

Equation (2) shows trade and saving gaps of developing countries. The country faces foreign exchange problem when M > X and as well investment is lower as there is low level of saving in developing countries. Eliminating of one does not get rid of the other, that is, domestic investment is financed by domestic saving as well as through foreign capital inflow. In this paper the researcher considers foreign capital inflow equals foreign aid and possibly FDI. So from the above equation we get;

$$\mathbf{I = S + (M-X)} \qquad \mathbf{(3)}$$

Equation (3) is general investment equation. Domestic private investment is derived from equation (3);

$$\mathbf{DPI = \delta S + \beta F} \qquad \mathbf{(4)}$$

Where DPI is domestic private investment, S is domestic saving and F is foreign saving. δ and β are parameters that measure the rate of domestic and foreign saving, respectively. Equation (4) indicates domestic private investment factored by either domestic saving or foreign saving, i.e., it is caused by endogenous and exogenous factors in the developing countries (J C H Fei et al. 1968). Since domestic saving is very low in low income countries foreign savings (from foreign aid) are capable to finance capital requirements of domestic investment (Lensink and van Bergeijk 1991).

2.2.2: Aid Pessimist Approach

This is the second position that many scholars are debating by giving greater emphasis on the effectiveness of aid. The point of discussion begins with why aid is effective in some countries and ineffective in other recipient countries. According to this literature, the difference arises from the behavior of the government in aid recipient countries. By analyzing the ineffectiveness of aid, some economists argue that the inflow of aid to developing countries is discouraging i.e. it damages the economic performance and makes the economy vulnerable to aid dependency. For example, Djankov et al. (2008) discussed that aid affects private investment growth in low income countries through encouraging corruption and weakening institutions. According to Djankov et al. more aid reduces the accountability of the government and encourages corruption and weakens governance systems and institutions. In addition, Herzer and Morrissey (2009) argue that developing countries government may engage in corruption and rent seeking activities. If the government is autocrat and undemocratic a high inflow of aid is used for establishing patronage system in the society and also used for bribing peoples to get election. This concept suggests that foreign aid enlarges social and economic inequality and results in social conflicts in aid recipient countries due to rent seeking activities. In such case, foreign aid may produce social inequality and cause for slow or negative growth of domestic private investment in developing countries instead of promoting it. In the same way a high inflow of aid causes a resource shift from the productive sector to the unproductive sector (Herzer and Morrissey 2009). This depresses the export sector of the economy by reducing the profit of the entrepreneurs. Therefore, aid might have negative effect on the investment growth of the aid recipient countries. See, Snyder (1996) he conclude that countries who received high amount of aid experiences low level of private investment growth.

The "Dutch disease" empirical literature also discussed that aid decreases the productivity of the private sector by appreciating currency and increasing income of the developing country (Munemo 2011, Rajan and Subramanian 2011). A number of scholars debating on the side that, the increase in aid flow appreciates domestic currency and increases the volume of import. High amount of aid resulted in trade deficit which further kills the export performance of aid recipient countries. This damages the investment growth by slow down the competitiveness of the receipt countries. Due to this, aid causes a resource shift from the tradable sector to the non-tradable sector. Private investors invest their money in housing investment and producing non-tradable goods and services rather than producing industrial and other exportable goods. So, aid affects private investment growth via shifting resources and increasing the value of the home currency. [2]

[2] The idea that aid creates "Dutch disease" effect didn't clearly discussed in most literature. It's more argumentative and theoretical. It didn't clearly address how it produces aid curse and affect the economy of poor countries. The reality in aid recipient countries is far from this argument. As far as I know low income countries facing hard currency deficiency to import investment inputs especially capital goods like machinery. I agree that huge amount aid flow in recipient economy generates

2.2.3: Aid Conditionality Approach

The third position emphasized on the conditionality of aid which gives much more emphasis to endogenous source of growth than to foreign financial assistance. According to the aid conditionality literature, a foreign capital flow is meaningless without structural change in home countries. Here the basic assumption is that aid can assist the development campaign of developing countries if it is pre-organized by good macroeconomic policies and institutions. The work of Burnside and Dollar (1997, 2000 and 2004) assures the effectiveness of foreign aid conditional on the macroeconomic policy of aid in the recipient countries. According to the authors aid affects negatively the growth of aid recipient economies unless there are sound policies and institutions:

> *"Foreign aid to developing countries has been criticized as wasteful and even counterproductive. Careful examination of the recent experience with foreign aid shows, however, that it can be an effective investment when a recipient country's economic policies are sound before aid is provided."*
>
> *(Burnside and Dollar 1997: 4)*

Dollar and Easterly (1999), Burnside and Dollar (1997 and 2004) and Collier and Dollar (2004) argues that aid may not make difference, what makes difference is a policy that promotes investment and economic growth. The conditional delivery of aid encourages low income countries to develop governance systems and institutional capacity. In developing countries the absence of privatization policy, property right protection, rule of law and others creates risk for private investors. But the conditionality of aid to these policies could guarantee to entrepreneurs and supposed to stimulate private investment development. Dollar and Easterly (1999) supports this argument, unless aid supported by policy aid-investment-growth linkage does not work especially in Africa. This denotes domestic policy and institutional set ups are vital to the investment growth of low income countries. They also argue that domestic government or politics factors the reform of economic policies, makes the difference in the economic performance of the recipient countries.

It is obvious that policy brings a change in the economic development of developing countries, but the concern is what type of policies we are dealing with. Is that about domestic policy which are designed by realizing the actual conditions of the country or tight macroeconomic policies? If it is about endogenous policies and institutions i.e., a change in governance system/ administration capacity and democratization, aid could facilitate the economic activities if not it might not have importance to the low income countries because each country has heterogeneity characteristics. Policies that are appropriate in the advanced countries might not appropriate in the

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"Dutch disease" but the point is; First, developing countries are not received the amount of aid they need even to finance development gaps. Second, most aid recipient countries are facing persistent hard currency problems. Third, the commitment of developed countries to contributing 7% share of their GDP to poor countries is not implemented till today except five countries. Under such circumstances how aid resolves currency shortage and creates currency appreciation in aid receipt countries. It's far from the reality. I could not also find empirical evidence that clearly shows aid-curse in any literature. But, since this is not the interest of this paper, I recommend it for further research.

developing countries. Providing aid for countries that are willing to reform their policies to the donors interest may cause aid ineffective. However, as indicated in most literatures aid allocated for countries who are willing and committed to reform their domestic policies in lined with donors interest which they called "good policy and institution". Since the situations of developing countries and developed countries are varied good policy and institution for one country might not good to the other. Policy change in relation with donor interest harms the economy of developing countries. Therefore, it is a strategy that designed deliberately to suppress the economy of aid receipt countries. The title of ODA is to reduce poverty and facilitating the economy of developing countries. But huge amount of aid are flows into countries that have commercial interests and strategic relation with the donor countries not to the poor countries those who need it to fill the development gaps. It seems like the flows of aid goes in non cooperative base between donors and receipts (Murshed 2009). Good policy and institution used as an instrument to accomplish these 'hidden interests' especially for bilateral type of aid. A number of economists questioned what does it means good policy and institution and for whom it is good. For example, for Chang and Ha Joon (2002) good policies and institutions are a restrictive macroeconomic policy which is deliberately designed to diverge further the economic and political differences. Other economists, Dalgaard et al. (2004), Dalgaard and Hansen (2001) found that aid stimulates private investment and growth without the conditionality of policy.

In summary, the effect of foreign capital flow (aid) on domestic private investment is theoretically and empirically ambiguous and factored by different parameters. According to different economic theories and empirical works it has different and significant effect on private investment. It is also varied from country to country and changes over time. Therefore, this issue will be addressed empirically by the analysis of this study.

2.3: FDI and Domestic Private Investment

Recently studies indicate that the flows of FDI to developing countries have increased substantially since 1990s (UNECA 2006). Though FDI flow is increasing the importance of it for the domestic private investment growth is debatable. Basically in macroeconomic theories there are two types of theories on FDI and DPI; "crowding in" and "crowding out". The first one, FDI flows is assuming to provide capital, transfer technology, Knowledge and employment opportunity. These positive externalities enable domestic private firms to adopt foreign technology, new knowledge and skills and further produce new products and services in the developing countries (Mebratie and van Bergeijk 2013). In addition, FDI also assumed to improve trade and balance of payment deficit by expanding the export performance of host countries. We can see China as a best example here. In 1990 China has been the highest FDI recipient among developing countries. The high inflows of FDI brought "crowd in" effect on the China economy. Zhang and Song (2000) and Cheung and Lin (2005) recognized as China economy benefited from FDI inflow. According to them inward flow of FDI has three impacts. First, domestic firms acquire knowledge about the products and technologies of foreign firms. Second, knowledge transferred from foreign workers to domestic workers. Third, the flow of FDI encourages the research and development of local firms to discover and differentiate products and hence expand their market. This spillover effects enhance the knowledge and skill of domestic workers and facilitate the growth of investment in low income countries.

The second theory deals about the "crowding out" effect of FDI on domestic private investment. Crowding out principle is related with the traditional literature which states on the occupational choice of employees. Workers are more interested to work with TNCs to get better salary, to have better working environment and to acquire better knowledge as well. This natural characteristics cause domestic workers to migrate from domestic firms to foreign firms. In such case domestic firms become less competitive. Thus, the flows of FDI to developing countries affect negatively the entry of domestic firms into the market due to the risk that related with the capacity they have to compete with these firms. Inability of domestic firms to compete with foreign firms forced them to exit from the market (De Backer and Sleuwaegen 2003). According to De Backer and Sleuwaegen crowding out effect is not only restricted with entry effect it also related with affiliation of domestic workers in foreign firms. Moreover, the crowding out debate also extends to research and development issue. It states that domestic investors are focusing on how to imitate and apply the new technology. They totally ignore the discovery of new knowledge through using research and development strategy (Kim et al. 2003). New technology and innovation makes domestic firms more competitive and makes them the owner of licensing. But FDI flow kills all this process and makes them dependent on foreign technologies. Innovation is vital not only to discover new technology and new product but also to compete with foreign firms.

The third theory is applicable with minimum requirements and conditionality's in developing countries. According to the conditionality theory of FDI, the productivity of FDI is limited by financial and human capital developments of the developing countries. Human capital development (absorptive capacity) is a prerequisite to diffuse technology, to achieve investment demand and to improve economic performance (Meberatie and van Bergeijk 2013). FDI produces positive spillover if the host country has minimum human capital that can absorb or imitate and apply technology (Borensztein et al. 1998). Kosack and Tobin (2006) also challenged that the relation between foreign and domestic investment in low income countries depends on various factors, such as, the economic policies, the commitment of foreign investors to diffuse technology and the level of human development. If these conditions are implemented, FDI will have positive spillover effect on the domestic private investment in developing countries.

2.4: Complementarities of Foreign Aid and FDI

It is generally accepted that low income countries lack resources to finance its development needs and look for foreign capital to augment domestic resources. Mostly these foreign capitals are inflow either in the form of foreign aid or FDI. Theoretical and empirical evidence reveals that FDI and official development assistance affect growth of developing countries in different ways. Some argue that FDI contributes more than aid because of its inherent relation with market forces and rule of law (Kosack and Tobin 2006). They argue that if it's supported by skilled man power FDI brings positive effect on the less developed countries. Imposingly others argue that instead of filling technology and knowledge gap it crowds out domestic investment and hence affect economic development negatively.

As pointed out above, economists have different views on the importance of foreign aid to the investment and economic development in developing nations. Here the point is not to assess the

usefulness of aid and/or FDI on investment but to examine the complementary or substitutability relationship of the two financial forms of capital flow. Many economists argue that both have complementarity characteristics based on development policy of host countries. According to Selaya and Sunesen (2008) foreign aid increase the marginal productivity of capital through providing capital for infrastructure development, encouraging human development and public investment and then promote foreign as well as domestic investment. The basic line of argument is aid can buy growth through affecting positively domestic and foreign investments. Similarly Kosack and Tobin (2006) argue that international community's committed to increase the flow of aid to African countries with the aim to increase foreign investment sustainably and affect the economic development. According to their argument the fall of aid flow will cause to the decline in foreign direct investment and affect the economic performance in the continent. They recommend that developing nations should reform their policies that can magnetize foreign aid and FDI to boost investment and economic growth. Bhavan et al. (2010) find positive relation between FDI and aid in the long run. They reason out that foreign aid finances infrastructure and human resource development of poor countries and this in return attracts foreign direct investment. They provide practical example about the healthy macroeconomic variables of the south Asian countries Bangladesh, Pakistan, India and Sri Lanka due to the complementary effect of both aid and foreign investment during 2009/10.

