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Why Does Foreign Direct Investment Go Where It Goes?: New Evidence From African Countries

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The central concern of this paper is to respond to the question: why do FDI inflows go where they do in African countries? An understanding of such factors will assist African policymakers to formulate and execute policies for attracting FDI. Our estimation results from cross-country regressions for the period 1996-2008 indicate that: (i) there is a positive relationship between market size and FDI inflows; (ii) openness to trade has a positive impact on FDI flows; (iii) higher financial development has negative effect on FDI inflows; (iv) the prevalence of the rule of law increases FDI inflows; (v) higher FDI goes where foreign aid also goes; (vi) agglomeration has a strong positive impact on FDI inflows; (vi) natural resource endowment and exploitation (such as oil) attracts huge FDI; (vii) East and Southern African sub-regions appear positively disposed to obtain higher levels of inward FDI. The key policy implications are discussed.

Key Words: Foreign direct investment; Factors driving FDI; African countries.
JEL Classification Numbers: F21, F23, O19.

1. INTRODUCTION

Foreign direct investment (FDI), as a key element of the globalization and of the world economy, is a driver of employment, technological progress, productivity improvements, and ultimately economic growth. It plays the critical roles of filling the development, foreign exchange, investment, and tax revenue gaps in developing countries (Smith, 1997; Quazi, 2007). In particular, it can play an important role in Africas development efforts,

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including: supplementing domestic savings, employment generation and growth, integration into the global economy, transfer of modern technologies, enhancement of efficiency, and raising skills of local manpower (Dupasquier and Osakwe, 2003; Anyanwu, 2003).

However, Africa has never been a major recipient of FDI flows and so lags behind other regions of the world. On an annual average basis, the regions share of global FDI inflows was 2.6 percent in the period 1980-89; 1.9 percent in the period 1990-1999; and 3.2 percent in the period 2000-2009. During the same periods, the Asian region received FDI inflows 14.2 percent, 19.1 percent, and 19.1 percent of total global inflows, respectively. One key question is: Why does Africa not attract much FDI? The answer to this question is important in economics, business, politics, and academia in the Continent and hence calls for further analysis of the forces driving FDI.

This paper therefore aims at examining the factors that cause FDI to go where they do, using evidence from African countries, thus enabling us to propose some measures for FDI promotion in the Continent. This is done by means of cross-country regressions for the period 1996-2008. Thus, the further contents of the paper are as follows. Section 2 presents a review of recent trend in FDI inflows into Africa. Section 3 examines some theoretical perspectives of the factors driving FDI inflows to developing countries. Section 4 reviews the recent empirical literature while section 5 presents the econometric model, data sources and variable definitions. The empirical results are presented in section 6, and section 7 summarizes and concludes the paper with some policy recommendations for increased FDI inflows to Africa.

2. OVERVIEW OF FDI INFLOW TO AFRICAN COUNTRIES

FDI, as an element of the rapid globalization process, has made rapid increases in the last few decades. Global inward FDI flows rose from US$54.1 billion in 1980, reaching US$207.7 billion in 1990 to a peak of US$1,401.5 billion in 2000. A fall ensured from 2001 such that by 2003 it had dipped to US$565.7 billion before peaking again at US$2100 billion in 2007. Estimates for 2009 put the fall to US$1114.2 billion consequent upon the financial and economic crisis (Figure 1 and Table 1) (UNCTAD, 2010a).

After almost ten years of growth, FDI inflows to Africa fell from a peak of US$72 billion in 2008 to $59 billion in 2009 — a 19 percent decline compared to 2008 — due to the financial and economic crisis (UNCTAD, 2010b). As noted above and as Figure 1 and Table 1 show, Africa has never been a major recipient of FDI flows and lags behind other regions of the world. By 1990, Africa's share was a mere 1.37 percent compared to Asias 10.9 percent and by 2009 while Africa's share was just 5.27 percent,

Asia received a whopping 27 percent (see Figure 2). Just as FDI inflows to Africa represent a low percentage of the global total, they also represent a low percentage of its GDP and gross capital formation (Figure 3).

FIG. 1. Trend in FDI Inflows (% of GDP) to Developing Regions, 1970-2009

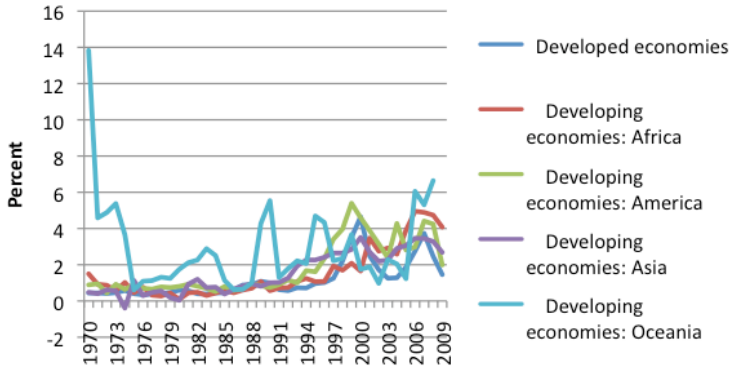


TABLE 1.

