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# IMPACT OF FDI ON POVERTY REDUCTION IN AFRICA: ARE THERE REGIONAL DIFFERENCES?


## Abstract

The current financial and economic crises have reanimated the debate on the importance of Foreign Direct Investment (FDI) for economic growth and poverty reduction in developing countries, especially in Africa. Many economists agree on the fact that the current financial crisis may have stronger negative repercussions on economic growth in Africa because of the potential reduction in foreign capital flows. Although, the literature bonds on papers that study the causal link and relationship between FDI and economic growth, the key basic assumption common to these papers is that economic growth is a good proxy for welfare. However, fewer of these papers have been devoted to Africa and its regional disparities on attracting FDI. This paper intends to re-examine the relationship between FDI flows and poverty reduction in Africa across regions. We use as key FDI and welfare variables, respectively, the FDI net inflows per capita and the UNDP Human Development Index (HDI). Our analyses confirm the positive significant relationship between FDI net inflows and poverty reduction in Africa. Nevertheless, this relationship is significantly different between African regions and between Africa and other parts of the World. For instance, whilst the relationship remains positive and significant for economic communities in Central and East Africa, it is non-significant in Northern and Southern Africa and ambiguous in Western Africa. Our results are robust to many model specifications.



*JEL classification code*:
*Keywords*: FDI, Economic growth, Regional integration, Welfare, Poverty reduction.

# I. INTRODUCTION

The 2000 United Nations' Millennium Development Goals (MDG) Declaration outlines eight commitments to be reached by developing countries by 2015.[1] The achievement of these Goals will contribute to improved human development and notable poverty reduction. Unfortunately, at present, most African countries are off-track on meeting their Goals and require significant levels of capital investment to help them to get back on track. One main source of this capital investment is Foreign Direct Investment (FDI), since in most African countries, the private sector is seen as being a principal driver of growth. Hence, FDI will play a critical role in the achievement of these goals. Moreover, with the widespread ongoing financial and economic crises, the achievement of the MDG goals is even more jeopardized since most developed countries are defining economic and fiscal policies in order to keep capital at home.[2] According to latest World Bank estimates, remittances will drop by 8.3% in 2009 in Sub-Saharan Africa (World Bank, 2009). Such a reduction implies probable difficulties for many African countries. In addition, with the uncertainty surrounding the recovery from the current crisis, several multinational companies are cancelling or postponing investments in Africa; about US$ 70 billions of FDI will be cancelled for Africa in 2009 (17% of the US$ 393 billions of total FDI stock).[3]

Given the significant disparities in development, African countries need continuous flows of foreign investment in order to stimulate their economies and thus trigger reductions in poverty levels. Over the last decades, FDI to Africa has increased on average in terms of net inflows FDI per capita and as a ratio of FDI over total GDP. At the same time, real per capita GDP as well as the Human Development Index (HDI)[4], have been improving. Therefore, at first glance, it appears to be a link between FDI increase and welfare improvement or poverty reduction. In spite of this apparent linkage, at closer look, we can question the type of FDI received and the conditions under which some African countries attract FDI.

The literature **is rich on** studies **analyzing** on the causal relationship between FDI and economic growth, e.g., Alfaro (2003), Alfaro et al. (2004), Apergis et al. (2007), Carkovic and Levine (2005), Chowdhury and Mavrotas (2006) and Hansen and Rand (2006) among many

[1] For more details, visit the 2000 MDG website at http://www.un.org/millenniumgoals/.
[2] See for example, the February 7-13th, 2009 issue of The Economist on "The return of economic nationalism." (www.economist.com).
[3] Jeune Afrique No 2532 of July 19-25, 2009.
[4] computed by the United Nations Development Programme (UNDP)

others. All these cited papers analyse the impact of FDI on economic growth measured by GDP growth. Therefore, the implicit assumption done in these papers for economic development is the use of GDP growth as a good proxy for welfare. Recently, this assumption has been questioned (e.g., Anand and Sen (2000)). Indeed, even if economic growth is required to improve population well-being, when this growth is not pro-poor, the effect may be a large inequality with a worsening of welfare.

One constraint in the literature is in the definition of welfare or economic development. Two common indicators that are chosen to measure welfare are GDP per capita and poverty incidence. The former is widespread and available for each country on an annual basis, but measures only one dimension of development. The latter is a good measure of overall well-being but there is a lack of data availability and consistency across countries. During the last three decades, the UNDP has calculated the Human Development Index (HDI) that seems to be universally accepted as a consensual measure of human development. The Index is readily available for each country. Few researchers have used the HDI to analyze the impact of FDI directly on welfare and those that do have focused their studies on Asian countries or low and middle income countries (e.g., Sharma and Gani (2004)). But, to our knowledge, such a study has not been carried out for African countries only.

Yet, analysing all these possible implications in the context of economic integration is necessary. Indeed, Asiedu (2006) finds the country's market size (measured by the level of its GDP) to be a key determinant of FDI inflows to a country. Unfortunately, most African countries have relatively small market sizes. In order to overcome this market size limitation, most multilateral and bilateral development agencies promote regional integration in Africa to attract more FDI and thus improve growth and reduce poverty. For instance, in its 2004 report on Assessing Regional Integration in Africa, and subsequent ones, the United Nations Economic Commission for Africa (UNECA, 2004) underscores the need to accelerate links between national economies: "African countries are taking concrete steps towards integrating their economies -- building regional communities, adopting common currencies and increasing trade with each other -- and laying the groundwork for the establishment of an African Economic Community which, like the European Union, could enable them to benefit from larger markets."

This paper studies the relationship between FDI net inflows and poverty reduction in Africa with a special focus on the impact on the Regional Economic Communities (RECs). Thus, we examine the following specific research questions: (1) Does FDI contribute to

poverty reduction in Africa?; (2) Are there any regional differences on the role of FDI on poverty reduction in Africa?; and (3) Are there any differences between Africa and other World regions on the role of FDI on poverty reduction? Regarding the impact of the RECs, we consider five in this paper: the Economic Community of Central African States (ECCAS), the Economic Community of West African States (ECOWAS), the Intergovernmental Authority for Development (IGAD), the Southern African Development Community (SADC) and the Arab Maghreb Union (AMU). We also consider four custom and monetary unions: the Economic and Monetary Community of Central Africa (CEMAC), the East African Community (EAC), the Southern African Customs Union (SACU) and the West African Economic and Monetary Union (WAEMU); and the embryonic West African Monetary Zone (WAMZ). To answer to our first question, we use as key welfare or poverty reduction measure, the UNDP Human Development Index (HDI) to capture the human development level of a country. We also use the alternate welfare measure commonly used in the literature, the real GDP per capita. For FDI measure, we use as key variable the FDI per capital net inflows. Here also, we use alternatively, the ratio of total FDI net inflows over GDP and the ratio of total FDI net inflows over gross capital formation (GCF).

The contribution of this paper to the literature is twofold. First, we analyse the impact of FDI on poverty reduction in Africa. To our knowledge this paper is the first one that focuses on this issue in Africa. The second contribution is to analyze the impact of being a member of a REC. From our analyses, we find a positive causal relationship between FDI and welfare in Africa using Granger causality Wald test. Moreover, our empirical analyses with both panel and cross sectional regressions show that the impact of FDI on welfare is positive and significant in Africa and the relationship is robust to different model specifications and to alternative welfare and FDI variables used. However, the degree of the impact of FDI on welfare differs across African regions and between Africa and other World regions. For instance, in Central and East Africa RECs (CEMAC, EAC, ECCAS, IGAD), FDI impacts positively and significantly on welfare, whilst in Southern and Northern Africa RECs (SACU, SADC, UMA), the impact of FDI on welfare is non-significant, and in West Africa region (ECOWAS), it is ambiguous with the impact being negative in the WAEMU region and non-significant in the WAMZ region. We also conduct a comparative study between Africa and three non-African RECs, ASEAN, Central America Common Market (CACM) and European transitional economies, and find that, unlike Africa, FDI does not have a positive significant impact on welfare in these RECs.

The remaining part of the paper is organized as follows. Section 2 provides a literature review on the relationship between FDI, economic growth and welfare or poverty reduction. Section 3 presents the methodology and describes the variables and data used. In this section, we also present the sample of countries and regions. Section 4 analyses the empirical results of the relationship between welfare and FDI in Africa and its regional economic communities and between Africa and other emerging World regions. Section 5 concludes and formulates policy recommendations.

## II. LITERATURE REVIEW ON FDI AND WELFARE

A large number of studies have analyzed the relationship between FDI and economic growth. The main research concern is whether FDI has an impact on a country's economic development and to what extent. The implicit assumption made is that economic growth leads to welfare improvement. Recently, some authors have questioned the role that a country's financial market development plays on this linkage. Overall, the answers to these concerns are mixed. even though the tendency is towards the positive impact of FDI inflows on economic growth. These contradictory answers may be due to a number of methodological and conceptual factors, including the lack of a comprehensive harmonized dataset, various definitions of FDI and different econometric specifications.

This section first reviews the theoretical transmission mechanisms of the linkage between FDI and welfare. It then discusses the causality between FDI and economic growth, and then reviews the recent findings on the relationship between FDI and economic growth. Finally, it presents the main findings on the role of a country's financial market development on this linkage.

### 2.1 Theoretical arguments on the linkage between FDI and welfare:

Since World War II (WWII), there have been two main tendencies in the evolution of FDI to developing countries. FDI flows and stocks have both increased globally, especially in the developing countries from the end of WWII to the end of the Cold War (in the 1990s). Over this period, the FDI flows were mainly driven by political rather than economic reasons. Since the 1990s, FDI is mainly directed to countries with FDI-friendly incentive policies, such as countries offering important fiscal incentives and subsidies. According to Sumner (2005), UNCTAD (2003) noted in 2002 that out of the 70 countries that have liberalized their

economic policies towards FDI attractiveness, 236 out of 248 regulatory changes were beneficial to FDI inflow, and that of the 1641 changes since 1999, 95 per cent were more conducive to attracting FDI. With all these fiscal incentives that the recipient countries have to put in place in order to attract FDI, one may wonder about the effectiveness of FDI to welfare improvement or poverty reduction.

Assessing the impact of FDI on human development can be analyzed from at least two viewpoints. First on the social side, poverty reduction and improvement of overall population welfare are the priorities of Governments of developing countries. In these countries, the Government's main objective is to improve the living standards of its population as one of its social functions. Foreign investments can help countries achieve these priorities as they create jobs, develop local skills and bring new technological progress. Second, on the economic side, recent endogenous growth literature shows that human capital might be the main contributor to self-sustained GDP per capita growth. As from the initial studies on economic growth, it has been recognized that technological progress is the main driver of sustainable growth (Solow; 1956). One of the main contributors to human capital is obviously human development. It is then of prime interest to assess how FDI can impact human development.

FDI may impact welfare through several channels divided in direct and indirect channels[5]. The direct channel may be through spillovers to the private sector (backward and forward linkages). This could happen if FDI is able to create positive vertical spillover effects with local suppliers (backward linkages) through local sourcing and local firms (forward linkages). FDI may also bring positive horizontal spillovers through augmented competition and implementation of new technologies. In addition to these positive spillovers to local firms, FDI can impact on welfare directly through job creation. Such jobs will generate income for new workers. For this channel to be efficient, job creation should be more than job destruction due to the use of FDI in the country (layoff due to mergers and acquisitions, closing of local firms, etc.). For instance, FDI in labor intensive sector such as the pro-poor sector (agriculture) is likely to have the highest impact on welfare. The indirect channel is located at a macroeconomic level. If a country receives an overall net positive transfer[6], it is likely that FDI will increase investment. Investment is considered to increase economic growth, even if the link with welfare is not direct.

[5] See Sumner (2005) for a detailed discussion of these various channels.
[6] This requires that profit repatriation, royalties be less than FDI inflow. In addition, tax paid by FDI needs to be higher than subsidies and fiscal relief offered to FDI (Sumner; 2005)

Therefore, FDI policy regime and the type of FDI received are of crucial importance. On the one hand, if FDI is simply purchasing raw materials for a firm outside the host country, then the scope on job creation and spillovers may be fairly limited. On the other hand, if FDI is targeting specific market accessibility, then its impact on jobs and backward and forward linkages will be the highest.

### 2.2. Review on the direct relationship tests between FDI and economic growth

Several research work has been devoted to the causality direction between FDI and economic growth using a number of econometric techniques including the Granger-causality test (the most used test in the literature) and the Toda-Yamamoto test. The findings are mixed.

Indeed, recently, Chowdhury and Mavrotas (2006) test the direction of causality between FDI and GDP growth for three major FDI recipients (Chile, Malaysia and Thailand) between 1969 and 2000. They use the Toda-Yamamoto test instead of the standard Granger causality-type test. Their empirical findings seem to suggest that GDP growth causes FDI in Chile and not vice versa, and in both Malaysia and Thailand, there is strong evidence of a bi-directional causality between GDP and FDI.

Hansen and Rand (2006) re-examine the causal links between FDI and economic growth in 31 developing countries over 31 years (1970-2000). They use bivariate vector autoregressive (VAR) models for GDP and FDI ratios. They find a strong causal link between FDI and GDP, even in the long run. They also find that GDP Granger-causes FDI, but find no impact on the long-run level of the ratio of FDI over GDP.

Meanwhile, Carkovic and Levine (2005) study the relationship between FDI and economic growth for 72 countries. They find no support for the claim that FDI per se accelerates economic growth. Therefore, the findings in the former two papers contrast with those of the later one. With these mixed views on the causality link between FDI and economic growth, some researchers have chosen to analyze the causal relationship between FDI and growth in specific economic sectors or particular regions.

For example, Alfaro (2003) found that the impact of FDI varies greatly across sectors by examining the effect of FDI on growth in the primary, manufacturing, and services sectors. Using cross-country data between 1981 and 1999, her findings suggest that FDI has an ambiguous effect on growth in general. However, FDI in the primary sector seems to have a negative effect on growth, while investments in manufacturing have a positive one. Evidence from the services sector is ambiguous.

Concerning the regional analysis, Apergis et al. (2007) examine the impact of FDI on economic growth using a panel data set from 27 European transitional economies over the period 1991-2004. Their empirical findings show that FDI does exhibit a significant positive relationship with economic growth, at least, for those transitional countries that are characterized by high levels of income and have implemented successful privatization programs.