To the other side for example, Karakaplan et al. (2005) and Kosck and Tobin (2006) argue that the flow of aid affects FDI negatively. Aid and FDI are unrelated in the developing countries. Aid is targeted to assist government financial deficit and finance human capital development whereas foreign direct investment is more private and related with physical capital. Caselli and Feyler (2007) argue that the presence of more foreign aid flow to developing countries lowers the marginal productivity of capital and affect investment growth. Therefore, they have substitutability relationship than complimentary. The "Dutch disease" literature also argues that Aid and FDI has negative relationship. More inflow of aid affects the export sector of the economy and this damage both foreign and domestic investment growth. Empirical and theoretical evidences indicated that these two forms of foreign capital flow have ambiguous relationship. Different authors argued in different ways based on the countries situation.

2.5: Empirical Evidences

As empirics indicated many studies has been researched on the impact of foreign aid on investment and economic development of developing countries. However, there is no common consensus; generally they found ambiguous results, as such, positive and negative results and also positive effect conditionality on policy and institutional quality. For example, Dollar and Easterly (1999) find in the short run, by channeling financial gap of the poor countries, foreign aid facilitates investment and economic growth. Herzer and Morrissey (2013) find positive relationship between aid and investment. According to Herzer and Morrissey foreign aid increases the real GDP of African countries by financing domestic investment. It supports the theoretical evidences of aid literature i.e., foreign capital flow, aid finances domestic investment of capital shortage countries. Gyimah-Brempong (1992) also find positive and significant result by using Least Square Dummy Variable (LSDV) model in sub Sahara African countries. The result shows aid has positive impact on the economic growth via affecting national saving and investment.

To the other side, Munemo (2011) used a general equilibrium model and argued that foreign aid damages private investment growth by harms the terms of trade if countries received abundant aid. The argument is as the country received more aid it affects the export sector and in turn

adversely affect the private investment growth. Herzer and Grimm (2012) used panel co-integration and causality techniques to analyze the long run relationship and argued that foreign aid had a negative significant factor on the development of private investment. Likewise, Morrissey and Herzer (2013) used panel co-integration for cross country regression and found negative effect on output through affecting investment in the long run. Snyder (1996) also studied the cross country relationship between foreign aid and private investment co-integration and he found insignificant relationship, the country received high aid has low investment growth rate and vice versa.

Burnside and Dollar (1997) conducted a study on aid interaction with macroeconomic policies and concluded aid without good policy is wasting of resources. According to them good governance and institutional quality helps to use aid effectively and promotes investment and growth via filling development gaps of low income countries. Here the point, it's not the amount of aid received, what matters is policy that improves the economic efficiency of developing countries. To the opposite, Hansen and Tarp (2001) concluded foreign aid have positive impact on the growth of private investment without the conditionality of policy environments.

On the relationship between FDI and DPI, different empirics indicate varied results. For example, Bal and Rath (2014) analyses the effect of FDI on domestic private investment in India by using VAR approach and found that as FDI has crowding in effect. In China high inflow of FDI produces positive externalities (Zhang and Song 2000, Cheung and Lin 2005). It helps to domestic manufacturing firms to acquire knowledge and encourages research and development to further explore development alternatives. Borensztein et al. (1998) discussed on the issue of FDI and domestic investment growth and conclude that FDI is conditional on the availability human capital that developing countries have. Without capable human being FDI flow crowds out domestic private investment. FDI also affects domestic private investment if it competes with domestic resources.

Bhavan et al. (2010) investigated whether aid has complementary or substitutable relationship with FDI and they found that aid inflow for human capital and infrastructure development helps to attract FDI in South Asian economies. The improvement in transport facilities, telecommunications, electricities, water, etc and the presence of capable human capital to deliver quality services encourage foreign investors to invest in developing countries. In the same way Blaise (2005) studied the complementarities of Japan ODA and FDI flow in China by using conditional logit analysis. Blaise found positive and significant results between aid and FDI flow i.e. aid has spillover effect for Japanese Manufacturing firm in China. This contingent relationship is also related with infrastructural and human capital developments that prioritize by the China's government itself to attract foreign firms. While to the other side, Kosack and Tobin (2006) argue that aid and FDI flows are neither substitute nor complement relations instead FDI flows are more related with the development whereas aid is conditional with countries economic growth. Karakaplan et al. (2005), Selaya and Sunesen (2008) and Caselli et al. (2007) found substitutability relationship. They argue that large size inflow of aid lowers the marginal productivity of capital and hence affects FDI inflow.

Table 2. 1: Tabular forms of some empirical evidences.

No.	Author	Methodology	Dependent Variable	Independent variables	Result
1	Mahdavi (1990)	Cross-country data for 8 countries	Private investment	Aid	Finds a positive but insignificant association between aid and private investment.
2	Hadjimichael et al. (1995)	Multiple regression for 41 Sub Saharan African countries over the period 1986 to 1993	Private investment	Aid	Find that the impact is positive for countries under structural adjustment and negative for countries with negative per capita growth.
3	Snyder (1996)	Cross country regression (36 countries) from 1977 to 1991	Private investment	Real GDP, inflation, openness, debt and government investments	Found negative relationship between private investment and foreign aid.
4	Dollar and Easterly (1999)	Pooled Ordinary Least Squares (OLS) regressions for 49 countries	Private investment	Aid and policy	Find a positive effect of aid on private investment in a good economic policy environment, but this effect is subject to diminishing returns; the marginal impact of aid declines and becomes negative at high volumes of aid.
5	Munemo (2011)	General equilibrium model of international trade and IV technique	Domestic private investment	Aid, TOT, price of international goods imported, government policies and regulations	Aid reduces private investment in Africa in two ways. First, Increases international prices of goods. Second, increase prices of

					imported goods affect domestic investment.
6	Herze and Grimm (2011)	Bivariate Panel co-integration and causality technique for 39 countries between 1970 to 1999	Domestic investment	Foreign aid	Statistically significant negative effect on private investment.
7	Herze and Grimm (2012)	Bivariate Panel co-integration and causality technique for 39 countries between 1970 to 1999	Private investment	Foreign aid	Aid has statistically significant and negative effect on private investment.

Chapter 3: Empirical Strategy, Data and Methodology

This section emphasizes mainly on the explanation of the data and the empirical approach adopted. This part serves as a building block for the subsequent parts of this paper.

3.1: Data Source

For this study secondary data are collected from World Development Indicators, United Nations Conference on Trade and Development (UNCTAD) in 28 August 2014 and Center for Systematic Peace (SCR) databases in 29 September 2014. Since DPI data is not directly found in World Development Indicators website, this paper took it as a proxy variable. To calculate DPI data we follow three steps; first, collect gross fixed capital formation of private sector in % of GDP (GFCF) data from World Development Indicators. Secondly, collect FDI data from UNCTAD. Finally, FDI data is subtracted from GFCF of private sector in % of GDP to obtain DPI data (Bal and Rath 2014). But in some years, FDI flow is greater than the value of gross fixed capital formation of private sector, which caused domestic private investment to have negative value in the sample countries. The value of DPI is negative; it is not because of the nonexistence of GFCF data but due to high inflow of FDI than GFCF. It is not logical to have negative value of gross DPI data due to such reason. So, in order to avoid negative values the study take a zero value for the some years, that FDI flow is higher than GFCF data. But for Robustness check the study also analyzed the negative values of DPI (see column 3 in Table 5.3, Table 5.4 and Table 5.5).

Data for the explanatory variables such as official exchange rate, net domestic saving and inflation are used from the World Development Indicators database. Whereas data for net official development assistance, foreign direct investment, real GDP and net export /trade are obtained from UNCTAD. Similarly, in order to get public investment data, first, the study draws GFCF of annual % growth and GFCF of private sector in % of GDP from World development Indicators. And then it deducts GFCF of private sector in % of GDP from GFCF of annual % of growth to obtain public investment data (Bal and Rath 2014). This paper also tried to consider CPIA and ICRG variables to analyze governance effect on the DPI but the data is not available for the EACs. So it includes only polity IV to measure the governance effect on the DPI in EACs. To compute polity IV data this study compile democratic and autocrat data from SCR organization data page which is updated and revised annually[3]. And then it deducts autocrat data from democratic data to construct polity IV data (Marshal et al. 2012). The length of the sample period runs from 1971 to 2012 which is decided by the availability of data.

3.2: Variables Description

The dependent variable in this study is the DPI, which is computed as the difference between GFCF of private sector in the % of GDP and FDI flow.

The independent variables of greatest interest are foreign aid which is measured as net official development assistance, foreign direct investment (FDI) flow and polity IV. The other explanatory variables estimated or variables which affect the response variable in the region are; Real

[3] http://www.systemicpeace.org/inscrdata.html

GDP, inflation, exchange rate, net national saving, public investment, net export/trade and polity IV (in Chapter 4 variables are described in detail).

The choices of these explanatory variables are determined by theoretical perspectives and the availability of data. According to theoretical considerations investment is factored by different macroeconomic variables. Among these real GDP or per capita income, real interest rate, inflation, debt servicing and public sector investment are some of determinants that affect domestic private investment development (Greene and Villanueva 1991). In addition to these variables Snyder (1996) identified real exchange rate, net export, aggregate saving and foreign aid as the other long run factors that conditions private investment in developing countries. Governance system is also matters the investment growth of the region. So in order to measure the conditional effect of aid with institutional capacity of the government on domestic investment in the region polity variable included in this study. It describes the characteristics of the government institution which measured by the combination of democracy and autocracy behavior of the ruling system.

However, due to the heterogynous characteristics of the sample countries all variables are not determinant factors for all individual countries in the region. In other words, domestic private is factored by different variables (listed above) in different countries in the region. The following Table shows the expected signs and measurement of the independent variables.

Table 3. 1: Measurement and expected sign of independent variables used in the analysis.

Variables	Measurement	Expected signs
Net official development assistance (ODA)	Amount of money inflows in millions of US dollar measured at current price and current exchange rate	+/-
Foreign direct investment (FDI)	Inward flow of FDI which is measured in US dollar at current prices and current exchange rate in millions	-/+
Real gross domestic product (real GDP)	Annual average growth rates of total production within a country, measured in US dollar	+
Official exchange rate	Annual average which measured based on monthly averages (local currency units relative to the U.S. dollar)	+/-
Inflation	Measured by the consumer price index reflects the annual % change in the cost of the average consumer of acquiring the basket of goods and services that may fixed annually	+/-
Net national saving	It is gross national saving minus the value of consumption of fixed capital in % of GNI	+
Net export	The amount of goods and services exported (X) and imported (M) in fiscal year, measured in US dollar at current prices and current exchange rate in millions	+/-
Public investment	The value of capital invested for the development of public infrastructure in US dollar	+/-
Polity IV	The difference between quantitative value of democracy and autocracy measured annually.	+/-

And also, since the interest of this paper is on the long run effect of aid on domestic private investment variables like shocks (drought, war or political instability), credit availability and others which vary from country to country and factors domestic private investment in the short run are not considered. Omitted variable bias (due to exclusion of these short term determinants) and error term correlation with explanatory variables are controlled by country specific fixed effect and time effect variables (see empirical strategy).

3.3: Empirical Strategy and Methodology

This paper examines long run effect of foreign aid on domestic private investment growth using panel co-integration model to control omitted variable and endoginiety bias for Eastern African countries.

Now a day it's common in panel co-integration technique to estimate bi-variate long run relationship between aid and domestic private investment (see Herzer, 2008, Herzer & Grimm 2011). But in developing countries it's difficult to estimate aid as the major determinant of domestic private investment growth. Other factors that are integrated with level, in the long run, like real GDP, inflation, trade, net national saving, foreign direct investment, exchange rate and public investment also determine domestic private investment growth in developing countries (Snyder 1996). Therefore, this paper includes these explanatory variables to investigate the effect of foreign aid on domestic private investment in EACs by using multivariate panel co-integration model.

Thus, the empirical model specified as:

$$LDPIit = \alpha i + \delta it + \beta 1LAIDit + \beta 2LFDIit + \beta 3LRGDPit + \beta 4LNSit + \beta 5LINit + \beta 6LPIit + \beta 7LERit + \beta 8Lpolity + \varepsilon it \quad \text{---- (5)}$$

Where DPI_{it} is domestic private investment, AID_{it} refers net official development assistance that expected to affect domestic private investment, FDI_{it} represents foreign direct investment flows to EACs, $RGDP_{it}$ refers real gross domestic product growth, NS_{it} national saving, IN_{it} inflation, ER_{it} exchange rate, PI_{it} public investment, polity refers to governance system of the region (democracy minus autocracy) and ε_{it} is error term over time period t= 1, 2,3, ..., T and countries i = 1. 2, 3, …, N. The β's are the coefficient estimates of each independent variable. In the long run, country specific omitted variables or heterogeneous characteristics are captured by country specific fixed effects, α_i and country specific time trend, δ_{it}. In the above equation, variables in the same order of integration and non-stationary variables are estimated. First difference I (1), stationary variables, are taken for the variable that have no the same order of integration in the long run.