FDI Flows by Region, 2007-2009 (US$ Billion and Percent)

	FDI inflows			FDI outflows		
Region	2007	2008	2009	2007	2008	2009
World	2100	1771	1114	2268	1929	1101
Developed economies	1444	1018	566	1924	1572	821
Developing economies	565	630	478	292	296	229
Africa	63	72	59	11	10	5
Latin America and the Caribbean	164	183	117	56	82	47
West Asia	78	90	68	47	38	23
South, East and South-East Asia	259	282	233	178	166	153
South-East Europe and the CIS	91	123	70	52	61	51
Memorandum: percentage share in world FDI flows						
Developed economies	68.8	57.5	50.8	84.8	81.5	74.5
Developing economies	26.9	35.6	42.9	12.9	15.4	20.8
Africa	3.0	4.1	5.3	0.5	0.5	0.5
Latin America and the Caribbean	7.8	10.3	10.5	2.5	4.3	4.3
West Asia	3.7	5.1	6.1	2.1	2.0	2.1
South, East and South-East Asia	12.3	15.9	20.9	7.9	8.6	13.9
South-East Europe and CIS	4.3	6.9	6.3	2.3	3.1	4.6

Source: UNCTAD, FDI/TNC database (www.unctad-org/fdistatistics)

FDI inflows to Africa vary across sub-regions. As Figure 4 illustrates, Central Africa dominated between 2002 and 2004 but from 2005 to 2008,

FIG. 2. Trend in % Share of FDI Inflows to Developing Regions, 1970-2009

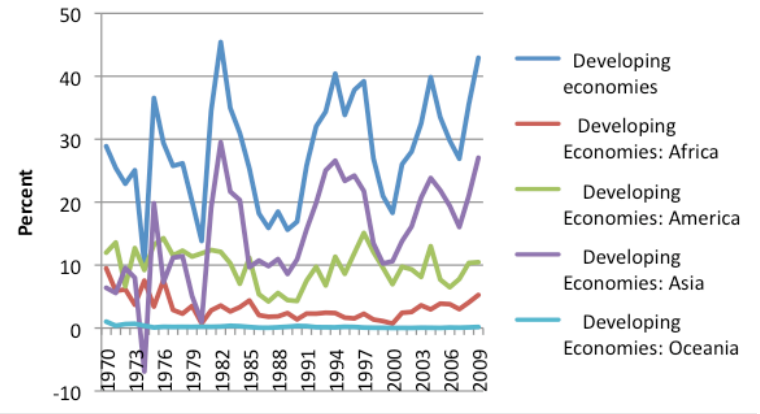
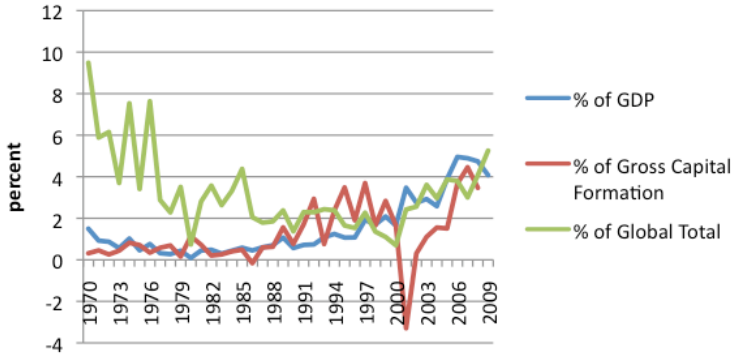


FIG. 3. Recent Trend in FDI Inflows to Africa as % of GDP, Gross Capital Formation, and Global Total



North Africa was the dominant sub-region. In 2009, all sub-regions experienced declines though Central Africa took the premier position again.

A major concern regarding FDI inflows into the Continent is that the overwhelming majority of these go into natural resources exploitation. Between 1998 and 2009, the top ten country recipients are Egypt, South Africa, Nigeria, Sudan, Angola, Congo Republic, Morocco, Tunisia, Algeria, and Chad (Figure 5). Of these top recipient countries, most of the flows into oil, gas and mining projects. Indeed, the primary sector has been the largest recipient of accumulated FDI outflows to Africa. For example, the distribution of FDI by industry shows a concentration in the mining industry in terms of value (Table 2).

FIG. 4. Recent Trend in FDI Inflows (US$m) to Africa's Sub-Regions, 2000-2009

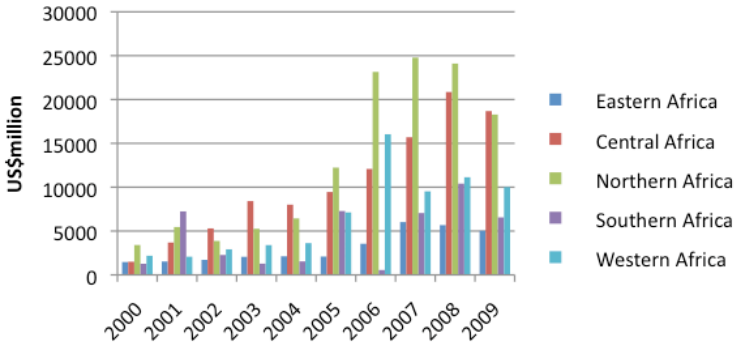
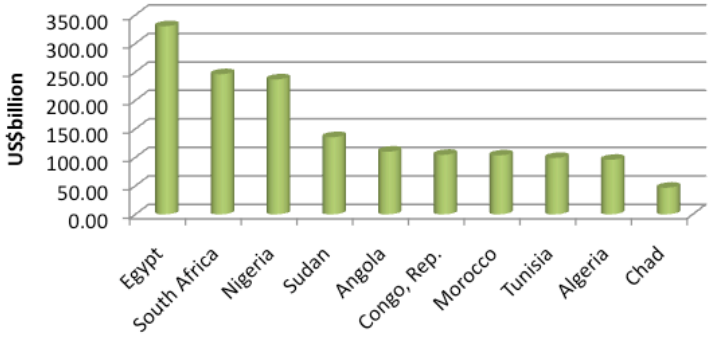


FIG. 5. Africa's Top Ten Recipients of FDI (US$billion), 1998-2007



3. MAIN FDI DRIVING FACTORS: A THEORETICAL FRAMEWORK

A popular conceptualization of, and theoretical framework for, FDI determinants is the "eclectic paradigm" attributed to Dunning (1977, 1993). It provides a framework that groups micro- and macro-level determinants in order to analyze why and where multinational companies (MNCs) invest abroad. The framework posits that firms invest abroad to look for three types of advantages: Ownership (O), Location (L), and Internalization (I) advantages; hence it is called the OLI framework. The ownership-specific advantages (of property rights/patents, expertise and other intangible assets) allow a firm to compete with others in the markets it serves regardless of the disadvantages of being foreign because it is able to have access to, and exploit and export natural resources and resource-based products that are available to it. These advantages may arise from the firm's ability to co-

TABLE 2.