Several other authors have found similar results using different databases and methodologies. A good example is Alfaro and Charlton (2007), who distinguish different "qualities" of FDI to re-examine the relationship between FDI and growth. In their study, 'quality' means the effect of a unit of FDI on economic growth. Exploiting a new comprehensive industry level data set of 29 countries between 1985 and 2000, they find that the growth effects of FDI increase when they account for the quality of FDI. After controlling for industry characteristics and time effects, they find the relation between FDI and economic growth to be no longer ambiguous but rather positive and significant.

### 2.3. Review on the role played by financial market development on the linkage between FDI and economic growth

Although it is possible to test the direct relationship between FDI and economic growth, it is legitimate to assume that FDI will flow to countries with better developed financial markets or to assume that FDI flows will contribute to the development of financial markets, thus leading to increased economic growth. With this view in mind, some authors analyse how the development of the financial system can contribute to the relationship between FDI and economic growth since empirical evidences seem to suggest that an advanced financial market is a good predictor of FDI inflow.

For instance, Hermes and Lensink (2000) investigate the role that the development of a financial system plays in enhancing the positive relationship between FDI and economic growth. Their dataset includes 67 countries, mostly from Latin America and Asia. They find that the development of a financial system of a recipient country is an important precondition for FDI to impact positively economic growth. A more developed financial system contributes to the process of technological diffusion associated with FDI inflow. Of the 67 countries in their data set, 37 have a sufficiently developed financial system in order to let FDI contribute positively to economic growth.

Alfaro et al. (2004) examine the same issue using cross-country data between 1975 and 1995. They find that FDI alone plays an ambiguous role in contributing to economic growth. However, countries with well-developed financial markets gain significantly from FDI.

Dutta and Roy (2008) empirically investigate the role of political risk in the association with FDI and Financial Development (FD). Using a panel of 97 countries over a period of 20 years, they establish a non-linear association between financial development and FDI inflows. Financial Development leads to greater FDI inflows up to a certain level of financial development. Beyond that the association becomes negative. However, they do find political risk factors to be affecting the relationship by altering the threshold level of FD. With higher political stability, the negative impact sets in at relatively higher levels of FD. Thus, the co-existence of advanced financial markets and political stability seem to be necessary to capture and enjoy the benefits of FDI.

Kholdy and Sohrabian (2005) investigate various links between financial markets, FDI and economic growth. Using a panel of 25 countries over the period of 1975-2002 and the Granger causality model, they find bi-directional links between financial markets and economic growth. Their finding suggests that, in countries with low GDP per capita, economic growth stimulates financial development; however, the direction of causality is reversed for countries with higher GDP per capita. They also find a bi-directional causality between financial markets and FDI in countries with relatively higher GDP per capita and more developed financial markets. However, their results suggest that FDI cannot induce economic growth.

Eller, Haiss and Steiner (2005) examine the impact of financial sector foreign direct investment (FSFDI) on economic growth by estimating a panel data model for 11 Central and Eastern European countries (CEECs) between 1996 and 2003 in a cross-country growth accounting framework. The results clearly indicate that there can be a relationship between FSFDI and economic growth. Approaching a medium degree of financial M&A is rewarded by higher economic growth after two periods. Beyond it, FSFDI seems to spur economic growth depending on a higher human capital stock. FSFDI-induced knowledge-spillovers to domestic banks can be an explanation for this phenomenon. Above a certain threshold, the crowding-out of local physical capital caused by the entry of a foreign bank seems to hamper economic growth.

### 2.4. Summary

As we discussed above, several research papers have examined the relationship between FDI and economic growth using FDI and GDP growth variables with mixed results. While the literature is ubiquitous regarding the impact of FDI on economic growth, it is rather weak when the interest is on the impact of FDI on welfare. Basically, most previous studies assume that economic growth and welfare are positively correlated and hence, use GDP growth as a proxy for welfare. However, this implicit assumption has been recently challenged (e.g., Anand and Sen (2000)). Several evidences show that GDP growth can occur while poverty incidence is increasing also.

To overcome this limitation, recently few papers analyze the direct relation between FDI and welfare. Sharma and Gani (2004) is one of the few papers that analyse the link between FDI and welfare using HDI as welfare measure. They find a positive effect of FDI on HDI for middle and low-income countries between 1975 and 1999.[7] As far as we know, no such a study has been done for African countries alone.

Table 1 summarizes the variables commonly used in the literature and the sign of their impact on economic growth. In general, the relationship between FDI inflow and economic growth is ambiguous.

**INSERT TABLE 1 HERE**

## III. METHODOLOGY, VARIABLES AND DATA DESCRIPTION

### 3.1. Variables

The variables used to explain the impact of FDI on welfare are mainly the net flow of FDI and welfare variables.

**Foreign Direct Investment variables:**

FDI is measured by FDI net inflows, which is the sum of equity capital, reinvestment of earnings, long term capital and short-term capital as shown in the Balance of Payment. We use three FDI variables: (i) FDIPOP: *per capital FDI* or ratio of FDI net inflows over total population; (ii) FDIGDP: ratio of FDI net inflows over GDP; and (iii) FDIGCF: ratio of FDI net inflows over gross capital formation (GCF).

**Welfare variables:**

[7] Their measure for FDI is FDI net inflows as a percent of GDP.

Several welfare measures have been proposed in the literature to assess progress accomplished by countries including the GDP per capita and the poverty incidence indicator. On the one hand, while GDP per capita is widely used, it captures only one dimension of welfare: the economic dimension. However, development is a multi-dimensional phenomenon and welfare depends also on various factors including heath care and education. On the other hand, poverty incidence is a comprehensive measure of well-being in a country as it takes into account all aspects of an individual living conditions (health, education, access to basic services, nutrition, etc.) and compares it against the minimum threshold needed for a decent standard of living. Nevertheless, poverty incidence measure is not recorded on an annual basis. In addition, it is too country specific to be aggregated across countries. These limitations do not allow its use in empirical studies. Therefore, a more appropriate indicator of population well-being has been defined recently by the United Nations Development Programme (UNDP) as the *Human Development Index* (HDI). HDI is, by definition one of the best available measures of a country's human development.

Therefore, for this study, our main welfare indicator is HDI. According to the UNDP, "The HDI – Human Development Iindex – is a summary composite index that measures a country's average achievements in three basic aspects of human development: health, knowledge, and a decent standard of living. Health is measured by life expectancy at birth; knowledge is measured by a combination of the adult literacy rate and the combined primary, secondary, and tertiary gross enrolment ratio; and standard of living by GDP per capita (PPP US$)."[8] For comparison purposes with the literature, we also use *real GDP per capita* (GDPPOP) as an alternative welfare measure.

**Control variables:**

To improve our empirical analysis, we also consider a set of control variables. Three groups of control variables are used: (i) *economic and policy variables*; (ii) *business environment and institutional quality variables*; and (iii) *political risk variables*. These variables are the followings:

- ***Economic and policy variables*** are
    - *total debt ratio* (DEBTGDP), measured by total debt outstanding over GDP ;
    - *government spending ratio* (GOVSPEND), measured by government total

[8] For more details on how to calculate the HDI, refer to the technical note of the Human Development Report available on the UNDP website at http://hdr.undp.org/en/media/HDR_20072008_Tech_Note_1.pdf.

consumption over GDP, this variable is also used to capture *government size* ;

- *inflation* (INFLATION) measured by the percentage change in GDP deflator ;
- three infrastructure variables measuring respectively the *number of fixed and mobile phones per 100 habitants* (PHONE), the *total road paved per 100 habitants* (ROAD) and the *number of internet users per 100 habitants* (INTERNET) ;
- schooling variable (EDUCATION) measured by the percentage of secondary school enrolment is used as control variable when real per capita GDP is used as welfare variable ;
- *degree of openness (*OPENNESS) measured by total imports plus exports over GDP.

- ***Business environment and institutional quality variables*** is composed of the following set of variables
  - *rule of law index* (LAW) measures the effectiveness of the rule of law and is obtained from the World Resources Institute[9] ;
  - *corruption perception index (*CPI) of Transparency International[10] ;
  - financial market development is measured, respectively by, *total credit by financial intermediaries to private sector over GDP* (measure the extent of financial intermediation in a country) (CREDIT) and *stock market capitalisation over GDP (*MKTCAP).[11]
- ***Political risks variables*** include two variables obtained from Freedom House:
  - *political rights rating (*POLRIGHTS);
  - *civil liberty rating (*CIVILLIB).

Table 2 summarizes in greater details these variables.

[9] From its technical notes at http://earthtrends.wri.org/searchable_db/variablenotes.php?varid=1280&theme=10, we can read that "The *Rule of Law Index* is a measure of "the extent to which agents have confidence in and abide by the rules of society." The degree to which a society's atmosphere is conducive to regular, orderly social and economic activity and the protection of private property is an important measure of government effectiveness. Values are indexed to have a mean of zero and a standard deviation of one index unit. Positive scores indicate better governance and 99% of the values fall between 2.5 and -2.5."

[10] ranges from 1 to 10, where 1 indicates the most corrupt country and 10 the less corrupt one.

[11] These financial market development variables are obtained from the Worldbank database on financial development and structure at http://econ.worldbank.org/WBSITE/EXTERNAL/EXTDEC/EXTRESEARCH/0,,contentMDK:20696167~pagePK:64214825~piPK:64214943~theSitePK:469382,00.html.

**INSERT TABLE 2 HERE**

### 3.2. Sample covered

As we mentioned above, regional economic integration is becoming an increasingly important engine for economic growth and human development. Globally, we observe a strengthening of regional economic integration between neighbouring countries. Also Multilateral Development Institutions like the African Development Bank and the World Bank emphasize the need for regional integration in their strategic plans and are reinforcing their on-the-field actions towards this direction. Since one of the objectives of our paper is to study the regional differences in the relationship between Foreign Direct Investments and welfare, we consider the following five African free-trade areas (UNCTAD; 2009): (i) the Economic Community of Central African States (ECCAS); (ii) the Economic Community of West African States (ECOWAS); (iii) the Intergovernmental Authority for Development (IGAD); (iv) the Southern African Development Community (SADC); and (v) the Arab Maghreb Union (AMU) plus Egypt. Table 3 gives a description of countries' classification by regional economic communities (RECs).

**INSERT TABLE 3 HERE**

Inside these large Regional Economic Communities, there are smaller groups more advanced in their economic integration, we therefore consider the following four custom unions: (i) the Economic and Monetary Community of Central Africa (CEMAC); (ii) the East African Community (EAC); (iii) the Southern African Customs Union (SACU); and (iv) the West African Economic and Monetary Union (WAEMU). In addition, we also consider in the ECOWAS region, the embryonic monetary zone, the West African Monetary Zone (WAMZ).

For comparison purposes and robustness checking, we have included in our sample three non-African economic communities: the Association of Southeast Asian Nations (ASEAN), the Central America Common Market[12] (CACM) and the European Transitional Economies (EUTE).

Our sample covers 53 African countries, 10 Asian countries, 25 East European countries and 32 Latin America countries over the period 1990-2007. Thus, we have collected data, when available, for all these countries from 1990 to 2007 on all the variables described above. Table 4 presents the average descriptive statistics for Africa for all the variables over the period 1990-2007. All variables have at least 400 country-year observations, except the *stock*

[12] We exclude from this group Canada and the USA and include Honduras.

*market capitalisation over GDP* (MKTCAP) and the *Corruption Perception Index* (CPI). For each regression, when the data is not available for a given country, we remove the country from the data set in order to run our panel regression. Given the data availability, in the regional analysis, we will drop variables incomplete data to safeguard the consistency across regions in terms of minimum data to obtain consistent statistics.

**INSERT TABLE 4 HERE**

### 3.3. Regression model specification

We run the following regression to study the impact of FDI on welfare:

$$\begin{aligned}\text{Welfare} = \alpha + \beta \times FDI + \sum \gamma_{1i} \times \text{Economic \& Policy var}_{\text{i}} \\ + \sum \gamma_{2j} \times \text{Business Env. \& Inst. var}_{\text{j}} + \sum \gamma_{3k} \times \text{Political Risks var}_{\text{k}} + \varepsilon,\end{aligned} \quad (1)$$

where welfare is measured by either *HDI* or *real per capita GDP*, *FDI* is measured by either *per capita FDI*, ratio of *FDI/GDP* or *FDI/GCF*, and the control variables are the economic and policy variables, the business environment and institutional quality variables, and the political risks variables.

For these control variables, since HDI is a combination of education, health and economic performance, and knowing that investments in developing countries are mainly from government spending and/or foreign direct investments, we expect the size of the government spending to have a positive impact on welfare. Indeed, this can be justified by the fact that investment by government will insure the basic needs of populations, especially in developing countries where the majority of investments in education and health care facilities are from the Government. Since a large part of Government financing comes from debt, at least for developing countries, introducing the debt ratio variable, as a control variable will help capture the government financial constraint. Thus, it is expected to have a negative impact on welfare, since the higher the indebtedness of a country, the more constrained the Government becomes in its capacity to respond to the basic needs of populations. Inflation is introduced to capture macroeconomic instability, and is expected to have a negative impact on welfare, because a high level of inflation can characterize a more unstable macroeconomic environment. Infrastructure development contributes to the better living conditions of populations. Therefore, it should have a positive impact on welfare. We consider three measures of infrastructures: total road paved per 100 habitants, or number of internet users per 100 habitants, or number of fix and mobile phone users per 100 habitants.

We also use openness to trade and education variables, since in previous studies, these variables have been used to control for the effect of FDI on economic growth. Openness to trade is measured by the ratio of total exports plus imports over GDP. Education is used as control variable only in regressions where per capita GDP is used as dependent welfare variable. Education is measured by the percentage of secondary school enrolment obtained from the UNESCO database. We do not include education in the regressions using HDI as dependent variable since this will generate spurious regressions because HDI includes education by definition We expect these two variables to have positive impacts on welfare.

Most African countries are known to be politically unstable and to have poor investors' protection mechanisms and weak institutions. This justifies the need to account for business environment, institutional quality and political risks in our analyses. We therefore add the following control variables: the rule of law index to capture the effectiveness of the judicial system and the level of investors' protection, the corruption perception index of Transparency International to gauge for the level of transparency in the country, the political rights and civil liberty indexes from Freedom House to measure the degree of freedom for political activism and civil liberty, respectively. We also include a financial intermediation variable to control for the level of financial market development.

## IV. EMPIRICAL ANALYSES

The aim of this study is to assess the impact of FDI on welfare in Africa, especially at the regional level. To achieve our goals, we address the following research questions:

(1) Does FDI contribute to poverty reduction in Africa?
(2) Are there any regional differences on the role of FDI on poverty reduction in Africa?
(3) Are there any differences between Africa and other World regions on the role of FDI on poverty reduction?