The panel is unbalanced and the total sample size is 378 (9 countries and 42 time period). To estimate the relationship between dependent and explanatory variables 9 countries are selected from the region out of 14 countries. To select these countries the availability of data, similarity of socioeconomic and political conditions and dependency of foreign aid to finance investment and growth are used as a criteria. Based on these characteristics countries that are included in the estimation procedure are Ethiopia, Uganda, Rwanda, Kenya, Djibouti, Burundi, Comoros, Madagascar and Mauritius. Due to the inconsistency and the absence of data countries like Somalia, Eritrea, Seychelles, Tanzania and South Sudan are not considered in this estimation.

Equation (5) assumes domestic private investment is endogenous meaning that, in the long run, the change in aid causes private investment growth. But recent literature dispute that, in the long run the growth of domestic private investment may cause foreign aid inflow. That means the direction of causality may run from domestic investment to foreign financial support i.e., two way causality. However, as empirical evidence revealed the existence of co-integration between variables, Granger causality, causes the variable at least in one direction which means the presence of long run relationship runs from aid to domestic private investment, that is, the lower amount of private investment causes large size of aid inflow and high growth of private investment lowers aid receipt (Herzer and Grimm 2012). But to determine the direction of causality and to get unbiased result confidently Granger causality test is undertaken.

3.3.1: Methodology

The empirical investigation of the relationship between DPI and the explanatory variables in the EACs conducted in two steps. First, test order of integration of the variables. Second, estimate the relationship of the coefficients over the period 1971 to 2012 by using dynamic OLS (DOLS) panel co-integration estimation methodology.

To estimate the order of integration between the dependent and independent variables the paper used panel unit root test which is based on Im et al. (2003; Im, Pesaran and Shin, hereafter called IPS) and Augmented Dickey-Fuller (ADF) tests. After we identified the unit root test result the long run Granger causality test applied to check the direction of causality between aid and DPI.

Panel Unit root Test

There are different types of unit root test measurement in panel data. For example, Levin and Lin (1992, called LL) set off panel unit root study with heterogeneous dynamics, fixed effects, and an individual-specific determinant trend for balanced panel data. However, LL assumes the homogeneous unit root under the alternative. And the other test is that Im et al. (2003; IPS) type of unit root test for unbalanced data which assumes heterogeneous unit root under the alternative hypothesis. IPS unit root measurement is more preferable for the cross country regression and unbalanced panel data because we couldn't fully control the heterogeneity of each country. Therefore since the data for this study is unbalanced the paper used IPS panel unit root test methodology. The mathematical equation for the IPS unit root test presented as follows:

$$\Delta DPIi,t = \alpha i + \beta i DPIi,t-1 + \sum_{j=1}^{p} \rho j \Delta DPIi,t-j + \varepsilon i,t \quad \text{---------- (6)}$$

i= 1, 2, 3, ..., N, t= 1, 2, 3, ... T

Where α_i refers to the fixed effects or homogeneous effects of individual country in the region, ρi is the lag order and p is selected to make the error term uncorrelated over time. The null hypothesis of IPS test contains unit root: H_0: $\varrho_i = 0$, All panels contain unit root results and the alternative hypothesis is: H_1: $\varrho_i < 0$, some panels have a stationary result around a deterministic trend.

The Augmented Dickey Fuller (ADF) test type t-statistics of IPS can be written as follows:[4]

[4] H.Kim et al. (2005) also similarly suggests the ADF type of IPS panel unit test.

$$\bar{t}_{NT} = 1/N \sum_{i}^{N} tiT(pi) \text{ ----------} \quad (7)$$

Where $\bar{t}_{NT}$ refers a standard normal distribution as N and T $\approx \infty$ and N/T$\approx$k, where k is finite positive constant and $t_{iT}(p_i)$ is the augmented Dickey Fuller t-statistics for country i which is based on the individual country ADF regression result, as equation(5). Where the null hypothesis is all individual country has a unit root whereas the alternative hypothesis is at least some of country in the region has stationary.

Long Run Causality Test

As explained above, once we estimate panel unit root test and decided on the order of integration the next step is causality test of the variables in each country. To check causality between aid and domestic private investment long run Granger Causality Test is used. The Granger Causality Test procedures looks like the following;

$$DPIit = \sum_{i=1}^{n} \delta jAIDit - i + \sum_{i=1}^{n} \beta jDPIit - i + u1it \text{ ----------} \quad (8)$$

$$AIDit = \sum_{i=1}^{n} \delta jDPIit - 1 + \sum_{i=1}^{n} \beta jAIDit - 1 + \mu 2it \text{ --------} \quad (9)$$

Where β's denote the coefficients estimates and n refers the lag terms. Here we assume that domestic private investment and foreign aid are stationary if not we need to transform it to stationary before testing granger causality. And here we also assume that error term for the first and the second model are uncorrelated. In equation (1) the null hypothesis that *AID* doesn't Granger cause DPI if $\beta 1=\beta 2 = \ldots \beta j = 0$. Similarly in equation (2) DPI doesn't Granger cause *AID* if $\delta 1 = \delta 2= \ldots . \delta j = 0$. The numbers of lagged variables in the estimation process are determined by CIS and BIS methodology (Kejriwal and Perron 2008). The lowest value of CIS and BIS indicates the lagged variables that the study used in the estimation procedure.

Finally, after the estimation of the order of integration we proceed to estimate the relationship between the dependent variable and explanatory variables. To estimate the coefficient of estimators the study tried to consider OLS and GMM estimator Methodologies. But OLS estimator suffers from omitted variable bias and serial correlation problem between the error term and the explanatory variables. In the context of this paper, time invariant determinants factors of domestic private investment are omitted so the use of OLS estimator might produce biased result. However, GMM has a greater advantage than OLS regression. It controls endogeniety and serial correlation by including the current and lag variables and it produces unbiased result. Standard GMM model use variables in difference to control unabsorbed country specific effects and lagged values with levels as an instrument to correct simultaneity bias (Fakhfakh & Fitzroy 2006). In the same vein, dynamic OLS (DOLS) estimator which is based on Kao and Chiang (2003) detects endogenous problem and serial correlation by including current, lag and lead variables in the model. If the variables are co-integrated in the long run with level it produces unbiased result even with endogenous independent variables. It does require neither exogeneity assumption nor instrument variable to detect endogenous problem of explanatory variables (Herzer and Morrissey 2013). Therefore, due to these feature dynamic OLS estimation is super qualified and the most preferable estimation methodology for this paper. Here one of the most difficult questions is how to deal with heterogeneity problem

across countries in the region. For this the study I used Dynamic OLS panel co-integration methodology which allows cross country differences in the model.

The model is presented as follows;

$$LDPIit = \alpha i + \delta it + \beta 1 LODAit + \beta 2 LFDIit + \beta 3 LNEit + \beta 4 LPIit + \beta 5 LRGDPit + \beta 6 LERit + \sum_{j=1}^{n} \Phi ij \Delta ODAit - j$$

$$\sum_{j-1}^{n} \phi ij FDIit - j + \sum_{j=1}^{n} \varphi ij NEit - j + \sum_{j=1}^{n} \gamma ij PIit - 1 + \sum_{j=1}^{n} \pi ij RGDPit - j + \sum_{j=1}^{n} \rho ij ERit - j + \upsilon it$$

----- (10)

Where α_i country specific fixed effect, δ_{it} country specific time trend and $\Phi ij, \phi ij, \varphi ij, \gamma ij, \pi ij, \rho ij$ are coefficients of current, leads and lag differences which controls the serial correlation and endoginiety problems of explanatory variables. As expressed above Akaike information criterion (AIC) (Akaike 1973) or the Bayesian information criterion (BIC) of Schwarz (1978) are used to choose the number of leads and lags. The lowest value of the coefficient estimate indicates the number of leads and lags that are included in the estimation.

Furthermore, since aid and FDI are foreign source of capital, investigating the effect of foreign aid only on the DPI in the sample countries might yield biased result. Because FDI flows might have either positive or negative effect on the dependent variable, i.e., FDI may be significant effect on DPI together with foreign aid. Therefore, to investigate the individual effect the paper used the interactive terms of both aid and FDI as an explanatory variable and compare the result with the individual coefficient of aid and FDI. The regression equation specified as;

$$DPIit = \alpha i + \delta it + \beta 1 ODAit + \beta 2 FDIit + \beta 3 RGDPit + \beta 4 NEit + \beta 5 ERit + \beta 6 PIit + \beta 7 * ODAit * FDIit 10$$

$$+ \sum \chi ij ODAit - j + \mu it - - - - - - - - - - [11]$$

Where β_7 refers the coefficient of interactive term for aid and FDI, χ_{ij} indicates the current, lag and leads of the explanatory variable that assumed to detect the serial correlation and endogineity of explanatory variables as pointed out in equation (10).

Chapter 4: Data Description and Analysis

4.1 Data Description and Summary

This part of the paper elaborates the nature and distribution of the variables used in the next chapter.

The following table shows the summary and descriptive statistics of the variables used in the estimation process.

Table 4. 1: Summary statistics for the variables

Variable	Observation	Mean	Median	Standard Deviation	Minimum	Maximum
Dpi	255	1.53125	0.0000	4.222734	-27	17
fdi1	372	126.7552	26.000	208.6808	-26	970
rgdp	377	3.56557	1.7132	5.522272	-48.81	33.52
oda	378	678.1563	501.500	664.9055	-14	3819
inf	306	12.10417	8.500	17.76901	-8	161
ns	266	4.000	4.000	7.628824	-18	28
er	287	459.6306	128.83	581.584	2.02	2522.750
ne	298	-895.3073	4.000	1237.326	-81	194
pi	218	-3.031250	-4.5	19.81905	-47	131
polity	368	-3.322917	-1.000	19.30521	-88	10
oda_polity	368	-19.94609	-11.91	10.52781	-10.2344	19.872
oda_fdi1	369	7.505007	8.394	2.51447	1.791759	13.44497

Source: Own computation

Domestic Private Investment (dpi) growth: is a measure of the private investment level in EACs. The level of DPI might increase or decrease depending on the effect of different factors. In other words, DPI changes due the change in explanatory variables. The changes in the dependent variable vary from country to country depending on the situations of the host country. For instance, the increase in foreign aid might finance investment if it's not misused. As empirical evidences indicated overflow of capital and misappropriation of it damps DPI growth in developing countries.

In this paper the value of DPI lies between -27 and 17 with an average of 1.53. Hence, on average, DPI growth is positive and very low in the region. It is not considerably different from zero.

Foreign Direct Investment (fdi1) is the flow of capital from rich countries to EACs in the form of investment by foreign investors. It includes reinvestment of earnings, the sum of equity capital, and other long-term and short-term capital in the region. The presence foreign private investment assumed to augment the financial deficiency of the region and hence promote DPI. On average, the value of FDI flow to these countries range from a minimum -26 to a maximum of 970 with a mean value of 126.75. The negative of minimum value of FDI indicates that disinvestment in assets. It happens in three cases; first, when equity sell out to the third party, Second, when investors used the money to pay back liabilities. Third, when dividends greater than the current income earnings. As the mean value indicates, on average, FDI inflow is positive.

Real GDP (rgdp) is annual growth rate of gross domestic product, measured at constant price of each country in the region data from UNCTAD 2013. The average real GDP growth of the region ranges from -48.81 to 33.52 with average value of 3.56557. The mean value is positive and different from zero. It implies that the annual real GDP growth is positive in the region. This means that the annual improvement in real GDP attracts the entrepreneur's interest to invest more in each country. Positive development in Real GDP shows good opportunity to increase private investment.

Net Official Development Assistance (oda) is net overseas development assistance disbursement of loans made in concessional terms (net of repayments of principal) and grants by official agencies of the member countries of the DAC, by multilateral institutions, and by non-DAC countries to promote economic development and welfare in countries and territories and in DAC list ODA receipts. It includes loans with a grant element of at least 25 percent (calculated at a rate of discount of 10 percent) and excludes technical assistance and food support which is measured in US Dollars at current prices and current exchange rates in millions data from UNCTAD database 2013.

The average value of net ODA in concessional term ranges from -14 to 3819 with the mean value of 678.16 in US dollar. The minimum value of ODA is negative. This explains that debt servicing is greater than the flow of aid. To be more specific, in this paper, Mauritius received -14 million ODA in 2004, i.e., the country paid more debt than ODA it received in 2004. The mean value explains the average flows of ODA in the regional countries.