Africa's Cross-border M&As by Industry, 2008-2009 (US$ million)

	Sales		Purchases	
Sector/Industry	2008	2009	2008	2009
Total	21193	5140	8216	2702
Primary	−2055	2579	−33	621
Mining, quarrying and petroleum	−2055	2579	−133	621
Manufacturing	15639	−110	1645	138
Food, beverages and tobacco				39
Textiles, clothing and leather			7	
Wood and wood products		11	1082	
Publishing and printing	−4		14	
Chemicals and chemical products	21	−620	153	
Non-metallic mineral products	15469	250	340	−4
Metals and metal products	104	248		102
Services	7609	2672	6704	1942
Trade	37			−1
Hotels and restaurants	4	−117		3
Transport, storage and communications	1667	3058	4	
Finance	6613	−295	7037	1643
Business services	−157	21		
Health and social services	152	5	282	

Source: UNCTAD, FDI/TNC database (www.unctad-org/fdistatistics)

ordinate complementary activities such as manufacturing and distribution, and the ability to exploit differences between countries. The location advantages are those that make the chosen foreign country a more attractive site (such as labor advantages, natural resources, trade barriers that restrict imports, gains in trade costs and strategic advantages through intangible assets) for FDI than the others hence the reason for the FDI is to supply the domestic market of the recipient country through an affiliate (horizontal FDI). The location advantages may arise from differences in country natural endowments, government regulations, transport costs, macroeconomic stability, and cultural factors. Internalization advantages arise from exploiting imperfections in external markets, including reduction of uncertainty and transaction costs in order to generate knowledge more efficiently as well as the reduction of state-generated imperfections such as tariffs, foreign exchange controls, and subsidies. In this case, the delocalization of all or a portion of the production process (e.g. production of components/parts and/or different locations) leads to low costs benefits (vertical FDI) (Baniak et al, 2005; Sekkat and Veganzones-Varoudakis, 2007; Pantelidis and Nikolopoulos, 2008; and Kinda, 2010). Following on these, Dunning (1993)

identified four categories of motives for FDI: resource seeking (to access raw materials, labor force, and physical infrastructure resources), market seeking (horizontal strategy to access the host-country domestic market), efficiency seeking (vertical strategy to take advantage of lower labor costs, especially in developing countries), and strategic-asset seeking (to access research and development, innovation, and advanced technology) (Cleeve, 2008).

The literature on the forces driving FDI has also identified both policy and non-policy factors as drivers of FDI (Fedderke and Romm, 2006). Policy factors include openness, product-market regulation, labor market arrangements, corporate tax rates, direct FDI restrictions, trade barriers, and infrastructure. Non-policy factors include market size of the host country (often measured by the GDP), distance/transport costs, factor proportions (or factor endowments) and political and economic stability (Mateev, 2009).

The pull factors or domestic factors include economic, socio-political and structural conditions, including uncertainty, while the push factors relate to cyclical and structural conditions, irreversibility and herding (see Fernndez-Arias, 1996; Fernndez-Arias and Montiel, 1996; Gottschalk, 2001).

Fernndez-Arias (1996), Fernández-Arias and Montiel (1996), Gottschalk (2001) and calvo et al. (1996) present a two-factor classification of the factors that influence FDI flows: as "push" (those that are external to the recipients of FDI — relating to cyclical and structural conditions, irreversibility and herding) or "pull" factors (those internal to them such as economic, socio-political and structural conditions, including uncertainty). A similar classification has emerged from the works of Tsai (1991), Ning and Reed (1995) and Lall et al. (2003) who see these factors as (i) those on the "supply-side" (e.g., skilled labor, research and development, and infrastructure), (ii) those on the "demand-side" (host country economic and social variables or pull factors, including interest rates, tax and tariff levels, market size and potential, wage rates, income distribution, human capital, cost differentials, exchange rates, fiscal policies, trade policies, physical and cultural distance, among others) (Karakaplan et al., 2005); and (iii) "institutional factors" (e.g., culture, intellectual property rights, transaction costs, political risk, corruption, and bureaucracy). Also, Qiu (2003) examined the implications of comparative advantage for foreign direct investment incentives. Using a trade-cum-FDI model with two countries (the FDI host country and the FDI source country) and two sectors (auto and textile, in each country), the author found that the host country's comparative advantage sector is more attractive to inward FDI than its comparative disadvantage sector. In particular, he found that the source country's auto firms have weaker FDI incentives than its textile firms and hence the host country's comparative advantage sector is more attractive to inward FDI.

Razin, Sadka and Yuen (2000) have also demonstrated that there is a severe "home bias" problem with regard to equity flows. Thus, the degree of international capital mobility is significantly limited by this home bias phenomenon though today large amounts of capital move across international borders to take advantage of rates of return and risk diversification benefits.

Sekkat and Veganzones-Varoudakis (2007) have grouped the factors determining the inward flow of FDI into three categories: basic economic factors, trade and the exchange market policies, and other aspects of the investment climate. The basic economic factors include the difference in the rate of return on capital across countries, portfolio diversification strategy of investors and market size of the host country. Trade and foreign exchange policy considerations relate to trade liberalization and exchange rate movements and their volatility (Froot and Stein, 1991). Business climate factors relate to infrastructure (Wheeler and Mody, 1992), labor costs and availability of skilled labor/education, incentive factors, political risk, economic factors (per capita GDP, GDP growth rate, economic integration, importance of transport, commerce and communication), social factors (degree of urbanization), political stability (the number of constitutional changes in government leadership), the role of institutions (in terms of commitments to and enforcement of rules) (Root and Ahmed, 1979; Schneider and Frey, 1985), the stability of basic macroeconomic policies (fiscal, monetary, and social) (Baniak et al, 2005), and the catalyzing effect of foreign aid (Harms and Lutz, 2006; Kimura and Todo, 2010).