### 4.1. Descriptive statistics

Table 5 provides some descriptive statistics on Africa and outside Africa regions for welfare (HDI and real per capita GDP) and FDI variables. As we expect, there are major differences in the distribution and flows of FDI, the level of real per capita GDP and HDI across regions. Africa has the lowest value of HDI and FDI inflows (in terms of per capita FDI or FDI/GDP or FDI/GCF) compared to the other three outside Africa regions considered

(ASEAN, Central America Common Market and Europe transitional economies).[13] Moreover, a further analysis of the three FDI variables' data shows that the gap between Africa and the other three regions is much larger when per capita FDI measure is used (see panel A of table 5). This underscores the need to choose the right variable for the problem under study. We decide to use mainly per capita FDI since it gives a better idea on the repartition of FDI among individuals, and this is important for the study of the impact of FDI on welfare.

**INSERT TABLE 5 HERE**

On the regional basis in Africa, SACU, SADC and UMA lie above the Africa average for HDI, real per capita GDP and per capita FDI (see panel B and C of table 5). Thus, countries that have the highest HDI seem also to have the highest per capita FDI. But, the same trend is not observed when we consider the ratio FDI/GDP or FDI/GCF measures, since using these FDI measures, SACU, SADC and UMA are below Africa average because of the size of their economies, while ECCAS and ECOWAS are above average.

Table 6 presents the variables correlation matrix for Africa, calculated using country-year data. We draw three shade areas. The first shaded area (upper left) corresponds to correlations between welfare variables (HDI or real per capita GDP) and the FDI ones. The second shaded area (middle area) corresponds to the correlations between the economic and policy variables. And finally, the third shaded area (lower right) corresponds to the correlations between the business environment, institutional quality and political risks variables.

**INSERT TABLE 6 HERE**

The first shaded area of the correlations matrix shows that the two welfare variables, HDI and real per capita GDP, have a high correlation of about 70%. This 30% lost of correlation seems to support the claim that economic growth does not necessarily translate entirely into welfare improvement. For the FDI variables, we observe that the ratio FDI/GDP and FDI/GCF are highly correlated with a coefficient of 64%, but their correlation with per capita FDI is relatively low, below 40%.

The second shaded area highlights the correlations between the economic and policy variables. EDUCATION is highly correlated with HDI and real per capita GDP, as expected, since it is one of the components of HDI calculation. We also observe that EDUCATION has a

[13] This lack of attractiveness for FDI by African countries, especially Sub-Saharan Africa, is consistent with previous findings, e.g., Asiedu (2002). In another study, she analysed the differences between African countries in attracting FDI, and found that FDI to Sub-Saharan Africa is largely driven by natural resources and market size (Asiedu; 2006).

high correlation with the infrastructure variables (PHONE, INTERNET and ROAD). The three infrastructure variables are also highly correlated, especially the correlation between PHONE and INTERNET. Thus, we drop two of the infrastructure variables with less dataset and keep PHONE, which has the most dataset[14].

The third shaded area of the correlations table highlights the correlations between the business environment, institutional quality and political risks variables. There is a high correlation of 80% between MKTCAP (market capitalisation ratio) and CREDIT (ratio of credit by financial intermediaries to private sector), since both variables measure the degree of financial intermediation or level of financial market development. Given the limited number of data available for MKTCAP (261 points), we keep CREDIT for our empirical test. LAW (rule of law index) and CPI (corruption perception index) are highly correlated. Also, these later two variables are highly correlated with the political risks variables (POLRIGHTS and CIVILLIB). Here also, because of data availability, we will drop CPI (only 256 points) and LAW (456 points) for most of the estimations. Finally, the two political risks variables POLRIGHTS and CIVILLIB are highly correlated; therefore we will retain CIVILLIB.

### 4.2. Impact of FDI on welfare in Africa

Here we address our first research question: (1) *Does FDI contribute to poverty reduction in Africa?* First, we conduct the Granger causality Wald test between HDI and per capita FDI on the one hand and, between the real per capita GDP (alternative welfare measure) and per capita FDI on the other hand. The results are shown in Table 7. We cannot reject the hypothesis that per capita FDI causes HDI or real per capita GDP. Indeed, we cannot reject either the existence of a causal link between HDI or Log of real per capita GDP and per capita FDI at the 5% confidence level. Furthermore, with the real per capita GDP measure, we cannot reject the existence of a positive bidirectional relationship between FDI and Log of real per capita GDP. Hence, from the causality test, it seems that FDI causes HDI, and using per capita GDP as alternative welfare measure, the causality link becomes bi-directional.

**INSERT TABLE 7 HERE**

To assess the impact of FDI on welfare in Africa, we use equation (1). Table 8 presents the panel regression results for Africa when HDI is used as the dependent variable for welfare. Columns 1 to 3 use alternatively each of the FDI variables as explanatory variable without control variables. The results show that per capita FDI impacts positively welfare at a 1%

[14] We can also use a synthetic index of infrastructure using these three variables and factor analysis techniques or we can, as we are doing in this paper, use one of these variables.

significance level. When alternative FDI variables are used, we still find the same positive relationship, but not significant for the ratio FDI over GDP. The BUSE R2 is higher with per capita FDI than with the other two FDI measures. For the other regressions presented in columns 4 to 6, and subsequent regressions, we retain per capita FDI as our main measure of FDI.

**INSERT TABLE 8 HERE**

In the regressions presented in columns 4 to 6 of table 8, we use different sets of control variables, the positive impact of FDI on welfare remains significant at 1% confidence level. The results confirm the expected sign of the control variables. In fact, the country debt burden (DEBTGDP), has a negative impact on welfare. As we have argued before, the higher the indebtedness of a country, the more it is likely to experience financial distress due to its debt servicing obligations, and thus it will be less easily for its Government to access financial resources for social spending. The size of the government (GOVSPEND) and the macroeconomic instability (INFLATION) measures seem to have non-significant impact on welfare. Infrastructure, however, measured by the LOG of PHONE, number of fix and mobile phones per 100 habitants, has a positive significant impact on welfare. Indeed, infrastructure development will improve the standard of living of populations and contribute positively to their overall well-being. Openness to trade impacts positively on welfare. But, CREDIT has a negative impact on welfare.

For the business environment and institutional quality variables, the political risks variable (CIVILLIB) has a negative significant impact on welfare. Indeed, CIVILLIB gives a high score to a country with the poorest freedom status and a low score to a country with better freedom environment. Therefore, the negative impact on welfare is consistent with our expectations, since more freedom will contribute positively to the well-being of populations. In fact, political rights (POLRIGHTS), civil liberties (CIVILLIB), corruption perception index (CPI) and rule of law index (LAW) are highly correlated, and measure to some extent the institutional quality, as a better judicial system goes hand in hand with lesser corruption, better individual rights and democracy. In the panel regression, we did not use CPI or LAW, since they have less data points available.

For robustness check, we also consider cross sectional regressions. To achieve that, for each variable and each country, we calculate the average of the variable across time. We then obtain one data per country for each variable. Next, we run ordinary-least squares (OLS) cross-

sectional regressions with White's correction of heteroskedasticity using all African countries. The results presented in Table 9 confirm our previous finding that FDI has a significant positive impact on welfare. Observing the increase of the R-square after the introduction of the infrastructure, openness to trade and financial development variables suggests that these variables are also key determinants of welfare, especially the infrastructure variable LGPHONE. The effectiveness of the rule of law (LAW) and the corruption perception index (CPI) have positive significant impact on welfare, which means that a better judiciary system will improve the business environment and provide better protection to investors, thereby facilitating investment and business development, which, in turn will create jobs and improve standard of living. The fact that, OPENNESS and CREDIT are not significant is not worrisome, because, these variables are found in the literature as being part of the determinants of FDI. Therefore, using these variables together with FDI can spread the explanatory power of the variables, which we suspect is the case.

**INSERT TABLE 9 HERE**

We also run the same panel and cross-sectional regressions using the alternative welfare measure, Log of the real per capita GDP. The results presented in Table 10 show that the impact of per capita FDI on welfare measured by Log of real per capita GDP is positive and significant in both panel and OLS regressions. Here, as expected, EDUCATION has a positive significant impact on per capita GDP.

**INSERT TABLE 10 HERE**

Our results for both panel and cross sectional regressions support the positive significant impact of FDI on welfare. Therefore, FDI contributes to poverty reduction at the aggregate Africa level. Overall, all else being equal, we observe that 1 dollar FDI adds about 0.5 basis points to HDI. The question that remains is that: is this effect uniform across regions? ; which leads us to our second research question.

### 4.3. Impact of FDI on welfare across Africa regions

The second research question we address is: (2) *are there any regional differences in Africa on the role of FDI on poverty reduction?* To address this second research question, we first consider the following regression equation:

$$\begin{aligned}\text{Welfare} = \alpha &+ \beta_1 \times FDI \times \text{Dummy}_{\text{ECCAS}} + \beta_2 \times FDI \times \text{Dummy}_{\text{ECOWAS}} \\ &+ \beta_3 \times FDI \times \text{Dummy}_{\text{IGAD}} + \beta_4 \times FDI \times \text{Dummy}_{\text{SADC}} \\ &+ \beta_5 \times FDI \times \text{Dummy}_{\text{UMA}} + \text{Control variables}\end{aligned} \quad , \qquad (2)$$

where we create dummy variables representing the five regional economic communities (RECs): ECCAS, ECOWAS, IGAD, SADC and UMA. For example, the ECCAS dummy takes one when the country belongs to that group and zero otherwise. For each region, we multiply the FDI variable by its dummy variable, this gives the FDI for the selected region countries. To avoid redundancy in this regression with dummy variables, we drop Angola and the Democratic Republic of the Congo from the SADC group. These two countries are already part of the ECCAS group.

Table 11 presents the regression results. As shown in the table, the coefficient for ECCAS dummy times FDIPOP is positive and significant, which is probably an indication that in this region, FDI impacts positively on welfare. The same holds for the IGAD region. For ECOWAS dummy times FDI, when HDI is used as the dependent welfare variable, the coefficient is positive but not significant in some regressions, and when it is significant, it is only at 10% confidence level. For the SADC dummy times FDI, when HDI is used as the dependent welfare variable, the FDI coefficient is negative and significant in most regressions. For the UMA region dummy times FDI, the coefficient is ambivalent and not significant in any regression with HDI as dependent welfare variable. Thus, when HDI is used as dependent welfare variable, FDI seems to impact positively welfare in ECCAS and IGAD, negatively in SADC, ambiguously in ECOWAS and has no impact in UMA.

When real per capita GDP is used as welfare variable, as done in most previous works, it becomes obvious that FDI has a positive impact on growth.

**INSERT TABLE 11 HERE**

**Impact of FDI in the free-trade areas**

To further investigate the regional differences, we run panel regressions using equation (1) in each of the free-trade area. The results for the five RECs are given in Table 12. In the ECCAS and IGAD regions, FDI contributes positively to welfare improvement. This result remains stronger even when control variables are added. In these two regions, the sign of the coefficients estimates for FDI are inline with those of Africa and support the positive impact of FDI on welfare. In the ECOWAS region, the impact of FDI on welfare is ambiguous. Indeed, when per capita FDI is considered alone, its coefficient is positive but non significant. When

control variables are introduced, the impact of FDI on welfare becomes negative and non significant in regression 2 and significant only at 10% confidence level in regression 3. In the SADC and UMA regions, per capita FDI has no significant impact on welfare. In the SADC region, when we exclude South Africa (the most developed economy in the region) or Zimbabwe (high inflationary macroeconomic regime over past years) from this group and rerun the analysis, the results remain more or less the same. Thus, FDI does not impact positively and significantly on welfare in the SADC and UMA regions.

**INSERT TABLE 12 HERE**

**Impact of FDI in the custom unions**

Table 13 presents the results of the panel regressions for the four custom unions and the embryonic West African Monetary Zone. In this regional analysis, CEMAC is a subgroup of ECCAS, SACU a subgroup of SADC, EAC a subgroup from ECCAS, IGAD and SADC, WAEMU and WAMZ are subgroups of ECOWAS. We expect these advanced economic groups to confirm our regional differences observed with the large communities. In these subgroups, CEMAC and WAEMU are two common monetary zones with the same pegged currency to the Euro, the CFA franc. Therefore, the economic convergence between the countries within these groups is more likely to happen earlier than between the other countries in their region. As the table shows, FDI impacts positively welfare in EAC and CEMAC regions, which confirm what we have already obtained for ECCAS and IGAD. In the WAEMU region, however, FDI has a negative significant impact on welfare, and in the WAMZ region the impact is positive; which explains why in the ECOWAS region, the impact of FDI on welfare is ambiguous. In the SACU region, the impact of FDI on welfare is not significant as in the whole SADC region.

**INSERT TABLE 13 HERE**

Overall, the impact of per capita FDI on welfare varies from region to region, with substantial differences between regions. Indeed, FDI impacts positively welfare in Central and Eastern Africa, while it has no significant impact in Northern and Southern Africa, and has an ambiguous impact in Western Africa.

To assess the robustness of these findings, we run the regressions in the free-trade RECs using the real per capita GDP as a welfare variable. Table 14 shows the results of these regressions. Here also, we observe differences across regions on the relationship between FDI and economic growth. Indeed, in all regions, FDI has a positive impact on economic growth.

Particularly, in the ECOWAS region, the impact of FDI on welfare is positive and significant, which was not the case with HDI as dependent welfare variable. This finding implies two things. First, the use of real per capita GDP as a welfare measure can be misleading in capturing the relationship between FDI and welfare. Second, the link between real per capita GDP and welfare is not as linear as one may think. This then seems to confirm the need to assess the impact of FDI directly on welfare.

**INSERT TABLE 14 HERE**

### 4.4. Comparative study with other out-of-Africa emerging RECs

Having studied the effect of FDI on welfare in Africa and its RECs, next we address our third research question: (3) *are there any differences between Africa and other World emerging regions on the role of FDI on poverty reduction*? To respond to this question, we consider three out-of-Africa emerging RECs: ASEAN, Europe transitional economies (EUTE) and Central America Common Market (CACM).

The regression results are presented in Table 15. The first three columns regress HDI on the four regional dummy times FDI. It shows that FDI impacts positively and significantly welfare in Africa but not in the other three regions. Indeed, FDI has a negative significant effect on welfare in Europe transitional countries and Central America Common Market, and has a non significant effect on welfare in ASEAN.

**INSERT TABLE 15 HERE**

To further explore the relationship between FDI and welfare in these three out-of-Africa regions, we consider each of them separately. The results given in table 15 confirm the non positive significant impact of FDI on welfare in the three out-of-Africa emerging RECs. Indeed, FDI has a negative impact on welfare in CACM, a positive non significant impact in EUTE and an ambiguous impact in ASEAN, while it impacts positively welfare in Africa.