Inflation (inf) is the rate of inflation which is measured by the annual rate of change in the consumer price index. In other words, it is the overall general upward price movement of goods and services in the economy (often caused by an increase in the supply of money), usually as measured by CPI and PPI (from World Development Indicator). The average value of annual inflation growth rate lies between -8 and 161 with mean value of 12.1. The negative minimum value of inflation (-8) explains the fall in price of goods and services in the economy or deflation in certain country.

National Saving Rate (ns) is a savings rate that refers to the percentage of GNI savings by households in a country. It denotes that the financial growth and development of the country, as household saving is the major source of government income to fund public services. Rate of national saving differs from country to country depending on the socio economic behaviors. For example, retirement age, borrowing constraints, income distribution over life time, population and welfare state influenced the level of national saving. In other words, a country that pays retirement pensions generated from tax levied on people of working age will have lower saving rate compared to countries where people have to save to personally provide for their retirement. Therefore, the growth of national saving factors investment growth in this group of

countries. The effect is ambiguous meaning that it may have positive or negative effect. In this paper the average value of net national saving is in between minimum number of -18 and maximum number of 28 with average value 4. The mean value indicates that net national saving rate is positive and low as well.

Public Investment (pi) is public expenditures or spending which includes all consumption, investment, and transfer payments by the government. The purchase of goods and services for current use to satisfy directly the individual and collective needs of the society is classified under government final consumption expenditure. The acquisition of goods and services by the government intended to create future wellbeing's, such as infrastructure development or research spending, is classified as government investment (government gross capital formation). These two types of government expenditures, on final consumption and on gross capital formation, together contain one of the major components of GDP. The later types of government spending is very likely affect DPI either substitutability or complementarily relationships. The net effect depends on the countries situation, as empirical studies revealed, it differs from country to country.

The value of public investment ranges from -47 to 131 with a mean value of –3.03. The mean value indicates that public investment growth in the region is negative.

oda_fdi1 interaction is the interactive term of both forms of financial flow, i.e., foreign aid and FDI. Interactive term is used to measure individual effect of aid and FDI on the DPI growth. To measure the effect of interaction on the dependent variable we take the summation of both aid and FDI and the interaction coefficients.

Polity IV is a variable that used to measure governance system and institutional development in the EACs. As it's described by Marshal et al. (2012) polity IV is a combination of both democracy and autocracy characteristics of the ruling system. Democracy and autocracy are measured in quantitative value to obtain governance system of the regional countries. It's calculated as democracy minus autocracy in the region data from CSP dataset 2014.

But in the case of EACs as we can understand from the summary statistics the quantitative value of polity ranges from -88 to 10 with mean value of -3.3229. The mean value indicates that the region has autocratic system of governance, on average, or institution is poorly organized. The minimum value -88 indicates a transition period - when new institutions are established or old systems are removed either by election or coup d'état. And the maximum value 10 explains full democracy in the specific country[5].

oda_polity interaction is the interactive term of foreign aid and polity IV variable. Interactive term is used to measure the conditional characteristics of aid with regional governance system.

4.2: Data Analysis

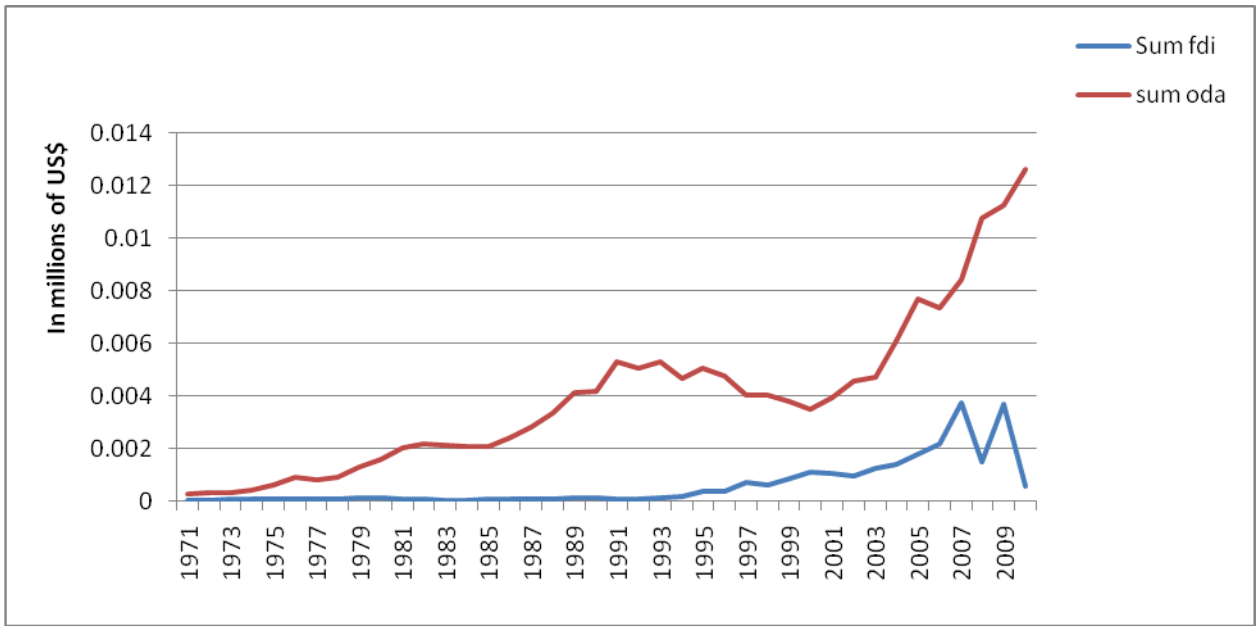
The study has analyzed data over the period 1971 to 2012. The sample period is selected based on the criterion, availability of data. The list of dependent and independent variables are explained in chapter three. In this part the study analyzes the trends of main variables (foreign aid and FDI) in relation to the DPI.

[5] See http://www.systemicpeace.org/inscr/p4manualv2013.pdf

4.2.1: Trends of Foreign Aid and FDI Flows

There has been an increasing trend of both aid and FDI flows, on average, subjected to temporal declining. Net ODA increases at an increasing rate except the period of 1990s while FDI flow stayed stagnant for long period and started to rise after mid 1990s but during world financial and economic crisis, it turned into unstable. Figure 4.1 shows the trends of financial flows (aid and FDI) to the EACs.

Figure 4. 1: Trends of foreign aid and FDI flow on the eastern African countries (1970 – 2012)



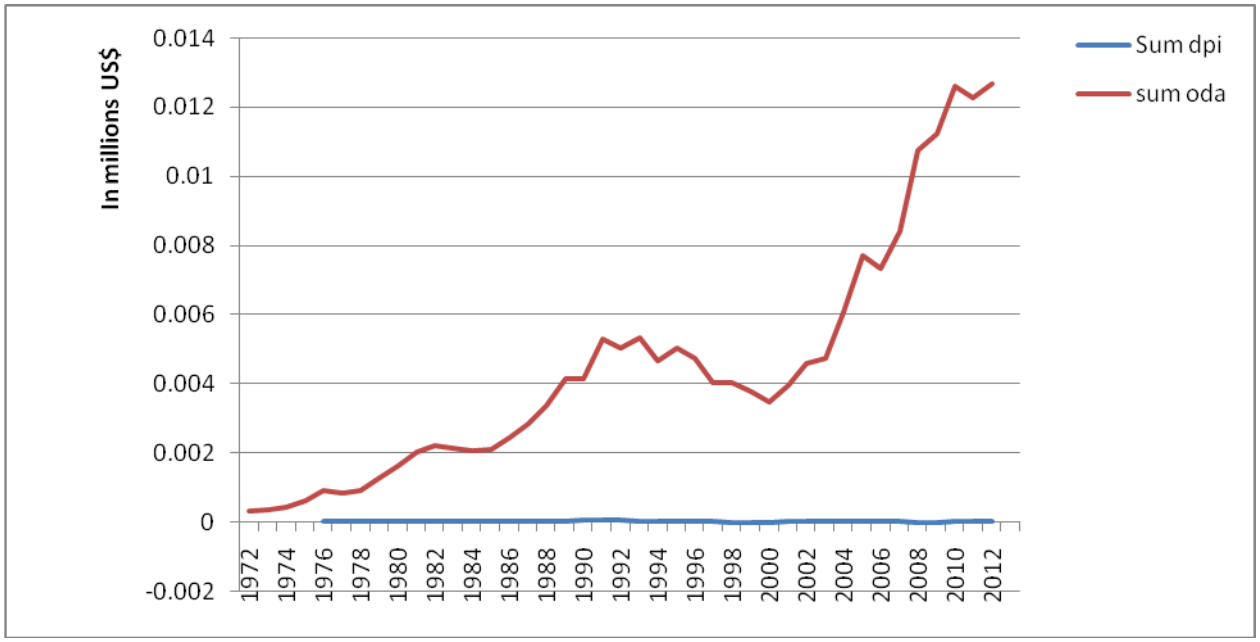
Source: Own computation data from World Development Indicator and UNCTAD in 28 August 2014.

With the aim of assisting poverty reduction strategy of the region the flow of net ODA (excluding technical assistance, food aid and military support) are increasing at an increasing rate till the beginning of 1990s, relative to FDI flows. But from 1992 to 2000 ODA inflow declines sharply. This may be due to Asian financial crisis that occurred in 1990s and the political instabilities that happened in Rwanda, Ethiopian and other countries in the region. On wards 2000, the macroeconomic policy reform and political stability, in relative term, and the commitment of donors to contribute 0.7% of their GDP share raises continually the flow of aid to the region (see United Nations 2005: 31, OECD 2005). However, FDI flows stayed sluggish or we can say zero FDI movement over the period 1971 to the beginning of 1990s. This time period was post independent period so there was no good condition that enables to attract foreign private investors. But after mid 1990 the financial crisis in Asia and macro economic reforms like privatization policy in the region gives chance for foreigners to see investment opportunities in the region (United Nations 2005). The accessibility of natural resources (minerals and water) and huge population helps to increase further FDI flow after 2000. And also during the world financial crisis FDI flow become unstable or unpredictable.

4.2.2: The Relationship between Aid and Domestic Private Investment

Figure 4.2 indicates the relationship between ODA and DPI. As we can see from Figure 4.2 foreign aid increases sharply except in 1990s whereas DPI growth is stagnant or not significantly different from zero. This trend shows that net official development assistance has no significant relationship with the growth of the domestic private investment over this period. This observation is supported by the aid pessimist literature, which argues aid did not support the developing countries economy. This may be due to the use of aid for government consumption and unproductive activities like corruption and rent seeking activities rather than using it for productive activities. For instance, more than 60% of Ugandan budget source comes from foreign aid but it's contributes nothing for the development of the economy (see, Atingi-Ego 2005). Atingi-Ego argued that aid is used for unproductive purpose by the officials in Uganda. The combination weak institutional development and bad policy gives more space for autocratic governance system to misuse resources (aid).

Figure 4. 2: The relationship between net official development assistance and domestic private investment growth (1971 – 2012).



Source: Own computation data from World Development Indicators and UNCTAD in 28 August 2014.