In particular, the literature has identified five possible multiple channels through which foreign aid affects FDI, positively and negatively. These channels include:

(a) A positive "vanguard effect" through which foreign aid from a particular donor country promotes FDI from the same donor country but not from other countries (Kimura and Todo, 2010). This vanguard effect may occur due to three reasons, including when information on the local business environment of the recipient country is exclusively transmitted to firms of the donor country followed the provision of aid (Mody et al., 2003); government's provision of foreign aid may reduce the recipient country's investment risks perceived subjectively by firms of the donor country; and foreign aid may bring the donor country-specific business practices, rules, and institutions into recipient countries. These reasons may lead foreign aid promoting FDI from the same donor country but does not necessarily promote FDI from other countries (Kimura and Todo, 2010);

(b) A positive "financing effect" by which aid improves the ability of the recipient country to finance outflows (through improvement of the balance of payments) of profit repatriation from FDI (Harms and Lutz, 2006);

(c) A negative "Dutch-disease effect" by distorting resource allocations between tradable and non-tradable sectors. That is foreign aid is likely to increase the supply of tradables and lower their price relative to non-tradables. Indeed, given that FDI in developing countries is mostly invested in tradable sectors, foreign aid may discourage FDI through this channel that distorts the allocation of domestic resources (Arellano et al, 2009). In particular, this may occur through the adverse effect of natural resource revenues on the manufacturing sector, via a real exchange rate appreciation;

(d) A negative "rent-seeking effect" by which foreign aid encourages unproductive rent-seeking activities in the recipient country, leading to a drop in productivity (Harms and Lutz, 2006); and

(e) A positive "infrastructure effect" by which aid improves the recipient country's economic and social infrastructure (such as physical/economic infrastructure, including transport, telecommunications, and power/energy (electricity) as well as social infrastructure, including education, health or a reliable and well-functioning bureaucracy) (Harms and Lutz, 2006; Kimura and Todo, 2010) and hence raises the marginal product of capital in the country.

4. REVIEW OF RECENT EMPIRICAL LITERATURE

We organize recent empirical literature on the factors that make FDI go where they do around key factors as shown below, though in many cases results revolve around multiple factors.

Foreign Aid

There are a few studies which examine the relation between foreign aid and FDI by using cross-country panel data, most notably Kimura and Todo (2010), Harms and Lutz (2006), Yasin (2005), and Karakaplan et al (2005). Kimura and Todo (2010) investigate whether and how foreign aid facilitates FDI flows into less developed countries and find that foreign aid in general does not have any significant effect on FDI but when they allow for differences in the size of aid effects across donor countries, they find robust evidence that foreign aid from Japan in particular has a vanguard effect (that is, Japanese aid promotes FDI from Japan but does not attract FDI from other countries. Their finding is consistent with Blaise (2005) who uses province-level data for China and finds that Japanese aid in China has a positive and significant impact on the locational choice of Japanese private investors in China. On the other hand, Harms and Lutz (2006) find that the effect of aid on FDI is generally insignificant but significantly positive for countries in which private agents face heavy regulatory burdens. Yasin (2005) empirically investigates the relationship between official de-

velopment assistances and foreign direct investment flows using panel data from 11 sub-Saharan African countries for the period 1990C2003. The results show that bilateral official development assistance has a significant and positive influence on foreign direct investment flows while multilateral development assistance does not have a statistically significant effect on foreign direct investment flows. Karakaplan et al (2005) also find an insignificant effect of aid on FDI, but that good governance and developed financial markets lead to a positive effect of aid.

Infrastructure Development

Studies by Musila and Sigue (2006) and Dupasquier and Osakwe (2006) on FDI show FDI in Africa is dependent on the development of infrastructure. Also, other studies on developing countries (Mengistu and Adams, 2007; Cotton and Ramachandran, 2001); emerging economies (Zhang, 2001); Western Balkan Countries (Kersan-Skabic and Orlic, 2007) and Southeast European Countries (Botric and Škuflic, 2006) show the significant role of infrastructure development in attracting the inflow of FDI. However, the results of a study on US FDI flow to Africa by Nnadozie and Osili (2004) find less robust evidence on the role of infrastructure on foreign direct investment. Results from Anyanwu and Erhijakpor (2004) indicate that telecommunications infrastructures economic growth, openness and significantly increase FDI inflows to Africa while credit to the private sector, export processing zones, and capital gains tax have significantly negative effect.

Gholami et al (2006) uses a sample of 23 developed and developing countries observed for the period 1976C99 based on ICT data availability to show that in developed countries, existing ICT infrastructure attracts FDI; a higher level of ICT investment leads to a higher level of FDI inflows but in developing countries the direction of causality goes instead from FDI to ICT. Findings by Sekkat and Veganzones-Varoudakis (2007) indicate that infrastructure availability, openness, and sound economic and political conditions are important for South Asia, Africa, and the Middle East in attracting FDI. In a study of South East European Countries (SEECs), Dauti (2008) identifies ICT infrastructure market as the major factor positively influencing FDI inflows while seeking factors (GDP growth, GDP per capita, GDP level) have perverse signs, showing significantly negative effects on FDI inflows.