## V. CONCLUSION AND POLICY RECOMMENDATIONS

This paper assesses the impact of Foreign Direct Investment (FDI) on welfare across regions of Africa. We use as welfare measure, respectively the human development index (HDI) and real per capita GDP. As FDI measure, we use separately, per capita FDI net inflows, FDI net inflows over GDP and FDI net inflows over gross capital formation (GCF). We also control for several other phenomenon pertaining to welfare improving and economic

growth as done in previous literature (economic and policy, business environment and institutional quality, and political risks).

We find that there is a strong positive relationship between FDI and welfare at the aggregate Africa level, and this strong positive relationship holds even after controlling for government size, indebtedness, macroeconomic instability, infrastructure development, institutional quality, political risks, openness to trade, education and financial market development. However, when taken at the regional level, the impact of FDI on welfare is no longer obvious and differs across regions.

The policy recommendation is that, although, Foreign Direct Investment can contribute to countries' development and poverty reduction in Africa, policies put in place to attract these foreign investments should be tailored on a regional basis and account for economic convergence within regions and differences between regions in order to be effective. In some regions, the channelling of these FDI flows into investments that benefit the poor is missing, although at the aggregate level, FDI contributes to poverty reduction.

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**Table 1: Literature review of the sign of the explanatory variables used to explain economic growth or welfare**

| | Causality test on the impact of FDI on Economic growth | | | DEPENDENT VARIABLE | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Welfare (HDI) | Real per capita GDP growth rate | | | |
| **EXPLANATORY VARIABLES** | **Kholdy & Sohrabian (2005)** | **Hansen & Rand (2006)** | **Chowdhury & Mavrotas (2006)** | **Sharma & Gani (2004)** | **Aspergis et al. (2007)** | **Alfaro et al. (2004)** | **Alfaro (2003)** | **Carkovic & Levine (2005)** |
| FDI/GDP | **NO IMPACT** | **YES IMPACT** | **NO/YES** | + | + | +/- NS | + NS | +/- NS |
| **Economic and Policy** | | | | | | | | |
| Government spending | | | | + | | +/- NS | -NS | - |
| Economic growth | | | | -/+NS | | | | |
| Infant mortality | | | | - | | | | |
| Schooling | | | | | + | +/-NS | +NS | +/-NS |
| Population growth | | | | | | - | | |
| Inflation | | | | | | -NS | - | -/+NS |
| Log(initial GDP) | | | | | | - | - | - |
| Openness | | | | | | | -NS | + |
| Investment (GCF/GDP) | | | | | | | + | |
| **Business Env. & Institutions** | | | | | | | | |
| Black market premium | | | | | | - | | - |
| Financial market development | | | | | | -/+ NS | + | + |
| Institutional quality | | | | | | + | + | |
| **Political Risk** (Freedom status) | | | | +/-NS | | | | |

Note: the + sign is for positive coefficient, - for negative coefficient, NS for coefficient non-significant, +NS for positive but non significant and -NS for negative but non significant.

**Table 2: Description of the variables and sources of the data**

| VARIABLE | DESCRPTION | SOURCE OF DATA |
|---|---|---|
| | **Welfare variables** | |
| HDI | Human Development Index (HDI) | HDI is from the Human Development Report (HDR) of the UNDP |
| GDPPOP | Real per capita GDP | Per Capita GDP is from the Worldbank World Development Indicators (WDI) |
| | **FDI variables** | |
| FDIPOP | Per capita FDI | These variables are from the World Development Indicators (WDI) and Global Development Finance (GDF) databases of the Worldbank |
| FDIGDP | FDI / GDP | |
| FDIGCF | FDI / GCF | |
| | **Economic and policy variables** | |
| DEBTGDP | Total Debt / GDP | These variables are from the WDI and African Development Indicators (ADI) databases of the Worldbank |
| GOVSPEND | Government consumption / GDP | |
| INFLATION | Percentage change in GDP deflator | |
| PHONE | Fix and mobile phones users per 100 habitants | |
| INTERNET | Internet users per 100 habitants | |
| ROAD | Road paved per 100 habitants | Except the education variable, which is obtained from the UNESCO database |
| EDUCATION | Secondary school enrollment | |
| OPENNESS | (Import+Export)/GDP | |
| | **Business environment and institutional quality variables** | |
| LAW | Rule of law index | The rule of law index is obtained from the World Resources Institute |
| CPI | Corruption perception index (CPI) | CPI is obtained from Transparency International |
| MKTCAP | Stock market capitalisation / GDP | The financial intermediaries data are from the Worldbank GDF database |
| CREDIT | Credit by financial intermediaries to private sector / GDP | |
| | **Political risks variables** | |
| POLRIGHTS | Political rights rating | The data for these variables are obtained from Freedom House at www.FreedomHouse.org |
| CIVILLIB | Civil liberty rating | |

**Table 3: List of countries by regional economic communities (RECs)**

(A). African regions

| ECCAS (11) | ECOWAS (15) | IGAD (7) | SADC (15) | UMA + Egypt (6) | CEMAC (6) | EAC (5) | SACU (5) | WAEMU (8) | WAMZ (5) |
|---|---|---|---|---|---|---|---|---|---|
| Angola | Benin | Djibouti | Angola | Algeria | Cameroon | Burundi | Botswana | Benin | Gambia |
| Burundi | Burkina Faso | Eritrea | Botswana | Libya | Central African Republic | Kenya | Lesotho | Burkina Faso | Ghana |
| Cameroon | Cap Verde | Ethiopia | Democratic Republic of the Congo | Mauritania | Chad | Rwanda | Namibia | Côte d'Ivoire | Guinea |
| Central African Republic | Côte d'Ivoire | Kenya | Lesotho | Morocco | Congo | Tanzania | South Africa | Guinea Bissau | Nigeria |
| Chad | Gambia | Somalia | Madagascar | Tunisia | Equatorial Guinea | Uganda | Swaziland | Mali | Sierra Leone |
| Congo | Ghana | Sudan | Malawi | + | Gabon | | | Niger | |
| Democratic Republic of the Congo | Guinea | Uganda | Mauritius | Egypt | | | | Senegal | |
| Equatorial. Guinea | Guinea Bissau | | Mozambique | | | | | Togo | |
| Gabon | Liberia | | Namibia | | | | | | |
| Rwanda | Mali | | Seychelles | | | | | | |
| Sao Tomé & Principe | Niger | | South Africa | | | | | | |
| | Nigeria | | Swaziland | | | | | | |
| | Senegal | | Tanzania | | | | | | |
| | Sierra Leone | | Zambia | | | | | | |
| | Togo | | Zimbabwe | | | | | | |

(B). Other emerging world regions

| **ASEAN (10)** | **Europe Transitional Economies. (25)** | | **Central America Common Market[1] (32)** | |
|---|---|---|---|---|
| Brunei Darussalam | Albania | Moldova | Antigua & Barbuda | Guyana |
| Cambodia | Armenia | Mongolia | Argentina | Haiti |
| Indonesia | Azerbaijan | Poland | Bahamas | Honduras |
| Laos | Belarus | Romania | Barbados | Jamaica |
| Malaysia | Bosnia | Slovak Republic | Belize | Mexico |
| Myanmar | Bulgaria | Slovenia | Bolivia | Nicaragua |
| Philippines | Croatia | Tajikistan | Brazil | Panama |
| Singapore | Czech Republic | Turkmenistan | Chile | Paraguay |
| Thailand | Estonia | Ukraine | Colombia | Peru |
| Vietnam | Georgia | Uzbekistan | Costa Rica | Saint Kitts & Nevis |
| | Hungary | | Dominica | Saint Lucia |
| | Kazakhstan | | Dominican Republic | Saint Vincent & the Grenadines |
| | Kyrgyz Republic | | Ecuador | Suriname |
| | Latvia | | El Salvador | Trinidad & Tobago |
| | Lithuania | | Grenada | Uruguay |
| | | | Guatemala | Venezuela |

[1] Excluding Canada and the United States of America and including Honduras.

## Table 4: Descriptive statistics for Africa

This table gives the descriptive statistics for each variable for the whole sample of Africa. The welfare and FDI variables are: HDI - the human development index, GDPPOP - real per capita GDP, FDIPOP - per capita FDI, FDIGDP - ratio of FDI over GDP, FDIGCF - ratio of FDI over GCF. The economic and policy variables are: DEBTGDP - total debt outstanding over GDP, INFLATION - percentage change in GDP deflator, GOVSPEND - ratio of government consumption over GDP, PHONE - number of fix and mobile phones per 100 habitants, INTERNET - number of Internet users per 100 habitants, ROAD – total road paved per 100 habitants, OPENNESS - ratio of total exports plus imports over GDP, EDUCATION – UNESCO secondary school enrolment. The business environment variables are: MKTCAP – stock market capitalisation over GDP, CREDIT - total credit by financial intermediaries to the private sector over GDP, LAW - effectiveness of the rule of law, CPI - corruption perception index ranging from 1 to 10, with 1 the most corrupt country and 10 the less corrupt one. The political risk variables are: POLRIGHT - political rights rating and CIVILLIB - civil liberty rating, both ranked on a scale of 1 through 7, with 1 the highest and 7 the lowest level of freedom. We have a total of 51 African countries and 18 years (1990-2007).

| Variable | N | Mean | Std Dev | Minimum | Maximum |
|---|---|---|---|---|---|
| **Welfare** | | | | | |
| HDI | 850 | 0.4430 | 0.1754 | 0.0450 | 0.8480 |
| GDPPOP | 828 | 1069.0700 | 1369.2500 | 50.1288 | 7058.2500 |
| LOG(GDPPOP) | 828 | 6.4153 | 1.0070 | 3.9146 | 8.8620 |
| **FDI** | | | | | |
| FDIPOP | 839 | 52.2350 | 274.0363 | -451.7792 | 3842.2000 |
| FDIGDP | 815 | 0.0367 | 0.1037 | -0.8289 | 1.4520 |
| FDIGCF | 789 | 0.1613 | 0.4443 | -0.5273 | 9.6789 |
| **Economic & Policy** | | | | | |
| DEBTGDP | 815 | 1.1028 | 1.3029 | 0.0325 | 15.9820 |
| GOVSPEND | 796 | 0.1570 | 0.0789 | 0.0290 | 0.6950 |
| INFLATION | 891 | 73.6870 | 943.0654 | -24.0764 | 26762.0200 |
| PHONE | 891 | 7.8881 | 16.0567 | 0.0000 | 115.1108 |
| LOG(PHONE) | 883 | 0.6472 | 1.7426 | -3.2736 | 4.7459 |
| INTERNET | 695 | 1.7413 | 4.0133 | 0.0000 | 37.6329 |
| ROAD | 523 | 28.2099 | 24.5746 | 0.8000 | 100.0000 |
| EDUCATION | 561 | 30.1750 | 23.0259 | 4.9000 | 114.0000 |
| OPENNESS | 869 | 0.7422 | 0.3881 | 0.1083 | 3.1674 |
| **Business Env. & Institutions** | | | | | |
| MKTCAP | 261 | 0.2986 | 0.4526 | 0.0055 | 3.0029 |
| CREDIT | 717 | 0.1798 | 0.2069 | 0.0001 | 1.5544 |
| LAW | 456 | -0.6935 | 0.6789 | -2.6400 | 0.9300 |
| CPI | 256 | 3.0887 | 1.1399 | 0.7000 | 6.4000 |
| **Political Risks** | | | | | |
| POLRIGHTS | 914 | 4.7177 | 1.8818 | 1 | 7 |
| CIVILLIB | 914 | 4.5131 | 1.4412 | 1 | 7 |

## Table 5: Evolution of HDI, real per capita GDP and FDI variables from 1990 to 2007

This table gives the evolution of HDI, real per capita GDP and FDI variables over the periods: 1990-1994, 1995-1999, 2000-2004, 2005-2007 for Africa, its regions and three out-of Africa regions. Weighted HDI is the average HDI weighted by country population size.

(A). Africa and other emerging world regions

| **AFRICA** | **1990 - 1994** | **1995 - 1999** | **2000 - 2004** | **2005 - 2007** | **Overall** |
|---|---|---|---|---|---|
| Weighted HDI | 0.338 | 0.441 | 0.473 | 0.498 | 0.437 |
| Weighted HDI Growth | 0.081 | 0.021 | 0.001 | 0.022 | 0.031 |
| Real per capita GDP | 762.673 | 779.780 | 840.336 | 953.437 | 834.057 |
| Real per capita GDP Growth | -0.014 | 0.013 | 0.023 | 0.034 | 0.014 |
| Per Capita FDI | 5.300 | 11.104 | 17.431 | 33.059 | 16.724 |
| Per Capita FDI Growth | 0.242 | 0.158 | 0.111 | 0.256 | 0.192 |
| FDI/GDP | 0.008 | 0.016 | 0.024 | 0.031 | 0.020 |
| FDI/GCF | 0.042 | 0.080 | 0.117 | 0.133 | 0.093 |
| **ASEAN** | **1990 -1994** | **1995 -1999** | **2000 - 2004** | **2005 - 2007** | **Overall** |
| Weighted HDI | 0.426 | 0.525 | 0.625 | 0.640 | 0.544 |
| Weighted HDI Growth | 0.021 | 0.032 | 0.017 | 0.013 | 0.022 |
| Real per capita GDP | 592.956 | 724.887 | 821.235 | 1009.236 | 762.394 |
| Real per capita GDP Growth | 0.042 | 0.028 | 0.038 | 0.060 | 0.040 |
| Per capita FDI | 11.495 | 19.614 | 17.313 | 33.619 | 18.197 |
| Per capita FDI Growth | 0.130 | 0.079 | 0.075 | 0.295 | 0.117 |
| FDI/GDP | 0.021 | 0.028 | 0.023 | 0.030 | 0.025 |
| FDI/GCF | 0.072 | 0.104 | 0.091 | 0.105 | 0.091 |
| **CACM** | **1990 - 1994** | **1995 - 1999** | **2000 - 2004** | **2005 - 2007** | **Overall** |
| Weighted HDI | 0.762 | 0.776 | 0.762 | 0.790 | 0.773 |
| Weighted HDI Growth | -0.001 | -0.010 | 0.004 | 0.012 | 0.001 |
| Real per capita GDP | 2756.719 | 2983.964 | 3075.530 | 3418.960 | 3058.793 |
| Real per capita GDP Growth | 0.022 | 0.008 | 0.011 | 0.038 | 0.020 |
| Per Capita FDI | 35.303 | 126.002 | 123.066 | 154.652 | 109.756 |
| Per Capita FDI Growth | 0.405 | 0.245 | -0.036 | 0.182 | 0.199 |
| FDI/GDP | 0.012 | 0.032 | 0.032 | 0.027 | 0.026 |
| FDI/GCF | 0.057 | 0.157 | 0.163 | 0.125 | 0.126 |
| **EUROPE TRANS. ECO.** | **1990 -1994** | **1995 -1999** | **2000 - 2004** | **2005 - 2007** | **Overall** |
| Weighted HDI | 0.854 | 0.758 | 0.764 | 0.792 | 0.792 |
| Weighted HDI Growth | -0.027 | -0.015 | 0.019 | -0.006 | -0.006 |
| Real per capita GDP | 1666.269 | 1549.415 | 1914.141 | 2403.815 | 1825.587 |
| Real per capita GDP Growth | -0.069 | 0.024 | 0.054 | 0.062 | 0.017 |
| Per capita FDI | 41.546 | 78.445 | 129.018 | 275.933 | 105.701 |
| Per capita FDI Growth | -0.025 | 0.377 | 0.166 | 0.284 | 0.199 |
| FDI/GDP | 0.023 | 0.037 | 0.047 | 0.057 | 0.038 |
| FDI/GCF | 0.100 | 0.152 | 0.197 | 0.228 | 0.159 |