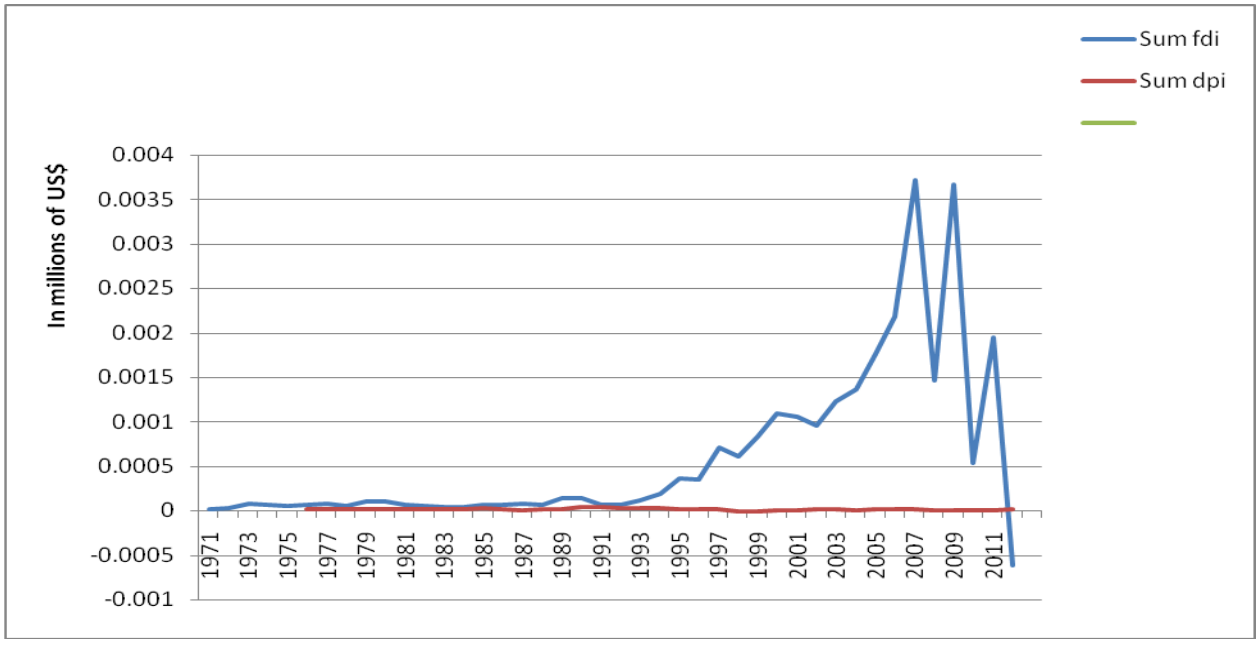
Furthermore, it could be due to high inflow of aid, which resulted in exchange rate appreciation and further evils, the export performance of the private sector. This shows foreign aid is ineffective to the growth DPI. High amount aid flow especially after the beginning of 2000 brought nothing on the DPI. This trend shows that there is another factor that advances investment in these countries than foreign financial flow. It may be governance system and institutional development. It's obvious the region is known by maladministration and weak institutional development. Political and religious conflicts and subsequent clashes that happened, in different period, between different tribes verify this fact. So we can denote that foreign aid is ineffective due to autocratic behavior of the government system or political and economic shocks that occurred in

different time. This argument is half support the work of Burnside and Dollar (1997, 2004) policy and institutions enables foreign aid to be effective. It's the government who committed and signs the agreement with donors and it's also the government who is responsible for policy reform and makes the country politically and economically stable. The failure of the government to use aid for productive activities makes the country aid dependent and/or aid ineffective.

4.2.3: The Relationship between FDI and Domestic Private Investment Growth

Figure 4.3 shows the relationship between FDI and DPI over the period 1971 to 2012 in the EACs. As indicated in the Figure below from 1971 to 1993 the flow of FDI is very small and almost negligible but afterwards it increases at an increasing rate till 2007. This trend proofs the finding of UNECA (2006) which shows FDI is substantially increase in developing countries. But DPI data stayed stagnant over the sample period. It has no significant change over the period. This implies that FDI and DPI has been insignificant relationship. In other words, the FDI has no significant effect on the DPI growth. It may be because the region has no skilled human power to adopt and apply technology. As discussed by Borensztein et al. (1998) positive externalities disturbed by low level of human development in developing countries.

Figure 4. 3: The association between FDI and domestic private investment (1971 – 2012)



Source: Own computation data from World Development Indicators and UNCTAD in 28 August 2014.

As prescribed in Figure 4.3 FDI a flow to the region is unstable after 2007/08. This might be because of the financial and economic crisis that happened in developed countries. In addition, the continuous decline of FDI after 2010 might be due to the stagnant growth of DPI over the sample period, it in return affects the interest of foreign investors to invest in this region. Above all the trend shows FDI and DPI has insignificant relationship over the sample period. This may be due to

low level of human capital development to imitate and apply technology. Weak institutional development and the presence of bad policies also has its own effect for the adverse relation between FDI and DPI.

In general, as net ODA and FDI inflow increase over the sample period, on average, there is no significant change in DPI trend. In other words, both foreign financial flows have no significance effect on the growth of DPI in the region. This indicates that there might be another major factor that determines DPI other than aid and FDI. It might be domestic source of growth like good governance system and strong institution. Moreover, political and economic instability has also backward effect for the growth of the private sector. Therefore, countries should focus on domestic constraints first and then it is good also look foreign sources of growth to relax domestic financial and capital complexities. Foreign assistance might not be effective without suitable conditions in hosting countries.

Chapter 5: Results and Discussion

This section presents and discusses the outcomes of the empirical approach which was explained in the previous section. It begins with unit root test analysis to check whether the variables have stationary result or not. Then, it extends to estimate the effect of foreign aid on DPI growth by Dynamic OLS regression which is based on (Kao and Chiang (2000) estimation methodology. Interactive terms of aid with FDI and polity IV are used in order to estimate the complementarity/substitutability effect and conditional behaviors of aid, respectively. In addition, for robustness check, the effect of foreign aid on domestic private investment is estimated at individual country level. Finally, long run Granger causality test are employed to determine the direction of causality between domestic private investment and net official development assistance.

5.1. Panel Unit Root Test Results

Unit root test results are displayed in Table 5.1 and 5.2. Table 5.1 shows the Im-Pesaran-Shin (2003) unit-root test results of the dependent variable and explanatory variables. This paper removed the mean value and used lag 2 to control the serial correlation between the variables and 't' statistics and ' z' statistics measures the unit root analysis with and without trend. The null hypothesis is that all variables have unit root while the alternative is that some variables are stationary. The result shows that the variables domestic private investment, official development assistance, foreign direct investment, net export, net national saving and interactive term oda_fdi1 have unit root tests meaning that in the long run they are non-stationary with demeaned and trend data. Whereas the variables real GDP, inflation, polity IV, public investment and interaction aid_polity have stationary results or they are integrated with order (0). So, we accept the alternative hypothesis, i.e. not all variables have a non stationary variable with levels.

Table 5. 1: Im-Pesaran-Shin unit-root test results

	Demean		Trend	
	T	**Z**	**T**	**Z**
Dpi	6.0344	1.0000	8.3635	1.0000
Oda	1.3200	0.9066	1.1239	0.8695
Rgdp	-5.3942	0.0000	-4.1609	0.0000
fdi1	3.3188	0.9995	4.531	1.0000
Inf	-2.7627	0,0029	-2.473	0.00067
Er*	8.2262	1.0000		
Ns	-0.0739	0.4706	-0.8865	0.1877
Ne	5.7305	1.0000	5.5754	1.0000
Pi	-3.9109	0.0000	-2.2068	0.0137
oda_fdi1	6.8039	1.0000	9.2938	1.0000
Polity	-5.4553	0.0000	-2.1727	0.0149
oda_polity	-3.8527	0.0001	0.6234	0.7335

*Exchange rate has insufficient number of time periods to compute W-t-bar of trend Im-Pesaran-Shin (2003) unit root test. (***), (**) and (*) indicate statistical significance at the 1 %, 5 % and 10 % levels

Source: own estimation based on data from UNCTAD, CSP and World Development Indicators.

Table 5.2 displays Fisher type augmented Dickey Fuller test results. Like the Im-Pesaran-Shin (2003) unit root analysis, the ADF test uses time trend data, lags 2 and at the same time removed cross sectional means to control for serial correlation. The null hypothesis is: all panels have unit root test and the alternative is that at least some variables have stationary at level. ADF result shows similar result with the IPS unit root test with demeaned and trend data (in levels). The result leads to reject the null hypothesis. This shows that the variables including inflation, real GDP, polity IV, public investment and interaction aid_polity have stationary in both demeaned and time trend data.

Table 5. 2: Fisher-type augmented Dickey-Fuller unit-root test results

	Demean		Trend	
	T	**Z**	**T**	**Z**
Dpi	3.1094	0.9991	3.6247	0.9999
Oda	4.8309	1.0000	3.3074	0.9995
Rgdp	-5.7072	0.0000	-4.3556	0.0000
fdi1	2.3060	0.9894	2.1474	0.9841
inf	-2.9248	0.0017	-2.5491	0.0054
Er	7.5222	1.0000	1.4884	0.9317
Ns	0.2679	0.6056	-0.7137	0.2377
Ne	5.3760	1.0000	4.1482	1.0000
Pi	-3.6393	0.0001	-2.1981	0.0140
oda_fdi1	-5.8822	0.0000	-2.0761	0.0189
polity	1.9159	0.9723	-0.8907	0.1865
oda_polity	5.1425	0.0000	0.8291	0.2035

(***), (**) and (*) indicate statistical significance at the 1 %, 5 % and 10 % levels

Source: own estimation based on data from UNCTAD, CSP and World Development Indicators.

As we can observe from the Table 5.1 and Table 5.2 both IPS unit root test and ADF unit root test produces uniform result. Thus, to estimate the coefficients of the variables we should convert non-stationary variable to stationary by using first difference technique i.e. non-stationary variables should differenced out to estimate the variables that have the same order of integration in the long run.

Also to measure the coefficient estimates of each country in the region unit root test done at individual country level. In the Appendix Table A1.12 and Table A1.13 shows unit root test results for each country. Each variable, in different countries, have mixed unit root test results. Consequently, the same principles are applied in the coefficient estimates of individual country, i.e. stationary variables are changed to non-stationary variables to estimate the variables that have the same order of integration.

5.2: Long Run Granger Causality Test Results

In this section the study presents the evidence from causality test analysis. Eventhough DOLS estimation does not require causality test (see the methodology part) the researcher is interested to check causation between the dependent variable and foreign aid. Therefore, the study examines the long run causality between the net ODA and DPI. In order to present the results from the causality analysis in a compact way we use Long run Granger causality test (VAR and VARGRANGER) and p-values for causality from DPI to aid versus causality from aid to DPI. From Table A5.3 to Table A5.11 (see in the appendix) shows the causality test result for each countries in the region. The null hyphothesis is H_0: there is no two way causality whereas the alternative hyphothesis is H_1: there is bidirectional correlation between aid and DPI.

Therefore, according to test results Table A5.5 country Djibouti has bi-directional result. It is not only aid affect DPI growth but the existence of economic shocks also causes to recieve high amount of aid and the increase in DPI reduces the flow of aid. Table A5.6 and A5.8 show uni-directional long run causality, impling that ODA causes DPI growth. While Table A5.4, A5.7 and A5.11 displays unidirectional but the direction of causality is differet from Ethiopia and Madagascar, meaning that DPI causes foreign aid. Table A5.3, A5.9 and A5.10 show no causal relationshiop in both directions. This indicates that neither aid nor DPI is determined one by the other in Burundi, Mauritius and Rwanda.

5.3: Dynamic OLS (DOLS) Estimation results

In this section Dynamic OLS regression of the cross country and individual country results are presented and discussed based on the models set out in chapter three. In addition to investigating the relationship between aid and DPI the study also measures the co-movement characteristics and conditionality behavior of aid with FDI and polity interaction, respectively.

5.4: Panel (Cross Country) Coefficient Estimates

Based on the panel unit root test result, variables that are integrated with the same order are estimated. In other words, non-stationary variables are converted into stationary data to estimate variables that have the same levels or the same order of integration. For this estimation, following Kao and Chiang (2003) DOLS technique is used for equation (10) and equation (11). As prescribed above the lag and lead variables are included to detect the serial correlation and endogeiniety problems and also to get unbiased coefficient estimates. Lags 2 and lead 1 are selected based on AIC and the BIC.

As we can observe in Table 5.3, the coefficient estimates are reported with and without log transformation for comparison purpose. In Table 5.3 column (1) and column (2) indicates the coefficients estimates with zero minimum value of DPI whereas column (3) shows coefficients estimates with negative value of DPI. Column (3) is presented here for robustness checkup. The result from column (2) indicates that ODA has negative and statistically significant result at 1% level. More precisely, the point estimate implies that, in the long run a 1 point percentage change in ODA reduces domestic private investment growth by 0.153 percentage points. The result is robust, that, as ODA increase by 1 % point domestic private investment decrease by 0.0164 percentage points. It indicates that the flow of ODA crowds out DPI growth in the EACs. This result is consistent with the previous finding of Herzer and Grimm (2011), Snyder (1996), Jonathan Munemo (2011) which emphasized that aid undermines the domestic private investment growth by weakening

accountability and institutional quality, encouraging corruption and rent seeking activities. This finding supports the aid fungability literature, which argues that using aid for unplanned activities weakens the economy of the recipient countries. Using aid for government consumption affects domestic private investment negatively.