Institutional and Political Factors and Investment Climate

Using bilateral FDI stocks around the world, Daude and Stein (2007) explore the importance of a wide range of institutional variables as determinants of the location of FDI and find that better institutions have overall a positive and economically significant effect on FDI. In particular,

the unpredictability of laws, regulations and policies, excessive regulatory burden, government instability and lack of commitment play a major role in deterring FDI. Also, Campos and Kinoshita (2003), using a panel data set for 25 transition economies between 1990 and 1998, find that the main determinants of inward FDI are institutions, agglomeration, and trade openness. In CIS countries, natural resources and infrastructure matter, while agglomeration matters only for Eastern European and Baltic countries. Ali et al (2006) examine the role of institutions in determining FDI inflows using a panel of 69 countries during 1981 and 2005 and find that institutions are a robust predictor of overall FDI and that the most significant institutional aspects are linked to propriety rights, the rule of law and expropriation risk, and especially in the services and manufacturing sectors.

Corruption and low transparency are found to hinder FDI inflows (Voyer and Beamish, 2004; Zhao and Du, 2003; Habib and Zurawicki, 2002; Kersan-Skabic and Orlic, 2007) just as ensuring property right in South Africa (Fedderke and Romm, 2006) and developing countries (Kapuria-Foreman, 2007) affect FDI inflows. Using 17 countries over the period 1994C2004 in examining the impact of governance on FDI inflows, Khamfula's (2007) results show that corruption is more harmful in an import substitution world than in an export promotion one. The findings agree with those of Al-Sadig (2009) who uses panel data from 117 host countries over the period 1984-2004 to show that overall, higher corruption levels decrease FDI inflows. Thus, secure property rights, political stability, and lack of corruption allow markets to properly function, and therefore attracting MNCs (Disdier and Mayer, 2004; Kinda, 2010). However, Al-Sadig's (2009) results show that after controlling for other characteristics of the host country (such as the quality of institutions), the negative effects of corruption disappear and sometimes becomes positive but statistically insignificant. In what appears to run against conventional evidence, Kim (2010) finds that countries with high level of corruption of government and low level of democracy have higher FDI inflows while being lower for those with greater political rights.

Poor governance and inhospitable regulatory environments (Dupasquier and Osakwe, 2006); foreign ownership ceiling in sectors open for FDI, policy on repatriation of capital and remittance of profit (Tarzi, 2005), and government regulations and restrictions on equity holdings by foreigners (Cotton and Ramachandran, 2001) all are found to have negative impact on FDI inflow. Also, political stability is inversely related to FDI inflows (Dupasquier and Osakwe, 2006; and Kyereboah-Coleman and Agyire-Tettey, 2008; Li (2008). Cleeve (2008) uses a data on 16 SSA countries and finds that that in addition to traditional variables and government policies to attract foreign investment to Africa, tax holidays are important. Asiedu

(2004) examines the effect of three types of capital control policies on FDI inflows: (i) the existence of multiple exchange rates; (ii) restrictions on capital account, and (iii) restrictions on the repatriation of export proceeds. The author finds that the impact of capital controls on FDI inflows varies by region and has changed over time: in the 1970s and 1980s, none of the policies had a significant impact on FDI inflows but in the 1990s, all three were significant. However, the author finds that capital controls have no effect on FDI to sub-Saharan Africa (SSA) and the Middle East, but adversely affects FDI to Latin America and East Asia. Baniak et al (2005) analyze the legal environment for FDI in some transition economies and their results show that (i) high volatility of fiscal and business regulations makes the inflow of FDI smaller, (ii) macroeconomic and legal instability leads to adverse selection of the investors, and (iii) higher variability of basic macroeconomic fundamentals reduces the inflow of FDI.

The study by Clarke and Logan (2008) shows that FDI flows are greatest to countries that have less political risk and better physical infrastructure. Contrary to majority of studies, they show that FDI flows are greater to countries with weaker currencies and smaller populations. In addition they find that FDI flows are concentrated in industries where asset exploitation is most likely, such as one time privatization of assets in telecommunications, and where there is the greatest potential to earn foreign exchange such as the tourism, mining and quarrying, and petroleum sectors. Pantelidis and Nikolopoulos (2008) investigate the FDI attractiveness for Greece as a host country compared with the rest of the EU countries and find that the crucial factors for the low FDI attractiveness in Greece are inefficient public governance, high taxation, inefficient infrastructure, and general macroeconomic conditions. In a study of a sample developed and developing countries over 1995C97, Globerman (2002) finds that governance infrastructure is an important determinant of both FDI inflows though investments in governance infrastructure are subject to diminishing returns, so that the benefits, in terms of inflows, are most pronounced for smaller and developing economies. Kinda (2010), using firm-level data across 77 developing countries, shows that constraints related to investment climate hamper FDI. In particular, physical infrastructure problems, financing constraints, and institutional problems discourage FDI. Botrić and Škuflić (2005) uses data on FDI inflows to South East European Countries to determine the main host country determinants of FDI and concludes that FDI inflows are largely dependent on privatization, trade regime, the density of infrastructure, and agglomeration.

Using a panel of 97 countries, Dutta and Roy (2008) investigates the role of political risk in the association of FDI and financial development and show that the impact of financial development on FDI becomes negative beyond a threshold level of financial development while political risk

factors affect the relationship by altering the threshold level of financial development. Quazi (2007) estimates the determinants of FDI to nine Latin American countries, with emphasis on the investment climate, and finds that FDI inflow is significantly boosted by foreign investors' increased familiarity with the host economy, better infrastructure, higher return on investment, and greater trade openness, but the inflow is significantly depressed by lack of economic freedom. Also, FDI inflow is negatively correlated with policy changes that result in higher trade barriers, more repressive taxation, more restrictive foreign investment code, more repressive financial system, and further price and wage controls. The study identifies two factors, namely, excessive bureaucracy and inefficient financial markets, which act as locational disadvantages for Mexico in comparison to its regional 'rival' countries.