(B). Africa free-trade areas

| **ECCAS** | **1990 - 1994** | **1995 - 1999** | **2000 - 2004** | **2005 - 2007** | **Overall** |
|---|---|---|---|---|---|
| Weighted HDI | 0.270 | 0.389 | 0.407 | 0.425 | 0.373 |
| Weighted HDI Growth | 0.105 | 0.044 | -0.028 | 0.034 | 0.039 |
| Real per capita GDP | 685.130 | 678.198 | 727.792 | 883.364 | 743.621 |
| Real per capita GDP Growth | -0.050 | 0.026 | 0.027 | 0.064 | 0.017 |
| Per Capita FDI | 3.087 | 12.922 | 34.655 | 24.346 | 18.753 |
| Per Capita FDI Growth | 0.491 | 1.588 | 0.218 | -0.138 | 0.540 |
| FDI/GDP | 0.008 | 0.016 | 0.024 | 0.031 | 0.020 |
| FDI/GCF | 0.053 | 0.190 | 0.443 | 0.185 | 0.218 |
| **ECOWAS** | **1990 -1994** | **1995 -1999** | **2000 - 2004** | **2005 - 2007** | **Overall** |
| Weighted HDI | 0.259 | 0.380 | 0.436 | 0.443 | 0.373 |
| Weighted HDI Growth | 0.115 | 0.038 | 0.002 | 0.017 | 0.041 |
| Real per capita GDP | 409.737 | 409.181 | 458.138 | 525.422 | 442.308 |
| Real per capita GDP Growth | -0.017 | 0.009 | 0.039 | 0.022 | 0.014 |
| Per capita FDI | 7.180 | 9.647 | 10.114 | 18.740 | 10.128 |
| Per capita FDI Growth | 0.231 | -0.010 | 0.049 | 0.551 | 0.139 |
| FDI/GDP | 0.023 | 0.028 | 0.024 | 0.026 | 0.025 |
| FDI/GCF | 0.127 | 0.152 | 0.126 | 0.108 | 0.132 |
| **IGAD** | **1990 -1994** | **1995 -1999** | **2000 - 2004** | **2005 - 2007** | **Overall** |
| Weighted HDI | 0.251 | 0.335 | 0.411 | 0.451 | 0.352 |
| Weighted HDI Growth | 0.055 | 0.044 | 0.021 | 0.026 | 0.036 |
| Real per capita GDP | 339.492 | 379.210 | 426.890 | 518.249 | 404.595 |
| Real per capita GDP Growth | -0.005 | 0.034 | 0.034 | 0.057 | 0.029 |
| Per capita FDI | 0.510 | 3.213 | 7.986 | 17.931 | 5.554 |
| Per capita FDI Growth | 1.174 | 0.432 | 0.276 | 0.334 | 0.556 |
| FDI/GDP | 0.003 | 0.013 | 0.031 | 0.046 | 0.019 |
| FDI/GCF | 0.015 | 0.075 | 0.160 | 0.202 | 0.097 |
| **SADC** | **1990 - 1994** | **1995 - 1999** | **2000 - 2004** | **2005 - 2007** | **Overall** |
| Weighted HDI | 0.428 | 0.475 | 0.460 | 0.478 | 0.460 |
| Weighted HDI Growth | 0.079 | 0.004 | -0.017 | 0.028 | 0.024 |
| Real per capita GDP | 1375.829 | 1373.033 | 1427.456 | 1616.958 | 1448.319 |
| Real per capita GDP Growth | -0.022 | 0.007 | 0.016 | 0.043 | 0.011 |
| Per Capita FDI | 3.791 | 19.052 | 25.161 | 23.800 | 17.951 |
| Per Capita FDI Growth | 4.135 | 0.770 | 0.204 | 0.751 | 1.465 |
| FDI/GDP | 0.004 | 0.020 | 0.028 | 0.014 | 0.016 |
| FDI/GCF | 0.023 | 0.112 | 0.166 | 0.082 | 0.096 |
| **UMA** | **1990 -1994** | **1995 -1999** | **2000 - 2004** | **2005 - 2007** | **Overall** |
| Weighted HDI | 0.494 | 0.621 | 0.652 | 0.693 | 0.607 |
| Weighted HDI Growth | 0.073 | 0.002 | 0.012 | 0.020 | 0.025 |
| Real per capita GDP | 1249.619 | 1324.292 | 1477.646 | 1682.095 | 1405.782 |
| Real per capita GDP Growth | 0.000 | 0.021 | 0.025 | 0.035 | 0.020 |
| Per capita FDI | 11.514 | 11.749 | 21.283 | 88.599 | 23.525 |
| Per capita FDI Growth | 0.292 | 0.027 | 0.171 | 1.228 | 0.288 |
| FDI/GDP | 0.010 | 0.008 | 0.014 | 0.043 | 0.015 |
| FDI/GCF | 0.040 | 0.037 | 0.057 | 0.226 | 0.066 |

(C). Africa custom unions

| **CEMAC** | **1990 - 1994** | **1995 - 1999** | **2000 - 2004** | **2005 - 2007** | **Overall** |
|---|---|---|---|---|---|
| Weighted HDI | 0.312 | 0.439 | 0.463 | 0.463 | 0.419 |
| Weighted HDI Growth | 0.110 | 0.021 | -0.010 | 0.018 | 0.035 |
| Real per capita GDP | 841.032 | 823.384 | 878.558 | 952.186 | 873.790 |
| Real per capita GDP Growth | -0.034 | 0.012 | 0.024 | 0.010 | 0.003 |
| Per Capita FDI | -0.222 | 8.879 | 55.565 | 94.166 | 39.597 |
| Per Capita FDI Growth | 2.375 | 4.099 | 0.452 | 0.099 | 1.756 |
| FDI/GDP | 0.000 | 0.014 | 0.070 | 0.074 | 0.039 |
| FDI/GCF | -0.003 | 0.054 | 0.276 | 0.317 | 0.161 |
| **EAC** | **1990 - 1994** | **1995 - 1999** | **2000 - 2004** | **2005 - 2007** | **Overall** |
| Weighted HDI | 0.323 | 0.392 | 0.445 | 0.469 | 0.407 |
| Weighted HDI Growth | 0.033 | 0.023 | 0.006 | 0.028 | 0.022 |
| Real per capita GDP | 330.336 | 335.805 | 347.283 | 377.478 | 347.726 |
| Real per capita GDP Growth | -0.018 | 0.017 | 0.008 | 0.031 | 0.009 |
| Per Capita FDI | 0.785 | 4.112 | 5.769 | 7.324 | 4.498 |
| Per Capita FDI Growth | 0.587 | 0.367 | -0.013 | 0.139 | 0.270 |
| FDI/GDP | 0.004 | 0.014 | 0.020 | 0.019 | 0.014 |
| FDI/GCF | 0.020 | 0.086 | 0.111 | 0.099 | 0.079 |
| **SACU** | **1990 - 1994** | **1995 - 1999** | **2000 - 2004** | **2005 - 2007** | **Overall** |
| Weighted HDI | 0.639 | 0.683 | 0.659 | 0.650 | 0.658 |
| Weighted HDI Growth | 0.047 | -0.001 | -0.007 | 0.007 | 0.012 |
| Real per capita GDP | 2826.338 | 2838.511 | 2997.693 | 3427.749 | 3022.573 |
| Real per capita GDP Growth | -0.015 | 0.004 | 0.022 | 0.042 | 0.013 |
| Per Capita FDI | 3.663 | 43.562 | 50.320 | 58.507 | 39.013 |
| Per Capita FDI Growth | 0.856 | 0.932 | 0.743 | 1.792 | 1.081 |
| FDI/GDP | 0.001 | 0.013 | 0.018 | 0.014 | 0.012 |
| FDI/GCF | 0.006 | 0.074 | 0.107 | 0.084 | 0.068 |
| **WAEMU** | **1990 - 1994** | **1995 - 1999** | **2000 - 2004** | **2005 - 2007** | **Overall** |
| Weighted HDI | 0.202 | 0.313 | 0.376 | 0.400 | 0.323 |
| Weighted HDI Growth | 0.133 | 0.056 | -0.006 | 0.050 | 0.058 |
| Real per capita GDP | 522.472 | 543.402 | 549.271 | 558.942 | 543.522 |
| Real per capita GDP Growth | -0.020 | 0.023 | -0.004 | 0.007 | 0.001 |
| Per Capita FDI | 2.119 | 7.777 | 7.126 | 8.628 | 6.412 |
| Per Capita FDI Growth | 1.024 | 0.296 | 0.007 | 0.078 | 0.351 |
| FDI/GDP | 0.005 | 0.019 | 0.018 | 0.016 | 0.014 |
| FDI/GCF | 0.037 | 0.120 | 0.115 | 0.089 | 0.090 |
| **WAMZ** | **1990 - 1994** | **1995 - 1999** | **2000 - 2004** | **2005 - 2007** | **Overall** |
| Weighted HDI | 0.285 | 0.411 | 0.463 | 0.463 | 0.405 |
| Weighted HDI Growth | 0.112 | 0.031 | 0.005 | 0.004 | 0.038 |
| Real per capita GDP | 361.196 | 349.835 | 418.520 | 514.242 | 410.948 |
| Real per capita GDP Growth | -0.015 | -0.002 | 0.068 | 0.031 | 0.020 |
| Per Capita FDI | 9.309 | 9.834 | 10.843 | 23.276 | 13.316 |
| Per Capita FDI Growth | 0.321 | -0.067 | 0.084 | 0.799 | 0.284 |
| FDI/GDP | 0.034 | 0.032 | 0.025 | 0.028 | 0.030 |
| FDI/GCF | 0.169 | 0.170 | 0.123 | 0.118 | 0.145 |

## Table 6: Correlation matrix for African countries from 1990 to 2007

The correlation matrix is obtained for African countries over the period 1990-2007. The welfare and FDI variables are: HDI - the human development index, GDPPOP - real per capita GDP, FDIPOP - per capita FDI, FDIGDP - ratio of FDI over GDP, FDIGCF - ratio of FDI over GCF. The economic and policy variables are: DEBTGDP - total debt outstanding over GDP, INFLATION - percentage change in GDP deflator, GOVSPEND – ratio of government consumption over GDP, PHONE - number of fix and mobile phones per 100 habitants, INTERNET - number of Internet users per 100 habitants, ROAD – total road paved per 100 habitants, OPENNESS – the ratio of total exports plus imports over GDP, EDUCATION – UNESCO secondary school enrolment. The business environment variables are: MKTCAP – stock market capitalisation over GDP, CREDIT – total credit by financial intermediaries to the private sector over GDP, LAW - effectiveness of the rule of law, CPI - corruption perception index ranging from 1 to 10, with 1 the most corrupt country and 10 the less corrupt one. The political risk variables are: POLRIGHT - political rights rating and CIVILLIB - civil liberty rating, both ranked on a scale of 1 through 7, with 1 the highest and 7 the lowest level of freedom.