Table 5. 3: DOLS estimate of the long run effects of aid on domestic private investment growth for the period 1971 - 2012

VARIABLES	(1) D.dpi	(2) LD.dpi	(3) LD.dpi
LD.fdi1	-0.0209***	-0.00587***	-1.004***
	(0.00149)	(0.00149)	(0.00130)
LD.oda	-0.167***	-0.153***	-0.0164***
	(0.00553)	(0.00659)	(0.00591)
L.rgdp	0	0	0
	(0.077)	(0.086)	(0.080)
L.inf	0.320***	0.0342	0.105*
	(0.0583)	(0.0624)	(0.0579)
LD.ns	-0.598***	-0.819***	-0.00396
	(0.0774)	(0.0853)	(0.0790)
LD.er	0.574***	0	0
	(0.092)	(0.0103)	(0.095)
LD.ne	-0.0181***	-0.0139***	-0.00454***
	(0.00103)	(0.00109)	(0.00101)
L.pi	0.0947***	0.173***	0.0815***
	(0.0126)	(0.0128)	(0.0119)
L.polity	-0.232	0.106	0.0183
	(0.584)	(0.631)	(0.585)
Years	28	27	27
Number of countries	9	9	9
R-squared	0.89	0.94	0.84

The regression is done by DOLS estimation methodology with one lead and two lags. (***), (**) and (*) indicate statistical significance at the 1 %, 5 % and 10 % levels, respectively and Standard errors in parentheses.
Source: own estimation based on data from UNCTAD, CSP and World Development Indicators.

Similarly, FDI and DPI are also negatively correlated implying that the inflow of finance in the form of FDI harms the DPI growth of the region by 0.00587 percentage points (column 2). The result is robust in column (3). This shows that the flows of FDI crowds out DPI growth in the region. In this case, foreign firms took over the scarce resource rather than transferring the skills and technology and/or domestic entrepreneurs cannot compete with foreign investors or it flows to the reverse in the form of repatriation of profits and dividends. This finding is consistent with the work of (Borensztein et al. 1998, Kosack and Tobin 2006). Borensztein et al. (1998) discussed that FDI could not be effective without qualified human beings and good policy. Similarly, Kosack and Tobin (2006) recommend that domestic policy of hosting country determines the effectiveness of FDI on DPI growth. According to these authors the flow of FDI dampens DPI growth in the region if the

necessary conditions are not fulfilled. Therefore, we can argue that aid and FDI discourage DPI growth in the region.

5.5: Complementarity Effects of Foreign Aid and FDI

As discussed by different authors, (e.g., see Morrissey 2004, Herzer and Grimm 2011, Kosck and Tobin 2014) the basic assumption of foreign capital flow is to finance development constraints of low income countries. This financial and capital flow comes either in the form of foreign aid or in the form of FDI. However, estimating the effect of aid, only, on DPI might yield biased result if both aid and FDI have co-movement characteristics. In order to get unbiased result and avoid such ambiguity, it is necessary to measure the two financial forms of flow individually. So, this study used interaction of aid with FDI to measure the individual and composite effects on domestic private investment. Based on this understanding, the individual effect of foreign aid and FDI flows are estimated by using DOLS estimation methodology.

Table 5. 4: DOLS estimate with interactive term of aid and FDI over the period 1971 - 2012.

	(1)	(2)	(3)
VARIABLES	D.dpi	LD.dpi	LD.dpi
LD.oda	0.0164*	0.000192	-0.0240***
	(0.00897)	(0.00903)	(0.00770)
LD.fdi1	-0.0211***	0.000947	-1.015***
	(0.00206)	(0.00226)	(0.00193)
L.rgdp	0	0	0
	(0.0900)	(0.0946)	(0.0806)
L.inf	0.311***	0.0981	-0.0936
	(0.0653)	(0.0672)	(0.0573)
LD.ns	0	0.466***	0.111
	(0.0866)	(0.0927)	(0.0790)
LD.ne	-0.0113***	0.00177	-0.00239**
	(0.00115)	(0.00118)	(0.00100)
LD.er	0	0	0
	(0.107)	(0.112)	(0.0959)
L.pi	-0.0949***	-0.141***	0.109***
	(0.0141)	(0.0143)	(0.0122)
L.polity	-0.328	-0.233	0.177
	(0.656)	(0.682)	(0.581)
oda_fdi1	-0.000334***	0.000514***	0.000217***
	(2.21e-05)	(2.21e-05)	(1.89e-05)
Years	28	27	27
Number of countries	9	9	9
Adjusted R-squared	0.843	0.92	0.809

The regression is done by DOLS estimation methodology with one lead and two lags. (***), (**) and (*) indicate statistical significance at the 1 %, 5 % and 10 % levels, respectively and Standard errors in parentheses.
Source: own estimation based on data from UNCTAD, CSP and World Development Indicators.

Table 5.4 shows the composite effects of foreign aid and FDI on DPI growth. The result (column 1) indicates that aid has positive and significant effect at 10% level on the DPI growth. While, in the second column (log transformation) aid has positive effect but it's statistically insignificant. In Column (3) the robustness check indicates that aid has negative and statistically significant result at 1% level. Similarly, financial inflow in the form FDI alone has positive and negative effect on the growth of DPI with and without log transformation, respectively. The result without log transformation is statistically significant while with log transformation it's statistically insignificant. Column (3) result shows that FDI has highly negative result. However, the interactive term column (2) and column (3) has positive and statistically significant result at 1% level. Therefore, the interactive term result (column 2) suggests that net ODA in conjunction with FDI has positive effect on the DPI in the EACs. The result is robust; see column (3). This implies that, aid and FDI flows has contingency effect on the growth of DPI, i.e., foreign aid provides economic facilities and which in return creates favorable condition for foreign investors to invest in low income countries. The finding supports the work by Selaya and Sunesen (2008) that argues foreign aid raises the marginal productivity of capital via creating access for infrastructural developments and public investments and human development as well. It is true that most of public investments in the region are constructed by the long term loans obtained from WB, IMF and bilateral organizations. The improvement in public infrastructure facilities through this channel attracts the intensions of foreign investors.

5.6: Conditionality of Aid on Policy

In this part, the effect of aid on DPI is analyzed in relation to policy environment. In order to estimate the conditionality characteristics of aid with polity (governance system), this study considered interaction of aid with polity variable.

Table 5.5 shows the regression result of aid, conditional on democracy/autocracy, on the domestic private investment of the region. As we can understand in Table 5.5, column (2), foreign aid alone has inverse relation with domestic private investment of the region and it is highly significant at 1% level. In column (3), ODA has positive and statistically significant result at 1 % level. The interaction (aid*polity) in both column (2) and column (3) has negative result. The negative interaction indicates that the absence of democracy, in the region, affects negatively the growth of domestic private investment. This is consistent with Burnside-Dollar (1997) approach, which argues that aid is ineffective due to the combination of bad policy and weak institutional development in the aid recipient countries. The same is for the EACs. When we see polity IV variable data, it is negative, i.e. the government has autocratic system of governance in the region. In practice this type of government employed aid for unproductive activities. Apart from using aid for the realization political interests, bad governance system creates unfavorable condition for domestic investors to invest their money in home country. Absence of democracy encourages private investors to spend their money outside of the host countries.

Table 5. 5: DOLS estimate with interactive term of aid and polity over the period 1971 to 2012

VARIABLES	(1) D.dpi	(2) LD.dpi	(3) LD.dpi
D.fdi1	-0.0512***	0.0907***	-0.991***
	(0.00176)	(0.00187)	(0.00142)
Rgdp	0	0	0
	(0.0700)	(0.0737)	(0.0578)
D.oda	0	-0.0414***	0.0172***
	(0.00774)	(0.00817)	(0.00604)
Er	-0.0609*	-0.155***	0
	(0.0340)	(0.0356)	(0.0719)
Inf	0.288***	0	0.101**
	(0.0394)	(0.0402)	(0.0413)
D.ns	0	0	0
	(0.0757)	(0.0801)	(0.0581)
D.ne	-0.0143***	0.00440***	0
	(0.000822)	(0.000833)	(0.0719)
pi	-0.0503***	-0.335***	0.0564***
	(0.0126)	(0.0129)	(0.00883)
D.polity	0	0	0
	(0.752)	(0.784)	(0.425)
D.oda_fdi1	-0.000213***	8.70e-05***	-1.70e-05
	(1.91e-05)	(1.82e-05)	(1.35e-05)
oda_polity	-0.00366***	-0.000675*	-2.80e-06
	(0.000347)	(0.000373)	(0.000291)
Years	28	27	27
Number of countries	9	9	9
R-squared	0.964	0.91	0.809

The regression is done by DOLS estimation methodology with one lead and two lag. (***), (**) and (*) indicate statistical significance at the 1 %, 5 % and 10 % levels, respectively and Standard errors in parentheses.
Source: own estimation based on data from UNCTAD, CSP and World Development Indicators.

It implies that system of governance or policy is vital to promote private investment in the region. Investors need rule of law, accountable government, strong and consistent institution which offers warranty for investment activities. If aid comes with these policy variables, it can reduce the investment constraints of the developing countries unless it is a waste of resources (Burnside and Dollar 1997). Therefore, this study concludes that aid is ineffective in the EACs due to the absence of good governance system. In other words, government in this region used aid for unproductive activities (corruption or using aid for political machine) instead of using it for infrastructure facilities which facilitates domestic private investment in the region. Therefore, this finding supports aid conditionality theory which argues foreign aid is important in developing countries if it's supported by sound macroeconomic policy and strong institution of the host countries.

5.7: Individual country coefficient Estimates

In addition to panel estimation, the study also analyzed the individual country coefficients estimates between aid and DPI. In this estimation, unit root tests are done country by country (see Table A5.1 and Table A5.2). Based on this, individual country regression results are reported in Table A5.12 and Table A5.13, which is also estimated by Dynamic OLS technique. In Table A5.12 and Table A5.13 column (1) shows coefficients estimates of the explanatory variables for zero value of DPI data whereas column (2) indicates the coefficients estimates for the negative value of DPI. Column (1) result shows that external financial support in the form of aid has negative effect on the growth of DPI in all EACs except in Kenya. The finding is highly significant at 1% level in all countries except Uganda. It implies that the flow of foreign aid crowds out DPI growth in the region. This result is consistent with the finding of Table 5.3 (estimated at panel level), which stated aid in the EACs has negative effect. This indicates that the flow of ODA in these countries remain ineffective for the period of 1971 to 2012. It damages the growth of the sector. The relationship between aid and DPI goes against aid positivist theory. Instead of filling the saving and foreign exchange gap, it harms DPI in the region[6].

The co-movement characteristics of aid and FDI are also investigated in each country. The interaction of oda_fdi1, in column (1), result indicates that in Burundi, Kenya, Madagascar, Mauritius and Uganda has negative and significant coefficients estimates. This entails that aid and FDI has no contingent relationship in these countries. While in countries like Djibouti, Comoros, Ethiopia and Rwanda oda_fdi1 has positive and significant relations. This signifies that aid and FDI has co movement characteristics. From these, we can perceive that the interaction aid and FDI has different result in the EACs. Therefore, careful attentions should be paid when we estimate the effect of aid on domestic private investment, i.e. it is necessary to measure individual effects of both forms of foreign financial flow to avoid biased estimation. Similarly, the interaction of aid with polity has negative relation with DPI in Burundi, Ethiopia and Kenya while in other countries it has positive relations. However, it is only significant at 1% level in three countries, i.e., Burundi, Djibouti and Rwanda. This implies that in some countries aid is conditional with polity IV where as in the others it's not conditional. So, the individual country aid*polity interaction indicates that conditionality of aid on the DPI growth is not working in all aid recipient countries.

Discussion

Like other developing countries, EACs are also received huge amount of development assistance from donor countries to augment financial needs. However, financial development assistance in these countries has not promising result. As can be seen from Table 5.3, Table A5.12 and Table A5.13, aid and ODA has inverse relation with D at a regional and individual country level. Aid on domestic investment has crowding out effect in these countries. This result supports the work of Dichter (2012) who argues aid is unimportant for the development of low income countries. Dichter[7] concludes that aid couldn't meet its planned objectives since 1950s to the present and even it is not promising in the future. Similarly, aid in these countries also remains counterproductive for

[6] See, Mosley et al. (1987), Synder (1996), Herzer and Grimm (2011), Jonathan Munemo (2011) and Herzer and Morrissey (2013).

[7] He is aid practitioner for the last 40 years in different International NGOs and Multilateral institutions including like WB and the UN Development Programme.

the period 1971 - 2012. Different economists reason out differently for the ineffectiveness of ODA in developing countries. For instance, Synder (1996) point outs that high amount of aid inflow crowds out DPI. It is obvious that the size of aid in each country, in the region, received is different. This is also analyzed at individual country level and the result shows that such differences could not bring change on the sign of the coefficient. It changes only the magnitude of its effect on domestic private investment. The Robustness check; that aid is ineffective in the sample countries. Whatever the size of aid countries received it has negative effect in EACs. For instance Ethiopia, Rwanda and Uganda received high amount of aid while other received less amount in relative term, over the period, but the result is negative. It suggests that aid is not used for productive activities in EACs. Unless the government is using aid for infrastructural facilities and other economic facilities, the amount of aid received by itself couldn't have power to advance DPI.