Attraction of Natural Resources

The works of Dupasquier and Osakwe (2006); Aseidu, 2002; and Deichmann et al., 2003), for example report that the availability of natural resources has a positive and significant effect on FDI inflows. Also, Mohamed and Sidiropoulos (2010), using a panel of 36 countries (12 MENA countries and other 24 developing countries), conclude that the key determinants of FDI inflows in MENA countries are the natural resources, the size of the host economy, the government size, and institutional variables. Asiedu (2006), using a panel data for 22 countries in Sub-Saharan Africa (SSA) over the period 1984C2000, find that countries that are endowed with natural resources or have large markets attract more FDI. In addition, good infrastructure, an educated labor force, macroeconomic stability, openness to FDI, an efficient legal system, less corruption and political stability promote inward FDI. Hailu (2010) conducts an empirical analysis of the demand side determinants of the inflow of FDI to African nations and concludes that natural resources, labor quality, trade openness, market accession and infrastructure condition positively and significantly affect FDI inflows but the availability of stock market has positive but insignificant effect.

Human Resources Development, Productivity and Cost

The study by Reiter et al (2010) shows that FDI inflows are more strongly positively related to improvement in human development when FDI policy restricts foreign investors from entering some economic sectors and when it discriminates against foreign investors relative to domestic investors. In addition, it finds that the relationship between FDI and improvement in human development is also more strongly positive when corruption is low. Markusen (2001) find that knowledge capital is important for FDI inflows while Rodríguez and Pallas (2008) find that human capital is the most

important determinants of inward FDI. Nonnemberg and Cardoso de Mendonça (2004), in a panel data analysis for 38 developing countries (including transition economies) for the 1975-2000 period, conclude that FDI is correlated to level of schooling, the economy's degree of openness, risk and variables related to macroeconomic performance like inflation, risk and average rate of economic growth. Alsan et al (2006) in a panel data analysis of 74 industrialized and developing countries over 1980C2000, find that gross inflows of FDI are strongly and positively influenced by population health (life expectancy) as a proxy of human capital development in low- and middle-income countries. Noorbakhsh et al. (2001) and Miyamoto (2008) have shown the positive effect of human capital generally on FDI inflows while Tarzi (2005) and Baeka and Okawa (2001) cite workers' productivity and Khair-UZ-Zaman et al. (2006) and Jeon and Rhee (2008) cite labor cost.

Basic Macroeconomic and Other Factors

Chowdhury and Mavrotas (2006), using data for three countries — Chile, Malaysia and Thailand –C find that GDP causes FDI in Chile and not vice versa while in the case of both Malaysia and Thailand, there is strong evidence of a bi-directional causality between GDP and FDI. Klein and Rosnegren (1994), Jeon and Rhee (2008) find strong evidence that relative wealth significantly affects inward foreign direct investment while Brahmasrene and Jiranyakul (2001) find that real income is a significant factor determining the inflow of FDI. However, Nnadozie and Osili (2004) find less robust evidence on the role of GDP per capita on FDI inflow but GDP growth is found to have significant impact. Market size is found to play an important role in FDI inflows (Barrell and Pain, 1996; Nigh, 1986; Anyanwu, 1998; Fedderke and Romm, 2006; Tarzi, 2005; Khair-UZ-Zaman et al, 2006; Zhang, 2001) though the results of Kyereboah-Coleman and Agyire-Tettey (2008) indicate that most foreign investors do not consider this factor in making a decision to invest or otherwise in Ghana. Inflation as a proxy for economic instability has been found to negatively affect FDI inflows (Nnadozie and Osili, 2004; Khair-UZ-Zaman et al, 2006) though the findings of Brahmasrene and Jiranyakul (2001) indicate otherwise. Trade openness has also been found to be positively associated with FDI inflows (Yih Yun et al., 2000; Asiedu, 2002; Feils and Rahman, 2008).

A study by Kamaly (2007) sheds some light on the direction and determinants of the aggregate Mergers and Acquisitions (M&A) activity directed to developing countries in the 1990s, concluding that openness has a significant effect on M&A, but quantitatively its effect is minimal while depreciation in the domestic exchange rate strongly and positively affects M&A. In addition, higher level of stock market activity and depth in developing countries decrease the amount of M&A directed to them. Oladipo

(2008) examines the determinants of Nigeria's FDI inflow for the period 1970-2005 and finds that the nation's potential market size, the degree of export orientation, human capital, providing enabling environment through the provision of infrastructural facilities, and macroeconomic stability are important determinants of FDI flows.

Varied results have been found on the influence of exchange rate on FDI inflows: A case study on Ghana by Kyereboah-Coleman and Agyire-Tettey (2008) on the volatility of real exchange rate shows that the volatility of the real exchange rate has a negative influence on FDI inflow while empirical investigation of firm level data on the US FDI to Korea (Jeon and Rhee, 2008) shows that FDI inflows have significant association with real exchange rate and expected exchange rate changes just as the results of Ramiraz (2006) and Cushman (1985) affirm the same. However, Brahmasrene and Jiranyakul (2001) and Dewenter (1995) find no statistically significant relationship between the level of the exchange rate and FDI inflows (see Ajayi, 2006 and Naud and Krugell, 2007 for survey of evidence).

Nasser and Gomez (2009), in a study of 15 Latin American countries from 1978 to 2003, find that FDI inflows are (i) positively correlated with stock market trading volume 9an important variable that reflects the development of the stock market) and (ii) significantly and positively correlated with the level of private credit offered by the banking sector. Others who find that financial development encourages FDI inflows are Kinda (2010), Deichmann et al. (2003), and Jenkins and Thomas (2002).