| | HDI | GDPPOP | FDIPOP | FDIGDP | FDIGCF | DEBTGDP | GOVSPEND | INFLATION | PHONE | INTERNET | ROAD | EDUCATION | OPENNESS | MKTCAP | CREDIT | LAW | CPI | POLRIGHTS | CIVILLIB |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **HDI** | 1.00 | 0.67 | 0.24 | 0.10 | 0.07 | -0.26 | 0.14 | -0.08 | 0.56 | 0.49 | 0.65 | 0.84 | 0.44 | 0.38 | 0.47 | 0.57 | 0.61 | -0.24 | -0.27 |
| **GDPPOP** | 0.67 | 1.00 | 0.41 | 0.04 | -0.02 | -0.24 | 0.16 | -0.04 | 0.63 | 0.51 | 0.44 | 0.76 | 0.45 | 0.44 | 0.34 | 0.46 | 0.60 | -0.22 | -0.30 |
| **FDIPOP** | 0.24 | 0.41 | 1.00 | 0.39 | 0.17 | -0.09 | -0.03 | -0.01 | 0.27 | 0.19 | 0.29 | 0.29 | 0.37 | 0.09 | 0.00 | 0.00 | 0.00 | 0.05 | 0.04 |
| **FDIGDP** | 0.10 | 0.04 | 0.39 | 1.00 | 0.64 | 0.03 | 0.03 | 0.01 | 0.03 | 0.01 | -0.02 | 0.04 | 0.39 | -0.12 | -0.10 | -0.07 | -0.15 | 0.07 | 0.11 |
| **FDIGCF** | 0.07 | -0.02 | 0.17 | 0.64 | 1.00 | 0.33 | -0.02 | 0.00 | 0.06 | 0.01 | -0.01 | 0.06 | 0.19 | -0.12 | -0.13 | -0.15 | -0.21 | 0.08 | 0.09 |
| **DEBTGDP** | -0.26 | -0.24 | -0.09 | 0.03 | 0.33 | 1.00 | -0.18 | 0.06 | -0.19 | -0.10 | -0.27 | -0.38 | -0.09 | -0.30 | -0.27 | -0.39 | -0.28 | 0.12 | 0.19 |
| **GOVSPEND** | 0.14 | 0.16 | -0.03 | 0.03 | -0.02 | -0.18 | 1.00 | -0.04 | 0.11 | 0.12 | 0.10 | 0.30 | 0.33 | 0.09 | 0.25 | 0.29 | 0.35 | -0.06 | -0.09 |
| **INFLATION** | -0.08 | -0.04 | -0.01 | 0.01 | 0.00 | 0.06 | -0.04 | 1.00 | -0.05 | -0.03 | -0.06 | -0.07 | -0.02 | 0.05 | -0.05 | -0.15 | -0.15 | 0.07 | 0.07 |
| **PHONE** | 0.56 | 0.63 | 0.27 | 0.03 | 0.06 | -0.19 | 0.11 | -0.05 | 1.00 | 0.83 | 0.50 | 0.73 | 0.34 | 0.51 | 0.48 | 0.48 | 0.46 | -0.24 | -0.31 |
| **INTERNET** | 0.49 | 0.51 | 0.19 | 0.01 | 0.01 | -0.10 | 0.12 | -0.03 | 0.83 | 1.00 | 0.42 | 0.61 | 0.36 | 0.31 | 0.40 | 0.38 | 0.32 | -0.24 | -0.29 |
| **ROAD** | 0.65 | 0.44 | 0.29 | -0.02 | -0.01 | -0.27 | 0.10 | -0.06 | 0.50 | 0.42 | 1.00 | 0.68 | 0.26 | 0.01 | 0.41 | 0.60 | 0.44 | -0.26 | -0.26 |
| **EDUCATION** | 0.84 | 0.76 | 0.29 | 0.04 | 0.06 | -0.38 | 0.30 | -0.07 | 0.73 | 0.61 | 0.68 | 1.00 | 0.45 | 0.67 | 0.64 | 0.57 | 0.66 | -0.28 | -0.34 |
| **OPENNESS** | 0.44 | 0.45 | 0.37 | 0.39 | 0.19 | -0.09 | 0.33 | -0.02 | 0.34 | 0.36 | 0.26 | 0.45 | 1.00 | -0.21 | 0.06 | 0.21 | 0.20 | -0.12 | -0.16 |
| **MKTCAP** | 0.38 | 0.44 | 0.09 | -0.12 | -0.12 | -0.30 | 0.09 | 0.05 | 0.51 | 0.31 | 0.01 | 0.67 | -0.21 | 1.00 | 0.80 | 0.22 | 0.31 | -0.31 | -0.29 |
| **CREDIT** | 0.47 | 0.34 | 0.00 | -0.10 | -0.13 | -0.27 | 0.25 | -0.05 | 0.48 | 0.40 | 0.41 | 0.64 | 0.06 | 0.80 | 1.00 | 0.54 | 0.60 | -0.26 | -0.30 |
| **LAW** | 0.57 | 0.46 | 0.00 | -0.07 | -0.15 | -0.39 | 0.29 | -0.15 | 0.48 | 0.38 | 0.60 | 0.57 | 0.21 | 0.22 | 0.54 | 1.00 | 0.82 | -0.59 | -0.69 |
| **CPI** | 0.61 | 0.60 | 0.00 | -0.15 | -0.21 | -0.28 | 0.35 | -0.15 | 0.46 | 0.32 | 0.44 | 0.66 | 0.20 | 0.31 | 0.60 | 0.82 | 1.00 | -0.54 | -0.55 |
| **POLRIGHTS** | -0.24 | -0.22 | 0.05 | 0.07 | 0.08 | 0.12 | -0.06 | 0.07 | -0.24 | -0.24 | -0.26 | -0.28 | -0.12 | -0.31 | -0.26 | -0.59 | -0.54 | 1.00 | 0.88 |
| **CIVILLIB** | -0.27 | -0.30 | 0.04 | 0.11 | 0.09 | 0.19 | -0.09 | 0.07 | -0.31 | -0.29 | -0.26 | -0.34 | -0.16 | -0.29 | -0.30 | -0.69 | -0.55 | 0.88 | 1.00 |

## Table 7: Granger Causality Wald Test between welfare and per capita FDI

These tables provide the results of the Granger Causality Wald Test between per capita FDI and HDI (Panel a) or Real per capita GDP (Panel b). FDIPOP is the per capita FDI.

(A). HDI and per capita FDI

| Test with 2 lags | Chi-Square | Pr > ChiSq |
|---|---|---|
| 1: FDIPOP causes HDI | 6.78 | 0.0338 |
| 2: HDI causes FDIPOP | 5.35 | 0.0690 |

| Test with 3 lags | Chi-Square | Pr > ChiSq |
|---|---|---|
| 1: FDIPOP causes HDI | 8.21 | 0.0418 |
| 2: HDI causes FDIPOP | 4.10 | 0.2514 |

(B). Real per capita GDP and per capita FDI

| Test with 2 lags | Chi-Square | Pr > ChiSq |
|---|---|---|
| 1: FDIPOP causes Log(Real per capital GDP) | 14.77 | 0.0006 |
| 2: Log(Real per capital GDP) causes FDIPOP | 7.31 | 0.0258 |

| Test with 3 lags | Chi-Square | Pr > ChiSq |
|---|---|---|
| 1: FDIPOP causes Log(Real per capital GDP) | 14.79 | 0.0020 |
| 2: Log(Real per capital GDP) causes FDIPOP | 6.54 | 0.0882 |

## Table 8: Panel regression results of the impact of FDI on HDI for Africa

This table presents the results of the panel regressions of HDI on FDI variables and selected economic and policy variables, business environment and institutional quality variables, and political risks variables used as control variables. We use panel data for African countries over the period from 1990-2007 when the data is available. The estimations are done by controlling for the Fixed Effects. We use HDI to measure welfare and FDI variables are FDIPOP - per capita FDI, FDIGDP - ratio of FDI over GDP and FDIGCF - ratio of FDI over GCF. The economic and policy variables are: DEBTGDP - total debt outstanding over GDP, INFLATION - percentage change in GDP deflator, GOVSPEND - ratio of government consumption over GDP, LGPHONE – log of the number of fix and mobile phones per 100 habitants, OPENNESS - ratio of total exports plus imports over GDP. The business environment and institutional quality variable is: CREDIT - total credit by financial intermediaries to the private sector over GDP. The political risks variable is CIVILLIB - civil liberty rating, ranked on a scale of 1 through 7, with 1 the highest and 7 the lowest level of freedom. Student t-statistics are in parenthesis, and "***" indicates a 1% significance level, "**" a 5% significance level and "*" a 10% significance level.

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| **INTERCEPT** | 0.518975 | 0.518574 | 0.519688 | 0.579242 | 0.566545 | 0.517776 |
| | (9.77) | (9.52) | (9.49) | (31.31) | (17.90) | (13.93) |
| **FDIPOP** | **0.00005*** ** | | | **0.000048*** ** | **0.000045*** ** | **0.000052*** ** |
| | (5.71) | | | (4.82 | (4.56) | (4.66) |
| **FDIGDP** | | 0.0251 | | | | |
| | | (0.98) | | | | |
| **FDIGCF** | | | **0.026756*** ** | | | |
| | | | (2.73) | | | |
| **DEBTGDP** | | | | **-0.01402*** ** | -0.01065 | **-0.01671** ** |
| | | | | (-2.16) | (-1.59) | (-2.41) |
| **GOVSPEND** | | | | -0.00723 | -0.02155 | 0.090343 |
| | | | | (-0.13) | (-0.38) | (1.45) |
| **INFLATION** | | | | -5.08E-6 | 3.852E-6 | 0.000027 |
| | | | | (-0.20) | (0.15) | (0.21) |
| **LGPHONE** | | | | | **0.011526** ** | **0.020504*** ** |
| | | | | | (2.08) | (3.40) |
| **CIVILLIB** | | | | | -0.00474 | **-0.00555** * |
| | | | | | (-1.46) | (-1.65) |
| **OPENNESS** | | | | | | **0.039036*** ** |
| | | | | | | (2.96) |
| **CREDIT** | | | | | | **-0.08656** ** |
| | | | | | | (-2.43) |
| **NB COUNTRIES** | 49 | 49 | 47 | 45 | 45 | 39 |
| **NB YEARS** | 18 | 18 | 18 | 17 | 17 | 17 |
| **F-STAT** | 120.79*** | 117.50*** | 117.81*** | 103.7*** | 39.41*** | 37.49*** |
| **BUSE $R^2$** | 0.9228 | 0.9184 | 0.9178 | 0.9286 | 0.9294 | 0.9401 |

## Table 9: Cross sectional regression results of the impact of FDI on HDI for Africa

This table presents the results of the cross sectional regressions of HDI on FDI and selected economic and policy variables, business environment and institutional quality variables, and political risks variables used as control variables. We use aggregated data of African countries. For each country, the value assigned to the variable is the average over the period 1990-2007. We use HDI to measure welfare and FDI variable is FDIPOP - per capita FDI. The economic and policy variables are: DEBTGDP - total debt outstanding over GDP, INFLATION - percentage change in GDP deflator, GOVSPEND - ratio of government consumption over GDP, LGPHONE - log of the number of fix and mobile phones per 100 habitants, OPENNESS - ratio of total exports plus imports over GDP, EDUCATION – UNESCO secondary school enrolment. The business environment and institutional quality variables are: CREDIT - total credit by financial intermediaries to the private sector over GDP, LAW - effectiveness of the rule of law. The political risks variable is CIVILLIB - civil liberty rating, ranked on a scale of 1 through 7, with 1 the highest and 7 the lowest level of freedom. All regressions are estimated with White's correction of heteroskedasticity. Student t-statistics are in parenthesis, and "***" indicates a 1% significance level, "**" a 5% significance level and "*" a 10% significance level.

| | **(1)** | **(2)** | **(3)** | **(4)** | **(5)** | **(6)** | **(7)** |
|---|---|---|---|---|---|---|---|
| **INTERCEPT** | 0.41873 | 0.62032 | 0.52906 | 0.15856 | 0.39144 | 0.32287 | 0.44935 |
| | (20.47) | (6.84) | (14.47) | (2.50) | (16.05) | (4.44) | (11.07) |
| **FDIPOP** | 0.00022046 | **0.00023581**** | **0.00019814***** | **0.00020278***** | **0.00007009***** | **0.00005551**** | 0.00004163 |
| | (1.44) | (2.29) | (3.00) | (2.70) | (3.93) | (2.50) | (1.42) |
| **DEBTGDP** | | **-0.03545**** | -0.01073 | **-0.02233**** | -0.00373 | -0.00101 | **-0.04247***** |
| | | (-2.11) | (-1.00) | (-2.26) | (-0.40) | (-0.12) | (-4.00) |
| **GOVSPEND** | | 0.16317 | 0.02506 | 0.01476 | -0.11682 | -0.11577 | **-0.45248**** |
| | | (0.91) | (0.18) | (0.11) | (-0.87) | (-0.93) | (-2.16) |
| **INFLATION** | | 0.00002846 | **0.00007988***** | **0.00003591***** | **0.00006765***** | **0.00006665***** | 0.00011471 |
| | | (1.43) | (4.37) | (2.82) | (6.33) | (4.50) | (1.39 ) |
| **LGPHONE** | | | | | **0.10537***** | **0.10133***** | **0.10377***** |
| | | | | | (16.17) | (11.48) | (12.00) |
| **LAW** | | | **0.15060***** | | | 0.02331 | |
| | | | (5.43) | | | (0.65) | |
| **CPI** | | | | **0.09893***** | | 0.00519 | |
| | | | | (5.06) | | 0.37 | |
| **CIVILLIB** | | **-0.04254**** | | | | 0.01574 | |
| | | (-2.26) | | | | (1.53) | |
| **OPENNESS** | | | | | | | 0.04135 |
| | | | | | | | (1.37) |
| **CREDIT** | | | | | | | -0.00604 |
| | | | | | | | (-0.16) |
| **NB OBS** | **49** | **46** | **47** | **44** | **47** | **43** | **41** |
| **Adj. $R^2$** | **0.0533** | **0.2171** | **0.4275** | **0.4481** | **0.8569** | **0.8547** | **0.8825** |

## Table 10: Panel and cross sectional regression results of the impact of FDI on Real per capita GDP for Africa

This table presents the results of panel and cross sectional regressions of log of real per capita GDP on FDI and selected economic and policy variables, business environment and institutional quality variables, and political risks variables used as control variables. We use panel and cross sectional data for African countries over the period 1990-2007 when the data is available. The panel estimations are done by controlling for the Fixed Effects. We use the Log of real per capita GDP to measure welfare and FDI variable is FDIPOP - per capita FDI. The economic and policy variables are: DEBTGDP - total debt outstanding over GDP, INFLATION - percentage change in GDP deflator, GOVSPEND - ratio of government consumption over GDP, LGPHONE – log of the number of fix and mobile phones per 100 habitants, OPENNESS - ratio of total exports plus imports over GDP, EDUCATION – UNESCO secondary school enrolment. The business environment and institutional quality variable is CREDIT - total credit by financial intermediaries to the private sector over GDP. The political risks variable is CIVILLIB - civil liberty rating, ranked on a scale of 1 through 7, with 1 the highest and 7 the lowest level of freedom. For the OLS regressions, estimations are done with White's correction of heteroskedasticity. Student t-statistics are in parenthesis, and "***" indicates a 1% significance level, "**" a 5% and "*" a 10%.

| | Panel1 | Panel2 | Panel3 | Panel4 | OLS1 | OLS2 |
|---|---|---|---|---|---|---|
| **INTERCEPT** | 6.699001 | 6.693881 | 6.690962 | 6.253735 | 6.29458 | 6.96278 |
| | (39.46) | (31.58) | (32.50) | (51.11) | (44.64) | (17.78) |
| **FDIPOP** | **0.000543*** ** | | | **0.000406*** ** | **0.00173** ** | **0.00101*** ** |
| | (19.64) | | | (6.88) | (2.06) | (3.84) |
| **FDIGDP** | | **0.138166*** | | | | |
| | | (1.65) | | | | |
| **FDIGCF** | | | -0.0312 | | | |
| | | | (-1.41) | | | |
| **DEBTGDP** | | | | **-0.19835*** ** | | **-0.29354*** ** |
| | | | | (-10.09) | | (-2.94) |
| **GOVSPEND** | | | | **-0.56249*** ** | | **-3.34586*** |
| | | | | (-3.19) | | (-1.77) |
| **INFLATION** | | | | **0.000684** ** | | -0.00227 |
| | | | | (2.00) | | (-0.99) |
| **LGPHONE** | | | | **0.091887*** ** | | **0.65455*** ** |
| | | | | (5.20) | | (5.08) |
| **CIVILLIB** | | | | **-0.01624*** | | |
| | | | | (-1.77) | | |
| **EDUCATION** | | | | **0.002727*** ** | | 0.00622 |
| | | | | (2.64) | | (1.31) |
| **OPENNESS** | | | | **0.166592*** ** | | -0.36668 |
| | | | | (4.16) | | (-1.32) |
| **CREDIT** | | | | **0.487781*** ** | | **-0.80193*** |
| | | | | (4.89) | | (-1.84) |
| **NB Countries** | 45 | 45 | 45 | 36 | 45 | 36 |
| **NB Years** | 18 | 18 | 18 | 17 | | |
| **F-STAT** | 427.95*** | 280.99*** | 276.64*** | 181.80*** | | |
| **$R^2$** | 0.9765 | 0.9620 | 0.9626 | 0.9853 | 0.0902 | 0.8266 |