Like the differences in the amount of aid received in all countries, in the region, have no similar determinant factors, implying that, DPI in different countries factored by different explanatory variables. For example, DPI in Burundi, Comoros, Djibouti, Ethiopia, Madagascar**,** Kenya and Madagascar are not determined by domestic national saving growth rate. The differences in determinant factor also changes only the magnitude of the coefficient estimates, which is expected. This is also good result which certifies the confidentiality of the paper. The omission of explanatory variables could not change the effect of ODA. Therefore, we can conclude that the flow of official development assistance crowds out domestic private investment at panel and individual country level.

Furthermore, institutional economist's debate that aid is ineffective due to poor institutional set up of aid recipient countries (Morrissey 2004). In this study, polity IV variable included to investigate conditional effectiveness of foreign aid. The result in Table 5.5, column (2), shows that interaction of aid and polity has negative result, i.e., the autocratic system of governance in the region affects the effectiveness of ODA. Even though authoritarian type of government is effective in developmental state of South Korea, Japan and China (Sorensen 2013) it is not working in EACs. Bad governance system, in the region, employed aid for unproductive sector instead of using it to expand infrastructure facilities. However, individual country, in Table A5.3 and Table A5.4 column (2), has mixed result, such as, negative and positive and statistically significant. Actually it is not statistically significant in all countries but the presence of different result indicates that conditionality of aid with governance system is not working in all countries. It doesn't mean that democratic or autocratic behavior of the government has no effect on the effective use of aid but it's to suggest that the mass generalization of conditionality theory in all aid receipt countries is wrong argument. Sorensen (2013) also discussed that it is impossible to conclude that all authoritarian system of governance could improve the economic performance of their home country like East Asian Tigers.

However, as we can see from Table A5.12 and Table A5.13 aid and DPI has exceptional, long run, relationship in Kenya. Contrary to other countries, aid has positive effect on the growth of DPI. The result is highly significant at 1% level. This is consistent with the work of Amanja and Morrissey (2006). The authors find negative relation between aid and growth but positive relation between private investment and foreign aid in Kenya. According to Amanja and Morrissey, aid relaxes financial constraints and in turn increases the investment opportunities of the country. The exceptionality of Kenya unlocks the developmental alter-nativities of foreign aid with conditional behavior of not only with policies but also with the democratization and good governance system of aid recipient countries. Since 1980's Kenya and donor countries have exceptional agreements and commitments on the conditionality of foreign aid, which is called "stop-go" approach. It states that if the government of Kenya fails to accomplish conditional agreement aid (loan or grant) is extended

till new negotiation and agreements will established i.e. donor's stop giving aid if the country goes against the bilateral agreements or starts to disobey. Aid will not deliver until the country willing to sign new commitments and/or new agreements. Such conditionality behavior helped the country to institutionalize development oriented programs (see Hanmer et al. 2003). This doesn't mean that Kenya's serving the interest of donor countries but this process helps the country to establish and built strong monitoring and evaluation system and strong institution, relatively, and set positive foot print on the effective use of resources (aid). According to the Hanmer et al. "stop-go" approach helped the country to stabilize the macroeconomic variables. Steady state of macroeconomic variables facilitates the private sector development. Currently, Kenya known by flexible policy, from the region, that enables it to draw the intentions of trans-national organizations with the motive of filling developmental gaps. For example, when Ethiopia endorsed anti-terrorist law and Charities and Civil Societies proclamation in 2009, a number of humanitarian organizations exiled from Addis Ababa to Nairobi. From this, it seems that the flexible approach of Kenya helped to receive development aid and also in the process it adopted right policy and institution. This approach left positive influence on the institutional development of Kenya (UN 2012). So, we can see that, aid by itself is not detrimental but the institution, the policy and the commitment of the government matter for the insignificant growth of DPI.

To summarize, aid has inverse relation with DPI in the region but its interaction with FDI has positive and significant association. Moreover, when aid interacted with polity IV it has negative and significant effect. This indicates that aid is ineffective due to weak institutional set up and bad governance structure in the sample countries. Under review the individual country estimation also verified that aid has negative relation with DPI. Irrespective of heterogeneity characteristics aid and DPI are inversely related in the regional countries except Kenya. Furthermore, the coefficient estimate of aid*fdi and aid *polity has different results. It has positive and significant result in some countries and negative and significant result in other countries. And also aid*polity variable has insignificant result in some countries. The individual country aid*polity interaction coefficient indicates that conditionality of aid with good policy and institution is not consistent with the work of Burnside and Dollar (1997, 2000 and 2004).

Chapter 6: Conclusion

This paper has examined the long run correlation between net ODA and DPI in the EACs by using dynamic OLS regression technique for the period 1971 to 2012. The main finding of this study is that foreign aid has negative and statistically significant result. The result is robust when we consider individual country case. With the exception of Kenya, the estimated coefficients of all other countries are negative and highly significant. So, this study concluded that the flows of foreign aid crowds out the DPI in the region. This finding is consistent with aid pessimist theory and fungibility literature, which argues that aid is ineffective in the recipient economy due to misuse or misallocation of it by the government (Djankov et al. 2008, Herzer and Morrissey 2009). However, in Kenya, aid has positive effect. This is because, Kenya and donor countries follow "stop-go' approach which signifies that donors stop giving aid if country fails to implement agreed rules and negotiations and will deliver if it signs new negotiation and commitments (Hanmer et al. 2003). Aid conditionality on "stop-go" approach helped the country to adopt flexible policy. It also assists the country to reform its policies and institutions timely. This accounts for the positive, long run, association between aid and DPI in Kenya.

The study also analyzed complementarity characteristics of aid and FDI by using oda*fdi interaction. The result shows that both forms of financial flows has contingent relationships at the regional level. It implies that foreign aid and FDI has contingent effect on DPI growth, i.e. the flow of aid attracts foreign investors by financing economic barriers. The result is consistent with the work of Selaya and Sunesen (2008) that argues ODA increases marginal productivity of capital by facilitating public investment and human capital development of developing countries. Moreover, conditionality behavior of aid with governance system is investigated by interacting oda*polity. The result shows that oda*polity has negative and statistically significant at the regional level. The negative coefficient estimate indicates that the region has autocratic system of governance. It suggests that aid may have positive response on the growth of DPI if the government is willing to practice democracy or if the country exercises good governance system. This result supports the empirical work of Burnside and Dollar (1997, 2000, and 2004). However, the individual country estimation shows different effect. This points out that the result is inconsistent with the conditional theory of aid which argues aid has positive effect on the DPI in developing countries. Despite the exercises of conditional behavior in some countries, it is not applicable to all aid recipient countries in the region. Thus, it is very difficult to generalize as aid has conditional effect with good policy and institutions.

Developing countries facing hard curency problem to import investment inputs and other capital goods and services (Herzer and Grimm 2011). On the other hand, "Dutch disease" litrature claims that high inflow of aid produces currency apprecaition and hence deteriorate export sector in aid recipient countries (Munemo 2011, Rajan and Subramanian 2011). In this paper the dynamics of "Dutch disease" and foreign exchange problems are not resolved. So, this study suggested that

future studies focus on how can aid creates "Dutch disease" effect in the developing countries. Does really developing countries recieve the amount of aid they need to finance development gaps?

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Appendix:

Table A5. 1: IPS unit root test Result for each individual country

Country code	Variable	T statistics	Z statistics	Non-stationary	Stationary
Burundi	**Dpi**	0.4536	0.4536		✓
Djibouti		0.2505	0.5989		✓
Comoros		0.7169	0.7633	✓	
Ethiopia		-0.8483	0.1981		✓
Kenya		-1.9755	0.0241		✓
Madagascar		1.2110	0.8871	✓	
Mauritius		-1.0018	0.1582		✓
Rwanda		-0.2741	0.3920		✓
Uganda		-0.1518	0.4397		✓
	fdi1				
Burundi		-1.1255	0.1302		✓
Djibouti		3.4582	0.9997	✓	
Comoros		0.1162	0.5463		✓
Ethiopia		2.0123	0.9779	✓	
Kenya		-0.4102	0.3408		✓
Madagascar		4.8210	1.0000	✓	
Mauritius		1.7022	0.9556	✓	
Rwanda		2.8646	0.9979	✓	
Uganda		0.7918	0.7858	✓	
Burundi	**oda**	1.1528	0.8755	✓	
Djibouti		-0.5738	0.2830	✓	
Comoros		-0.0292	0.4884	✓	

Ethiopia		2.0003	0.9773	✓	
Kenya		2.1240	0.9832	✓	
Madagascar		-0.3010	0.3817	✓	
Mauritius		1.7435	0.9594	✓	
Rwanda		3.3824	0.9996	✓	
Uganda		2.3283	0.9901	✓	
Burundi	**Rgdp**	-1.1845	0.1181		✓
Djibouti		-1.2578	0.1042		✓
Comoros		-2.2693	0.0116		✓
Ethiopia		0.1623	0.5645		✓
Kenya		-2.0309	0.0211		✓
Madagascar		-2.6275	0.0043		✓
Mauritius		-1.5440	0.0613		✓
Rwanda		-2.0900	0.0183		✓
Uganda		-0.7417	0.2291		✓
Burundi	**Er**	3.6221	0.9999	✓	
Djibouti		-0.5764	0.2822		✓
Comoros		Insufficient number of time periods to compute W-t-bar			
Ethiopia		2.7431	0.9970	✓	
Kenya		1.3209	0.9067	✓	
Madagascar		2.4279	0.9924	✓	
Mauritius		1.1214	0.8689	✓	
Rwanda		2.1297	0.9834	✓	
Uganda		1.8225	0.9658	✓	
Burundi	**Inf**	-1.9856	0.0235		✓
Djibouti		0.5190	0.6981	✓	

Comoros		-0.1614	0.4359		✓
Ethiopia		-0.6095	0.2711		✓
Kenya		-1.4611	0.0720		✓
Madagascar		-2.5683	0.0051		✓
Mauritius		-1.9914	0.0232		✓
Rwanda		-1.1529	0.1245		✓
Uganda		-0.3827	0.3510		✓
Burundi	**Ns**	-0.2840	0.3882		✓
Djibouti		-1.5343	0.0625		✓
Comoros		0.1696	0.5673		✓
Ethiopia		0.2065	0.5818		✓
Kenya		-1.6564	0.0488		✓
Madagascar		-1.1673	0.1215		✓
Mauritius		0.2317	0.5916		✓
Rwanda		-0.8543	0.1965		✓
Uganda		-0.1237	0.4508		✓
Burundi	**Ne**	2.7013	0.9965	✓	
Djibouti		3.1748	0.9993	✓	
Comoros		-0.0123	0.4951		✓
Ethiopia		4.7987	1.0000	✓	
Kenya		1.3858	0.9171	✓	
Madagascar		0.1336	0.5531		✓
Mauritius		2.2259	0.9870	✓	
Rwanda		4.1777	1.0000	✓	
Uganda		2.1391	0.9838	✓	
Burundi	**Pi**	-1.6033	0.0544		✓

Djibouti		-0.8906	0.1866		✓
Comoros		-0.0049	0.4980		✓
Ethiopia		-1.9638	0.0248		✓
Kenya		-1.9516	0.0255		✓
Madagascar		-1.5686	0.0584		✓
Mauritius		-0.7430	0.2287		✓
Rwanda		-1.2017	0.1147		✓
Uganda		-1.8538	0.0319		✓
Burundi	**polity**	-1.9481	0.0257		✓
Djibouti		-1.5728	0.0579		✓
Comoros		0.9850	0.8377	✓	
Ethiopia		-1.5576	0.0597		✓
Kenya		1.5050	0.9338	✓	
Madagascar		-1.4713	0.0706		✓
Mauritius		-0.3748	0.3539		✓
Rwanda		0.9317	0.8243	✓	
Uganda		-2.7484	0.0030		✓
Burundi	**oda_fdi**	0.6311	0.7360	✓	
Djibouti		3.6958	0.9999	✓	
Comoros		0.7399	0.7703	✓	
Ethiopia		3.9375	1.0000	✓	
Kenya		2.3679	0.9911	✓	
Madagascar		4.2668	1.0000	✓	
Mauritius		-0.5043	0.3070	✓	
Rwanda		6.1984	1.0000	✓	
Uganda		0.9724	0.8346	✓	