In a study of China and India, Zheng's (2009) findings show that market growth, imports, labor costs, and country political risk/policy liberalization are the determinants of inward FDI for both countries. However, exports, market size, and borrowing costs are important to China's FDI, while geographical and cultural distance factors are important to India's FDI. Mateev's (2009) study of Central and Southeastern European countries finds that population, distance, GDP, risk, labor costs, and corruption can explain, to a large extent, the size of FDI flows into transition economies. Lederman et al (2010) use international data and a micro-data set of firms in thirteen Southern African Developing Countries (SADCs) to investigate the benefits and determinants of FDI in the region and find that income level, human capital, demographic structure, institutions, and economic track record affect FDI inflows per capita. They find some differences between SADC and the rest of the world in FDI behavior, namely, that in SADC, the income level is less important and openness more so. However, relative to other regions of the world, SADC's low FDI inflows are explained by economic fundamentals (e.g., previous growth rates, average income, phone density, and the adult share of population). In the same manner, Leitão (2010) examines the FDI attractiveness for Greece as a host country in

the period 1998-2007 and finds that trade openness, market size and labor costs are significant factors to explain inward FDI to Greece.

5. THE MODEL AND DATA: DRIVING FACTORS OF FDI INFLOWS TO AFRICA

5.1. The Model

Based on the theoretical framework presented above and the structure of African economies as well as the characteristics of FDI inflows to Africa, we use the following model in estimating the factors that make FDI go where they do in African countries:

$$\begin{aligned} FDI_{ijt} &= \beta_0 + \beta_1(UrbanPop)_{ijt} + \beta_2(GDPPC)_{ijt} + \beta_3(Openness)_{ijt} \\ &\quad + \beta_4(Financialdev)_{ijt} + \beta_5 L(Inflation)_{ijt} + \beta_6(ExchangeRate)_{ijt} \\ &\quad + \beta_7(Infrastructure)_{ijt} + \beta_8(HumanCaptital)_{ijt} + \beta_9(Aid)_{ijt} \\ &\quad + \beta_{10}(GDPGrowth)_{ijt} + \beta_{11}(FDI\_1)_{ijt} + \alpha\beta_{12}(Corruption)_{ijt} \\ &\quad + \beta_{13}(Re\ gulatoryQuality)_{ijt} + \beta_{14}(RuleofLaw)_{ijt} \\ &\quad + \beta_{15}(exporters)_{ijt} + \Psi(Re\ gions)_{ijt} + \varepsilon_{ijt} \end{aligned} \tag{1}$$

where i and j denote countries, t denotes time, and the variables are defined as:

- FDI_{ij} denotes the net FDI inflows as % of GDP,
- UrbanPop is urban population as a percentage of total population,
- GDPPC is gross domestic product per capita (US$),
- Openness is openness index - total trade (% of GDP),
- Financialdev is financial development (domestic credit to the private sector as % of GDP),
- Inflation is the annual inflation rate,
- ExchangeRate is the official exchange rate to the US$ (annual average),
- Infrastructure is fixed and mobile subscribers (per 1000 people),
- HumanCapital is gross secondary school enrolment,
- Aid represents net foreign oda (% of GDP,
- GDPGrowth is real GDP growth rate (%),
- FDI_1 represents first lag of FDI,
- Corruption represents control of corruption (percentile rank 0-100,
- RegulatorQuality represents regulatory quality (percentile rank 0-100),
- RuleofLaw represents rule of law (percentile rank 0-100),
- Oilexporters represent dummy for net oil exporters,

• Regions represent is a binary variable representing the various regions of Africa (Central Africa, East Africa, North Africa, Southern Africa, and West Africa),

• β is a vector of coefficients, and

• ε_{ij} represents the myriad other influences on FDI, assumed to be well behaved.

All the variables are expressed in natural logarithm except dummies. As noted in the section on the theoretical framework, "market seeking" is a relevant motivation of MNCs' investments in developing countries such as Africa. Therefore, market size is proxied by urban population (as percentage of total population) of the host country (Fan et al, 2009) and GDP per capita (the level of economic activity/development) (Javorcik et al., 2011; Al-Sadig, 2009), which are expected to have a positive sign. Foreign investors are well aware that most urban dwellers constitute the largest consumers of their products and would cherish and crave for such market. Market-seeking investments can also be motivated by the need to overcome external trade barriers hence FDI is expected to be positively affected by trade openness (Anyanwu, 1998; Morisset, 2000; Anyanwu and Erhijakpor, 2004).

As Nasser and Gomez (2009) note, financial development is important in FDI decisions because it affects the cost structure of investment projects. Kinda (2010) observes that financial development is an engine of economic growth, providing better business opportunities for customers and firms. This is proxied by the ratio of domestic credit to the private sector to GDP. This is an indicator of domestic financial development, potentially an important factor in driving international finance. High domestic credit to the private sector also implies abundance of domestic capital and as such, foreign capital in the form of FDI would not be needed. Indeed, a high level of "credit to the private sector" is an indication of the abundance of domestic capital. As such, foreign capital in the form of FDI would not be needed as much hence a negative relationship between private credit and FDI inflows. Another possible explanation is that such negative relation is another manifestation of the negative relationship that exists between FDI and other types of flows, mainly bank loans (see, for example, Fernndez-Arias and Hausmann, 2000).

Inflation is used as an indicator of macroeconomic instability (Buckley et al., 2007) A stable macroeconomic environment promotes FDI by showing less investment risk. High exchange rate value relative to the US dollar, which implies a depreciated currency, will, ceteris paribus, attract higher FDI while the reverse ultimately dissuades foreign investment. This is because exchange rate allows us to determine the effect of relative wealth and relative labor costs on FDI inflows. Thus, a depreciation of a country's

exchange rate will increase the relative wealth of foreign firms and lead to an increase in foreign purchases of domestic assets. In addition, a depreciation of a country's foreign exchange will lead to capital inflows as foreign countries try to take advantage of relatively cheaper domestic labor.