## Table 11: Panel regression results of the impact of regional FDI on welfare for Africa

This table presents the results of the panel regressions of HDI on regions dummy times FDI and selected economic and policy variables, business environment and institutional quality variables, and political risks variables used as control variables. We use panel data for African countries over the period 1990-2007 when the data is available. The estimations are done by controlling for the Fixed Effects. We use HDI to measure welfare and FDI variable is FDIPOP - per capita FDI. ECCAS, ECOWAS, IGAD, SADC and UMA are dummy variables for the regions with 1 if the country belongs to the region and zero otherwise. To avoid overlap, SADC excludes Angola and Democratic Republic of the Congo since these countries are already included in ECCAS. The economic and policy variables are: DEBTGDP - total debt outstanding over GDP, INFLATION - percentage change in GDP deflator, GOVSPEND - ratio of government consumption over GDP, LGPHONE – log of the number of fix and mobile phones per 100 habitants, OPENNESS –ratio of total exports plus imports over GDP, EDUCATION – UNESCO secondary school enrolment. The business environment and institutional quality variable is CREDIT - total credit by financial intermediaries to the private sector over GDP. The political risks variable is CIVILLIB - civil liberty rating, ranked on a scale of 1 through 7, with 1 the highest and 7 the lowest level of freedom. Student t-statistics are in parenthesis, and "***" indicates a 1% significance level, "**" a 5% and "*" a 10%.

| | HDI | | | Real per capita GDP | | |
|---|---|---|---|---|---|---|
| | **(1)** | **(2)** | **(3)** | **(1)** | **(2)** | **(3)** |
| **INTERCEPT** | 0.51551 | 0.588139 | 0.533063 | 6.689515 | 6.886014 | 6.332279 |
| | (9.96) | (18.75) | (14.76) | (40.45) | (105.40) | (51.88) |
| **ECCAS*FDIPOP** | **0.000062*****| **0.00006***** | **0.000068***** | **0.000573***** | **0.000452***** | **0.000432***** |
| | (7.01) | (5.85) | (5.99) | (20.58) | (16.62) | (7.03) |
| **ECOWAS*FDIPOP** | **0.000303*** | 0.000303 | **0.000453**** | **0.002216***** | **0.002067***** | **0.001411***** |
| | (1.72) | (1.57) | (2.47) | (4.61) | (4.08) | (2.75) |
| **IGAD*FDIPOP** | **0.00097***** | **0.001204***** | **0.001706***** | **0.002962***** | **0.004303***** | **0.007117***** |
| | (3.32) | (2.92) | (3.73) | (3.18) | (3.89) | (3.94) |
| **SADC*FDIPOP** | **-0.00011***** | **-0.0001***** | **-0.00009***** | 0.000113 | **0.000238***** | 0.000033 |
| | (-3.49) | (-3.20) | (-2.84) | (1.15) | (2.89) | (0.18) |
| **UMA*FDIPOP** | 0.000041 | 0.000056 | 0.00005 | 0.001022** | **0.001346***** | 0.001175 |
| | (0.28) | (0.38) | (0.35) | (2.18) | (3.47) | (1.44) |
| **DEBTGDP** | | -0.00091 | -0.00668 | | **-0.14113***** | **-0.17749***** |
| | | (-0.13) | (-0.96) | | (-7.74) | (-8.86) |
| **GOVSPEND** | | -0.0501 | 0.038116 | | **-0.82869***** | **-0.7193***** |
| | | (-0.88) | (0.62) | | (-5.56) | (-3.99) |
| **INFLATION** | | -5.25E-06 | 0.000086 | | -0.00005 | **0.000926***** |
| | | (-0.21) | (0.67) | | (-0.76) | (2.70) |
| **LGPHONE** | | 0.00768 | **0.014581**** | | **0.094446***** | **0.085042***** |
| | | (1.40) | (2.45) | | (6.10) | (4.87) |
| **CIVILLIB** | | **-0.00524*** | **-0.00627*** | | **-0.02375***** | **-0.01763**** |
| | | (-1.65) | (-1.92) | | (-2.90) | (-1.95) |
| **EDUCATION** | | | | | | 0.001688 |
| | | | | | | (1.58) |
| **OPENNESS** | | | **0.048297***** | | | **0.159414***** |
| | | | (3.72) | | | (4.04) |
| **CREDIT** | | | **-0.06473*** | | | **0.514382***** |
| | | | (-1.82) | | | (5.16) |
| **NB COUNTRIES** | 49 | 45 | 39 | 45 | 44 | 36 |
| **NB YEARS** | 18 | 17 | 17 | 18 | 18 | 17 |
| **F-STAT** | 107.83*** | 40.33*** | 40.10*** | 398.71*** | 253.22*** | 188.03*** |
| **BUSE $R^2$** | 0.9271 | 0.9330 | 0.9443 | 0.9778 | 0.984 | 0.986 |

## Table 12: Panel regression results of the impact of FDI on HDI for Africa free-trade areas

We run panel regressions of HDI as welfare measure on FDI per capita (FDIPOP) and selected control variables. DEBTGDP is the total debt outstanding over GDP, INFLATION the percentage change in GDP deflator, GOVSPEND the ratio of government consumption over GDP, LGPHONE the log of the number of fix and mobile phones per 100 habitants, OPENNESS the ratio of total exports plus imports over GDP, EDUCATION the UNESCO secondary school enrolment, CREDIT the total credit by financial intermediaries to the private sector over GDP, CIVILLIB the civil liberty rating. We use country-year data over the period 1990-2007 when available. The estimations are done by controlling for the Fixed Effects. Student t-statistics are in parenthesis, and "***" indicates a 1% significance level, "**" a 5% and "*" a 10%.

| | ECCAS | | | ECOWAS | | | IGAD | | | SADC | | | UMA+ Egypt | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **1** | **2** | **3** | **1** | **2** | **3** | **1** | **2** | **3** | **1** | **2** | **3** | **1** | **2** | **3** |
| **INTERCEPT** | 0.389131 | 0.60546 | 0.48995 | 0.487433 | 0.493326 | 0.515683 | 0.456175 | 0.343999 | 0.294338 | 0.511373 | 0.615724 | 0.604901 | 0.825308 | 0.748261 | 0.584433 |
| | (19.01) | (10.80) | (9.98) | (38.64) | (12.88) | (14.76) | (18.37) | (6.88) | (4.42) | (9.42) | (12.07) | (9.36) | (19.42) | (6.26) | (2.35) |
| **FDIPOP** | **0.000061*** ** | **0.000035*** ** | **0.000032*** ** | 0.000123 | -0.00007 | -0.00015 | **0.000544*** | **0.00096*** | **0.001166*** | -0.00003 | -9.28E-06 | 2.166E-6 | -0.00016 | -0.00009 | -0.00015 |
| | (7.09) | (3.26) | (2.64) | (1.00) | (-0.53) | (-1.31) | (1.68) | (1.84) | (1.64) | (-0.77) | (-0.30) | (0.06) | (-0.77) | (-0.35) | (-0.45) |
| **DEBTGDP** | | **-0.03128*** | **-0.03097*** | | **0.053193*** ** | **0.023638** ** | | -0.00232 | -0.00905 | | **-0.04148*** ** | **-0.04235*** ** | | 0.001891 | -0.03471 |
| | | (-1.75) | (-1.64) | | (4.92) | (2.52) | | (-0.16) | (-0.53) | | (-3.74) | (-3.37) | | (0.05) | (-0.50) |
| **GOVSPEND** | | **-0.29529** ** | -0.21004 | | 0.01634 | -0.0886 | | **-0.29986** ** | **-0.57582*** | | **0.204142*** | **0.318038** ** | | 0.373712 | 0.006558 |
| | | (-2.2) | (-1.47) | | (0.19) | (-1.25) | | (-2.44) | (-1.84) | | (1.82) | (2.58) | | (1.26) | (0.02) |
| **INFLATION** | | 0.000021 | -0.00032 | | 0.00013 | 0.000099 | | 0.000335 | 0.000209 | | 0.00003 | 0.000168 | | 0.001511 | **0.002572*** |
| | | (0.81) | (-0.80) | | (0.72) | ( 0.68) | | (1.19) | (0.79) | | (1.17) | (0.81) | | (1.46) | (1.76) |
| **LGPHONE** | | -0.01268 | 0.018795 | | -0.00274 | -0.00729 | | 0.017508 | **0.048814*** ** | | **-0.02202** ** | **-0.02819** ** | | 0.004719 | 0.035166 |
| | | (-1.00) | (1.05) | | (-0.36) | (-1.16) | | (1.13) | (3.31) | | (-2.49) | (-2.31) | | (0.22) | (1.11) |
| **CIVILLIB** | | **-0.02105*** ** | **-0.03103*** ** | | -0.00457 | **-0.00504*** | | **0.028658*** ** | **0.03395*** ** | | **-0.01011*** | -0.00524 | | -0.00561 | -0.01226 |
| | | (-3.02) | (-4.08) | | (-1.25) | (-1.68) | | (3.59) | (3.79) | | (-1.70) | (-0.75) | | (-0.38) | (-0.64) |
| **OPENNESS** | | | **0.03785** ** | | | -0.02421 | | | -0.02514 | | | **0.045694*** | | | **0.247997*** |
| | | | (2.30) | | | (-1.25) | | | (-0.23) | | | (1.84) | | | (1.89) |
| **CREDIT** | | | 0.136993 | | | **0.189839*** ** | | | **0.471928** ** | | | **-0.17495*** ** | | | **-0.17852*** |
| | | | (1.03) | | | (4.28) | | | (2.07) | | | (-2.77) | | | (-1.73) |
| **NB Countries** | 11 | 9 | 7 | 14 | 13 | 12 | 7 | 6 | 4 | 14 | 14 | 12 | 5 | 5 | 4 |
| **NB Years** | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 18 | 17 | 17 | 17 | 17 | 17 |
| **F-STAT** | 51.71*** | 16.13*** | 11.71*** | 108.23*** | 59.16*** | 62.36*** | 25.57*** | 8.60*** | 7.14*** | 60.91*** | 31.61*** | 21.33*** | 27.97*** | 10.53*** | 5.19*** |
| **BUSE $R^2$** | 0.9147 | 0.9455 | 0.9586 | 0.9552 | 0.9632 | 0.9776 | 0.8938 | 0.8961 | 0.9484 | 0.9259 | 0.9544 | 0.9550 | 0.9151 | 0.9249 | 0.9385 |

## Table 13: Panel regression results of the impact of FDI on HDI for Africa custom unions

We run panel regressions of HDI as welfare measure on FDI per capita (FDIPOP) and selected control variables. DEBTGDP is the total debt outstanding over GDP, INFLATION the percentage change in GDP deflator, GOVSPEND the ratio of government consumption over GDP, LGPHONE the log of the number of fix and mobile phones per 100 habitants, OPENNESS the ratio of total exports plus imports over GDP, EDUCATION the UNESCO secondary school enrolment, CREDIT the total credit by financial intermediaries to the private sector over GDP, CIVILLIB the civil liberty rating. We use country-year data over the period 1990-2007 when available. The estimations are done by controlling for the Fixed Effects. Student t-statistics are in parenthesis, and "***" indicates a 1% significance level, "**" a 5% and "*" a 10%.

| | CEMAC | | | EAC | | | SACU | | | WAEMU | | | WAMZ | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **1** | **2** | **3** | **1** | **2** | **3** | **1** | **2** | **3** | **1** | **2** | **3** | **1** | **2** | **3** |
| **INTERCEPT** | 0.321875 | 0.472658 | 0.462281 | 0.415415 | 0.251339 | 0.213654 | 0.692711 | 0.737984 | 0.203247 | 0.509831 | 0.544684 | 0.449501 | 0.288511 | 0.184399 | 0.215507 |
| | (16.40) | (8.44) | (7.26) | (18.35) | (6.22) | (4.41) | (12.67) | (4.91) | (0.83) | (39.96) | (12.5) | (7.43) | (7.9) | (1.94) | (5.69) |
| **FDIPOP** | **0.000072*****| **0.000031***** | **0.000033**** | **0.004948**** | **0.005869***** | **0.006154***** | -0.00014 | -0.0001 | 0.000087 | **-0.00175***** | **-0.00097**** | -0.00067 | 0.000013 | 0.000775 | 0.000903 |
| | (8.59) | (2.99) | (2.65) | (2.62) | (3.48) | (3.42) | (-1.46) | (-0.85) | (0.59) | (-3.75) | (-2.04) | (-1.36) | (0.01) | (0.44) | (1.33) |
| **DEBTGDP** | | -0.03004 | -0.01705 | | 0.003958 | 0.008024 | | -0.17058 | -0.17293 | | **0.032812***** | 0.016728 | | 0.036314 | -0.01169 |
| | | (-1.50) | (-0.82) | | (0.25) | (0.27) | | (-1.27) | (-1.26) | | (2.79) | (1.29) | | (1.16) | (-0.97) |
| **GOVSPEND** | | **-0.35744**** | **-0.39952**** | | 0.112738 | 0.1292 | | **0.84264**** | **1.021811***** | | 0.163154 | -0.01406 | | -0.32647 | -0.09118 |
| | | (-2.35) | (-2.59) | | (0.66) | (0.70) | | (2.27) | (2.80) | | (1.44) | (-0.12) | | (-1.43) | (-1.02) |
| **INFLATION** | | **-0.00058** | -0.00055 | | -0.00015 | -0.00015 | | 0.002202 | 0.002842 | | 0.00026 | 0.000247 | | 0.00034 | -0.00012 |
| | | (-1.30) | (-1.18) | | (-0.37) | (-0.28) | | (0.89) | (1.17) | | (0.78) | (0.76) | | (1.16) | (-1.22) |
| **LGPHONE** | | 0.027468 | 0.028466 | | -0.00212 | 0.001733 | | **-0.05064**** | **-0.055**** | | 0.002719 | 0.001312 | | 0.007481 | 0.004109 |
| | | (1.58) | (1.47) | | (-0.13) | (0.09) | | (-2.06) | (-2.20) | | (0.30) | (0.15) | | (0.41) | (0.34) |
| **CIVILLIB** | | **-0.02509**** | **-0.02725***** | | **0.040259***** | **0.037605***** | | -0.00611 | 0.02157 | | **-0.01707***** | **-0.01101***** | | **0.01366*** | -0.00094 |
| | | (-2.54) | (-2.65) | | (5.01) | (4.37) | | (-0.26) | (0.86) | | (-4.36) | (-2.57) | | (1.74) | (-0.29) |
| **OPENNESS** | | | 0.024334 | | | 0.065548 | | | 0.079847 | | | 0.031833 | | | 0.053079 |
| | | | (1.38) | | | (0.86) | | | (0.90) | | | (0.73) | | | (1.62) |
| **CREDIT** | | | **0.298714*** | | | -0.04903 | | | -0.1899 | | | **0.33228***** | | | 0.126831 |
| | | | (1.65) | | | (-0.21) | | | (-1.17) | | | (3.94) | | | (0.88) |
| **NB Countries** | 6 | 5 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 8 | 8 | 8 | 4 | 4 | 3 |
| **NB Years** | 17 | 17 | 17 | 17 | 17 | 17 | 18 | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 17 |
| **F-STAT** | 47.08*** | 15.00*** | 10.29*** | 26.70*** | 15.29*** | 10.19*** | 8.58*** | 4.72*** | 2.95*** | 78.20*** | 43.64*** | 44.19*** | 31.71*** | 17.70*** | 68.24*** |
| **BUSE $R^2$** | 0.9367 | 0.9675 | 0.9696 | 0.9176 | 0.9537 | 0.9563 | 0.7988 | 0.8660 | 0.8888 | 0.9508 | 0.9618 | 0.9672 | 0.9426 | 0.9641 | 0.9975 |