Table A5. 2: ADF unit root test result for individual country

Country code	variable	Z statistics	P value	Non-stationary	Stationary
Burundi	**dpi**	0.2987	0.6174		✓
Djibouti		0.5873	0.7215	✓	
Comoros		-0.8460	0.8012	✓	
Ethiopia		0.6679	0.2521		✓
Kenya		3.1935	0.0007		✓
Madagascar		0.9227	0.8219	✓	
Mauritius		0.9333	0.1753		✓
Rwanda		-0.1514	0.5602		✓
Uganda		0.2780	0.6095		✓
Burundi	**fdi1**	1.1639	0.1222		✓
Djibouti		0.9980	0.8409		
Comoros		- 0.4833	0.6856		✓
Ethiopia		- 0.9792	0.8363	✓	
Kenya		0.0352	0.4859		✓
Madagascar		1.0000	0.8413	✓	
Mauritius		-0.9629	0.8322	✓	
Rwanda		-0.9954	0.8402	✓	
Uganda		-0.8151	0.7925	✓	
Burundi	**oda**	-0.8995	0.8158	✓	
Djibouti		0.2500	0.4013		✓
Comoros		-0.3662	0.6429		✓
Ethiopia		-0.9787	0.8361	✓	
Kenya		-0.9831	0.8372	✓	
Madagascar		-0.0943	0.5376		✓

Mauritius		-0.9657	0.8329		
Rwanda		-0.9978	0.8408	✓	
Uganda		-0.9883	0.8385	✓	
Burundi	**rgdp**	1.2750	0.1012		✓
Djibouti		1.4219	0.0775		✓
Comoros		3.9556	0.0000		✓
Ethiopia		-0.5143	0.6965	✓	
Kenya		3.2757	0.0005		✓
Madagascar		5.0676	0.0000		✓
Mauritius		2.0440	0.0205		✓
Rwanda		3.4395	0.0003		✓
Uganda		0.4964	0.3098		✓
Burundi	**er**	-0.9984	0.8409	✓	
Djibouti		0.2536	0.3999		✓
Comoros		-1.0000	0.8413		
Ethiopia		-0.9944	0.8400	✓	
Kenya		-0.9255	0.8226	✓	
Madagascar		-0.9903	0.8390	✓	
Mauritius		-0.8938	0.8143	✓	
Rwanda		-0.9832	0.8373	✓	
Uganda		-0.9704	0.8341	✓	
Burundi	**inf**	3.1522	0.0008		✓
Djibouti		-0.8150	0.7925	✓	
Comoros		-0.3443	0.6347		✓
Ethiopia		0.3001	0.3820		✓
Kenya		1.8557	0.0317		✓

Madagascar		4.8764	0.0000		✓
Mauritius		3.1679	0.0008		✓
Rwanda		1.2147	0.1122		✓
Uganda		-0.0103	0.5041		✓
Burundi	**ns**	-0.1348	0.5536		✓
Djibouti		2.2811	0.0113		✓
Comoros		-0.5978	0.7250	✓	
Ethiopia		-0.5567	0.7111	✓	
Kenya		2.3239	0.0101		✓
Madagascar		1.2535	0.1050		✓
Mauritius		-0.5659	0.7143	✓	
Rwanda		0.6761	0.2495		✓
Uganda		-0.2977	0.6170		✓
Burundi	**ne**	-0.9949	0.8401	✓	
Djibouti		-0.9977	0.8408	✓	
Comoros		-0.4203	0.6628	✓	
Ethiopia		-1.0000	0.8413	✓	
Kenya		-0.9386	0.8260	✓	
Madagascar		-0.5058	0.6935	✓	
Mauritius		-0.9874	0.8383	✓	
Rwanda		-0.9990	0.8411	✓	
Uganda		-0.9870	0.8382	✓	
Burundi	**pi**	2.4950	0.0063		✓
Djibouti		0.7750	0.2192		✓
Comoros		-0.4765	0.6832		✓
Ethiopia		3.2268	0.0006		✓

Kenya		3.1333	0.0009		✓
Madagascar		2.1845	0.0145		✓
Mauritius		0.4959	0.3100		✓
Rwanda		1.3408	0.0900		✓
Uganda		2.8932	0.0019		✓
Burundi	**polity**	3.0512	0.0011		✓
Djibouti		2.1234	0.0169		✓
Comoros		-0.8708	0.8081	✓	
Ethiopia		2.0753	0.0190		✓
Kenya		-0.9467	0.8281	✓	
Madagascar		1.8787	0.0301		✓
Mauritius		-0.0079	0.5031		
Rwanda		-0.8528	0.8031	✓	
Uganda		5.4661	0.0000		✓
Burundi	**oda_fdi**	-0.7636	0.7775	✓	
Djibouti		-0.9985	0.8410	✓	
Comoros		-0.7998	0.7881	✓	
Ethiopia		-0.9988	0.8410	✓	
Kenya		-0.9892	0.8387	✓	
Madagascar		-0.9990	0.8411	✓	
Mauritius		0.1557	0.4381	✓	
Rwanda		-1.0000	0.8413	✓	
Uganda		-0.8635	0.8061	✓	

Source: own estimation based on data from UNCTAD, CSP and World Development Indicators.

Table A5. 3: - Burundi Granger causality Wald tests result

Equation	Excluded	chi2	df	Prob > chi2
dpi1	oda1	1.9928	2	0.369
dpi1	All	1.9928	2	0.369
oda1	dpi1	0.1096	2	0.947
oda1	All	0.1096	2	0.947

Table A5. 4: - Comoros Granger causality Wald tests result

Equation	Excluded	chi2	df	Prob > chi2
dpi1	oda1	0.26536	2	0.876
dpi1	All	0.26536	2	0.876
oda1	dpi1	8.2774	2	0.016
oda1	All	8.2774	2	0.016

Table A5. 5: - Djibouti Granger causality Wald tests result

Equation	Excluded	chi2	df	Prob > chi2
dpi1	oda1	6.8307	2	0.033
dpi1	All	6.8307	2	0.033
oda1	dpi1	10.517	2	0.005
oda1	All	10.517	2	0.005

Table A5. 6: Ethiopia Granger causality Wald tests result

Equation	Excluded	chi2	df	Prob > chi2
dpi1	oda1	6.3893	2	0.041
dpi1	All	6.3893	2	0.041
oda1	dpi1	0.91881	2	0.632
oda1	All	0.91881	2	0.632

Table A5. 7: - Kenya Granger causality Wald tests result

Equation	Excluded	chi2	df	Prob > chi2
dpi1	oda1	0.68375	2	0.710
dpi1	All	0.68375	2	0.710
oda1	dpi1	9.5833	2	0.008
oda1	All	9.5833	2	0.008

Table A5. 8: - Madagascar Granger causality Wald tests result

Equation	Excluded	chi2	df	Prob > chi2
dpi1	oda1	15.959	2	0.000
dpi1	All	15.959	2	0.000
oda1	dpi1	0.57423	2	0.750
oda1	All	0.57423	2	0.750

Table A5. 9: - Mauritius Granger causality Wald tests result

Equation	Excluded	chi2	df	Prob > chi2
dpi1	oda1	4.2137	2	0.122
dpi1	All	4.2137	2	0.122
oda1	dpi1	4.842	2	0.089
oda1	All	4.842	2	0.089

Table A5. 10: - Rwanda Granger causality Wald tests result

Equation	Excluded	chi2	df	Prob > chi2
dpi1	oda1	0.6336	2	0.728
dpi1	All	0.6336	2	0.728
oda1	dpi1	0.28457	2	0.867
oda1	All	0.28457	2	0.867

Table A5. 11:- Uganda Granger causality Wald tests result

Equation	Excluded	chi2	df	Prob > chi2
dpi1	oda1	2.4438	2	0.295
dpi1	All	2.4438	2	0.295
oda1	dpi1	14.683	2	0.001
oda1	All	14.683	2	0.001

Table A5. 12: DOLS coefficient of estimate of the long run effects of aid on domestic private investment growth for individual country over the period 1971 to 2012

	Burundi		Comoros		Djibouti		Ethiopia	
VARIABLES	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
Rgdp								
Oda	-0.293***	-0.0173***	-0.402***	-0.260***	-0.575***	-0.191***	-0.00491*	-0.0499***
	(0.0187)	(0.00590)	(0.0338)	(0.0547)	(0.00842)	(0.0676)	(0.00267)	(0.00152)
fdi1	-5.750***		-5.788***	7.930***		0	0.00146	-0.940***
	(0.221)		(0.555)	(0.888)		(0.146)	(0.00964)	(0.00340)
Inf	2.005***	-0.455***						
	(0.0698)	(0.0633)						
Ns								
Ne							-0.00250*	-0.0405***
							(0.00132)	(0.000649)
Pi								
polity	0.250***	-0.579***	-0.600***	0.0496				0
	(0.0508)	(0.0257)	(0.159)	(0.0329)				(0.282)
D.oda_fdi1	-0.00134***	0.00272***	0.0174***	-0.180***	0.00373***	-0.00762***	8.69e-06**	-4.66e-05***
	(0.000198)	(0.00104)	(0.00404)	(0.0220)	(0.000170)	(0.00126)	(4.18e-06)	(1.59e-06)
oda_polity	-0.0423***	0.00169***	0.134***	-0.00991***	0.000580	0.00378	-5.10e-05	0.00323***
	(0.000985)	(9.91e-05)	(0.0137)	(0.000825)	(0.000713)	(0.00745)	(0.000233)	(0.000260)
Observations	24	24	26	26	12	12	21	21
Country code	1	1	2	2	3	3	4	4
Adjusted R-squared	0.814	0.790	0.803	0.811	0.850	0.818	0.768	0.871

The regression is done by DOLS estimation methodology with one lead and two lags and unit root test is checked at each country level. (***), (**) and (*) indicate statistical significance at the 1 %, 5 % and 10 % levels, respectively and Standard errors in parentheses.

Source: own estimation based on data from UNCTAD, CSP and World Development Indicators.

Table A5. 13: DOLS coefficient of estimate of the long run effects of aid on domestic private investment growth for individual country over the period 1971 to 2012

	Kenya		Madagascar		Mauritius		Rwanda		Uganda	
VARIABLES	**(1)**	**(2)**	**(1)**	**(2)**	**(1)**	**(2)**	**(1)**	**(2)**	**(1)**	**(2)**
Rgdp	-0.156	1.878***								
	(0.143)	(0.150)								
Oda	0.0179***	0.00176	-0.00575***	-0.00980*	-0.0512***	-0.921	-0.0175***	0.326***	-0.234	-0.706
	(0.00209)	(0.00185)	(0.00104)	(0.00553)	(0.0171)	(0.688)	(0.00184)	(0.0419)	(0.184)	(0.573)
fdi1	-0.0173***	-0.890***		-0.270***	-0.00107	0.399**				
	(0.00298)	(0.00239)		(0.0421)	(0.00397)	(0.159)				
Inf	0.349***	0.171***	0.00251	-0.147	-0.282***	-0.234				
	(0.0278)	(0.0288)	(0.0174)	(0.114)	(0.108)	(4.339)				
Ns					0.450***	-4.186				
					(0.169)	(6.805)				
Ne		-0.00256***		-0.0307***	-0.00573***	-0.0469	-0.0198***	-0.0264		
		(0.000286)		(0.00830)	(0.00183)	(0.0735)	(0.00308)	(0.0881)		
Er		-0.320***					0.0566***	0.0389	-0.209*	-0.608
		(0.0400)					(0.00537)	(0.207)	(0.107)	(0.413)
Pi	-0.278***	0.0551**		-0.0655	0.0325	2.231**	0.0774***	-0.0415		
	(0.0312)	(0.0231)		(0.0473)	(0.0254)	(1.020)	(0.0176)	(0.229)		
Polity	0.904***	0			0.190	-6.696				
	(0.0945)	(0.0012)			(1.236)	(49.65)				
oda_polity	-0.000183***	-0.000273***	-0.000145***	0.000264	0.00399***	0.148***	2.59e-05	0.00106	0.00679	-0.301***
	(2.53e-06)	(1.97e-06)	(2.10e-05)	(0.00132)	(0.000830)	(0.0333)	(0.000130)	(0.00500)	(0.0167)	(0.0200)
oda_fdi1	-0.000167	1.52e-05	3.73e-05	-0.00204***	-2.37e-05	-0.0236***	9.18e-05***	-0.00202***	-0.00540***	0.000376
	(0.000120)	(6.58e-05)	(0.000203)	(9.00e-05)	(3.90e-05)	(0.00157)	(2.73e-05)	(0.000199)	(0.000962)	(0.000319)
Observations	26	26	20	20	28	28	21	21	16	23
Country code	5	5	6	6	7	7	8	8	9	9
Adjusted R-squared	0.736	0.801	0.884	0.781	0.875	0.965	0.709	0.815	0.730	0.850

The regression is done by DOLS estimation methodology with one lead and two lags. Unit root test is checked at each country level. (***), (**) and (*) indicate statistical significance at the 1 %, 5 % and 10 % levels, respectively and Standard errors in parentheses.

Source: own estimation based on data from UNCTAD, CSP and World Development Indicators.