## Table 14: Panel regression results of the impact of FDI on Real per capita GDP for Africa free-trade areas

We run panel regressions of log of real per capita GDP as welfare measure on FDI per capita (FDIPOP) and selected control variables. DEBTGDP is the total debt outstanding over GDP, INFLATION the percentage change in GDP deflator, GOVSPEND the ratio of government consumption over GDP, LGPHONE the log of the number of fix and mobile phones per 100 habitants, OPENNESS the ratio of total exports plus imports over GDP, EDUCATION the UNESCO secondary school enrolment, CREDIT the total credit by financial intermediaries to the private sector over GDP, CIVILLIB the civil liberty rating. We use country-year data over the period 1990-2007 when available. The estimations are done by controlling for the Fixed Effects. Student t-statistics are in parenthesis, and "***" indicates a 1% significance level, "**" a 5% and "*" a 10%.

| | ECCAS | | | ECOWAS | | | IGAD | | | SADC | | | UMA+ Egypt | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **1** | **2** | **3** | **1** | **2** | **3** | **1** | **2** | **3** | **1** | **2** | **3** | **1** | **2** | **3** |
| **INTERCEPT** | 5.756587 | 6.312159 | 6.798071 | 5.960721 | 5.780599 | 5.752425 | 5.566173 | 5.19621 | 5.049599 | 6.693529 | 6.657209 | 5.677793 | 7.692706 | 7.736668 | 7.090611 |
| | (53.67) | (40.60) | (34.75) | (102.41) | (41.64) | (35.14) | (82.81) | (69.26) | (32.06) | (56.16) | (53.99) | (44.79) | (151.53) | (66.6) | (40.38) |
| **FDIPOP** | **0.000585*** ** | **0.000266*** ** | 0.000059 | **0.002457*** ** | **0.001958*** ** | **0.001216** ** | **0.003708*** ** | **0.002647*** ** | **0.004774*** ** | 0.000017 | **0.000138** ** | 0.000095 | 0.000388 | 0.000354 | 0.000037 |
| | (12.15) | (6.65) | (0.78) | (4.78) | (3.93) | (2.23) | (4.03) | (3.34) | (2.81) | (0.24) | (2.05) | (1.15) | (1.52) | (1.42) | (0.1) |
| **DEBTGDP** | | **-0.45066*** ** | **-0.63371*** ** | | 0.056046 | **-0.08232** * | | **-0.06397*** ** | -0.01897 | | **-0.08058*** ** | **-0.15843*** ** | | -0.02232 | **0.125195** ** |
| | | (-6.64) | (-9.54) | | (1.45) | (-1.84) | | (-2.83) | (-0.59) | | (-3.26) | (-9.07) | | (-0.55) | (2.75) |
| **GOVSPEND** | | **-1.38727*** ** | **-1.58628*** ** | | 0.063563 | -0.23645 | | 0.272445 | 0.267261 | | -0.15144 | **0.519908*** ** | | -0.25862 | **-0.63112** ** |
| | | (-3.05) | (-3.15) | | (0.2) | (-0.73) | | (1.49) | (0.51) | | (-0.59) | (2.9) | | (-0.89) | (-2.44) |
| **INFLATION** | | **0.000235** ** | **-0.00266** ** | | **0.002926*** ** | **0.003164*** ** | | -0.00033 | -0.00023 | | **-0.00014** ** | 0.00039 | | **0.002309** ** | -0.00038 |
| | | (2.42) | (-1.96) | | (4.53) | (4.97) | | (-0.77) | (-0.5) | | (-2.49) | (1.51) | | (2.3) | (-0.49) |
| **LGPHONE** | | **0.157109** ** | 0.03329 | | **0.123839*** ** | **0.095123*** ** | | **0.16873*** ** | **0.164241*** ** | | **0.119862*** ** | **0.120933*** ** | | **-0.0491** ** | -0.00985 |
| | | (2.41) | (0.50) | | (4.51) | (3.09) | | (7.20) | (5.49) | | (4.42) | (4.99) | | (-2.35) | (-0.5) |
| **CIVILLIB** | | **-0.09387*** ** | **-0.08724*** ** | | **-0.03645*** ** | -0.00705 | | **0.051283*** ** | **0.065141*** ** | | **-0.03816*** ** | -0.01152 | | **0.050639*** ** | **0.027729** ** |
| | | (-3.61) | (-3.27) | | (-2.81) | (-0.5) | | (4.34) | (4.34) | | (-3.08) | (-1.1) | | (3.49) | (2.33) |
| **EDUCATION** | | | **-0.01608*** ** | | | **-0.00328** ** | | | 0.002787 | | | **0.007016*** ** | | | **0.005634*** ** |
| | | | (-4.10) | | | (-2.06) | | | (0.94) | | | (5.9) | | | (4.05) |
| **OPENNESS** | | | 0.049059 | | | 0.036207 | | | 0.062361 | | | -0.03427 | | | -0.0766 |
| | | | (0.84) | | | (0.38) | | | (0.34) | | | (-0.71) | | | (-0.97) |
| **CREDIT** | | | 0.522924 | | | **1.255292*** ** | | | 0.62983 | | | **0.513228*** ** | | | **0.329392*** ** |
| | | | (1.22) | | | (5.79) | | | 1.63 | | | (5.83) | | | (5.09) |
| **NB Countries** | 8 | 8 | 7 | 14 | 14 | 12 | 7 | 6 | 4 | 12 | 12 | 9 | 5 | 5 | 4 |
| **NB Years** | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 18 | 17 | 17 | 17 | 17 | 16 |
| **F-STAT** | 92.26*** | 121.56*** | 38.58*** | 124.27*** | 81.66*** | 48.44*** | 109.07*** | 85.19*** | 41.11*** | 532.14*** | 158.51*** | 155.96*** | 290.37*** | 192.77*** | 12.79*** |
| **BUSE $R^2$** | 0.9568 | 0.9876 | 0.9927 | 0.9483 | 0.966 | 0.9717 | 0.971 | 0.99 | 0.9944 | 0.9912 | 0.9948 | 0.9987 | 0.9902 | 0.9940 | 0.9981 |

## Table 15: Panel regression results of the impact of FDI on HDI for Africa and three out-of-Africa regions

We run panel regressions of HDI as welfare measure on FDI per capita (FDIPOP) and selected variables. AFRICA, ASEAN, CACM and EUTE are respectively dummy variables for Africa, ASEAN countries, Central America Common Market (CACM) and Europe transitional economies (EUTE), with 1 if the country belongs to the group and zero otherwise. DEBTGDP is the total debt outstanding over GDP, INFLATION the percentage change in GDP deflator, GOVSPEND the ratio of government consumption over GDP, LGPHONE the log of the number of fix and mobile phones per 100 habitants, OPENNESS the ratio of total exports plus imports over GDP, CREDIT the total credit by financial intermediaries to the private sector over GDP, CIVILLIB the civil liberty rating. The estimations are done by controlling for the Fixed Effects. Student t-statistics are in parenthesis, and "***" indicates a 1% significance level, "**" a 5% significance level and "*" a 10% significance level.

| | POOL | | | AFRICA | | | ASEAN | | | CACM | | | EUTE | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **1** | **2** | **3** | **1** | **2** | **3** | **1** | **2** | **3** | **1** | **2** | **3** | **1** | **2** | **3** |
| **INTERCEPT** | 0.561663 | 0.643609 | 0.620855 | 0.518975 | 0.566545 | 0.517776 | 0.849992 | 0.327161 | 0.250314 | 0.857353 | 0.740743 | 0.646134 | 0.72375 | 0.695702 | 0.764307 |
| | (30.52) | (26.25) | (22.21) | (9.77) | (17.90) | (13.93) | (34.91) | (3.15) | (1.76) | (60.94) | (24.63) | (17.55) | (43.15) | (9.78) | (7.86) |
| **FDIPOP** | | | | **0.00005*** ** | **0.000045*** ** | **0.000052*** ** | **-0.00002*** | 0.000027 | 0.00015 | **-0.00003*** ** | -0.00003 | -0.00002 | 9.23E-06 | 0.000043 | 0.000012 |
| | | | | (5.71) | (4.56) | (4.66) | (-1.94) | (0.20) | (0.95) | (-3.82) | (-1.36) | (-1.20) | (0.51) | (0.87) | (0.21) |
| **AFRICA*FDIPOP** | **0.000067*** ** | **0.000056*** ** | **0.000061*** ** | | | | | | | | | | | | |
| | (6.60) | (4.98) | (4.89) | | | | | | | | | | | | |
| **ASEAN*FDIPOP** | -0.00002 | 0.000169 | 0.00018 | | | | | | | | | | | | |
| | (-1.52) | (0.90) | (1.01) | | | | | | | | | | | | |
| **CACM*FDIPOP** | **-0.00005*** ** | **-0.00008*** ** | **-0.00007*** ** | | | | | | | | | | | | |
| | (-5.50) | (-3.00) | (-3.02) | | | | | | | | | | | | |
| **EUTE*FDIPOP** | **-0.00005*** ** | **-0.00012*** ** | **-0.00007*** | | | | | | | | | | | | |
| | (-2.62) | (-3.22) | (-1.93) | | | | | | | | | | | | |
| **DEBTGDP** | | **-0.02649*** ** | **-0.02761*** ** | | **-0.01065*** | **-0.01671*** | | 0.047041 | -0.02971 | | **-0.02608*** ** | **-0.02061*** ** | | 0.011662 | 0.012088 |
| | | (-5.26) | (-5.13) | | (-1.59) | (-2.41) | | (0.72) | (-0.31) | | (-4.22) | (-2.80) | | (0.58) | (0.41) |
| **GOVSPEND** | | -0.0222 | 0.021791 | | -0.02155 | 0.090343 | | -0.41539 | -0.09474 | | **0.217244*** | 0.194338 | | -0.14348 | 0.004282 |
| | | (-0.40) | (0.37) | | (-0.38) | (1.45) | | (-0.95) | (-0.20) | | (1.75) | (1.54) | | (-0.95) | (0.02) |
| **INFLATION** | | 0.000018 | **0.000012*** | | 3.852E-6 | 0.000027 | | 0.001757 | 0.000671 | | 7.05E-6 | 6.922E-6 | | 4.88E-06 | 1.859E-6 |
| | | -- | (1.95) | | (0.15) | (0.21) | | (1.06) | (0.34) | | (1.09) | (1.09) | | (1.37) | (0.14) |
| **LGPHONE** | | **-0.00804*** ** | **-0.00927*** ** | | **0.011526*** | **0.020504*** ** | | **0.1158*** ** | **0.107759*** ** | | **0.020518*** ** | **0.026233*** ** | | 0.015392 | 0.017979 |
| | | (-3.64) | (-3.94) | | (2.08) | (3.40) | | (9.33) | (7.76) | | (5.18) | (5.91) | | (1.4) | (1.15) |
| **CIVILLIB** | | **-0.00738*** | **-0.00747*** | | -0.00474 | **-0.00555*** | | -0.00291 | -0.00233 | | -0.00327 | -0.00344 | | -0.00016 | 0.006192 |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | (-2.51) | (-2.45) | | (-1.46) | (-1.65) | | (-0.23) | (-0.17) | | (-0.62) | (-0.66) | | (-0.02) | (0.50) |
| **OPENNESS** | | | **0.030871**** | | | **0.039036***** | | | -0.01688 | | | **0.096768***** | | | 0.011376 |
| | | | (2.56) | | | (2.96) | | | (-0.32) | | | (3.77) | | | (0.28) |
| **CREDIT** | | | 0.008377 | | | **-0.08656**** | | | 0.115366 | | | 0.041259 | | | 0.015616 |
| | | | (0.38) | | | (-2.43) | | | (1.42) | | | (1.17) | | | (0.22) |
| **NB Countries** | 111 | 94 | 83 | 49 | 45 | 39 | 7 | 5 | 5 | 32 | 27 | 27 | 23 | 17 | 12 |
| **NB Years** | 18 | 17 | 17 | 18 | 17 | 17 | 17 | 17 | 17 | 18 | 17 | 17 | 17 | 17 | 17 |
| **F-STAT** | 145.65*** | 65.60*** | 64.67*** | 120.79*** | 39.41*** | 37.49*** | 37.50*** | 9.67*** | 6.71*** | 57.57*** | 27.39*** | 26.35*** | 18.58*** | 8.66*** | 5.84*** |
| **BUSE $R^2$** | 0.9318 | 0.9358 | 0.9444 | 0.9228 | 0.9294 | 0.9401 | 0.9247 | 0.9734 | 0.9729 | 0.8568 | 0.8642 | 0.8701 | 0.7731 | 0.7291 | 0.7876 |