The number of telephone mainlines and mobile phone subscribers (per 1000 people) is used to proxy the availability of infrastructures and communications facilities in African countries, both regarded by foreign companies as important pre-requisites for their investments (Khadaroo and Seetanah, 2007; Calderon and Serven, 2008). As Addison and Heshmati (2003) have shown, ICT infrastructure and skills are now critical in integrating local producers into international technological and communications networks, and in attracting vertical FDI in services as well as manufacturing. Also, Campos and Kinoshita (2003) have argued that good infrastructure is a necessary condition for foreign investors to operate successfully, regardless of the type of FDI. The use of the availability of main telephone lines is because they are necessary to facilitate communication between the home and host countries.

Since the presence of skilled human capital is usually felt as a relevant pull factor for foreign MNCs, the level of human capital is measured by gross secondary school enrolment. Secondary school attainment of the host country represents accumulated stock of human capital, which is a measure of labor quality and indicative of the level of education and skills of the workers within a country. This variable is expected to be positively related to FDI inflows.

The aid variable used in our analysis is net official development assistance (ODA) as percentage of GDP as a catalyst to FDI since it is assumed to raise the productivity of private capital by financing public investments.

Real GDP growth rate is also used to represent a country's economic track record and as an indicator of profitable investment opportunities. It is also included to allow for a systematic relation between cross-border financial activity and the level of development. Indeed, economic growth has an effect on the domestic market, where countries with expanding domestic markets should attract higher levels of FDI.

To test for agglomeration effects, we relate current FDI inflows to past FDI inflows and other explanatory variables. Agglomeration economies may exist given that foreign investors may be attracted to countries with more existing foreign investment. Indeed, being less knowledgeable of a country's environment, foreign investors may view the investment decisions by others as a good signal of favorable conditions and invest there too, so as to reduce uncertainty. This is proxied by the first lag of the dependent variable.

Another variable is used to evaluate African countries' access to FDI — institutions (to gauge government's fitness, quality and openness of the

political space) — which represent important factor in attracting FDI. This is proxied by the control of corruption, regulatory quality and rule of law (see also, Lederman et al., 2010; Globerman and Shapiro, 2002).

Many African countries receive much FDI in natural resource-based sectors, as they are rich in minerals, oil and natural gas. Indeed, both theoretical and empirical literature has shown that the need to get a secure access to natural resources is one of the main motivations driving MNCs to Africa, indicating one of the key characteristics of African countries in terms of natural resource endowment. Natural resource endowment is proxied by dummies as to whether a country is a net oil exporter or not. Finally, to capture any other unmeasured influences on the sub-regional and continental investment environment, as well as to allow for sub-regional effects, we include sub-regional dummies.

5.2. Data and Estimation Methodology

The data set used for the empirical analysis consists of annual data from 1996 to 2008 for 53 African countries. Table 3 below reports the summary statistics of the data, while Appendix Table A reports the description and sources of the variables. In particular, Table 3 shows that FDI inflows to Africa as a percentage of GDP is very low, averaging just 5 percent during the period, 1996 and 2008. As noted earlier, natural logarithms are used to transform the variables thus reducing the risk related to heteroskedasticity, which is nonetheless common in cross-country analyses. Figures 6 and 7 present the scatter plots of mean net FDI inflows in billions of US dollars and as a percentage of GDP, respectively, during the period of our analysis, 1996-2008. Figure 6 confirms the point made with respect to Figure 5 that the top ten country recipients of FDI in Africa are Egypt, South Africa, Nigeria, Sudan, Angola, Congo Republic, Morocco, Tunisia, Algeria, and Chad. However, as a percentage of GDP, Figure 7 shows Liberia and Equatorial Guinea at the top.

Since our sample is a cross-sectional data, we perform four different empirical techniques to strengthen our empirical results. First, we perform robust pooled ordinary least squares (OLS). Second, we perform feasible generalized least squares (FGLS) for the cross-sectional time-series linear model. This method allows estimation in the presence of AR(1) autocorrelation within cross-sectional correlation and heteroskedasticity across panels. Third, for robustness check, we take cognizance of the view that FDI decision may be made based on historical data and hence all the independent variables that are supposed to have effect on FDI inflow would materialize their effect the next period onward. Therefore, all the independent variables are lagged by one period for all variables and re-estimated by OLS/FGLS methods. Fourth, as stated below, for further robustness and to take care of any possible endogeneity in the aid variable, we use the

two-step (IV) efficient generalized method of moments (GMM) estimation method on the lagged specification.

Only Africa (sub-Saharan Africa and North Africa) countries are examined in this study since the factors that determine the inflow of FDI to Africa are different from those that determine FDI elsewhere in addition to the fact that the structure and characteristics of African countries are different from other developing countries. In addition, there is no doubt that this choice will ensure that the results are relevant to the African continent, its sub-regions and individual countries.

TABLE 3.

Descriptive Statistics of Main Regression Variables (Excluding Dummies), 1996-2008

Variable	Observations	Mean	Median	Standard Deviation	Range
FDI	662	0.05	0.02	0.11	1.45
Urban Population Share	689	39.1	37.7	17.44	79.88
GDP per capita	668	1438.71	482.84	2454.31	28024.89
Openness	634	77.15	69.52	39.68	265.58
Financial development	651	39.74	18.00	66.53	1173.23
Inflation	585	66.34	5.75	1024.72	24411
Exchange Rate	651	633.36	206.74	1497.76	14695.19
Infrastructure	637	129.26	41.03	209.54	1256.83
Human Capital	439	38.08	30.98	25.22	108.85
Aid	663	11.06	8.39	13.06	143.69
GDP Growth	663	5.88	4.74	6.92	106.27
Control of Corruption	516	31.87	29.3	21.76	84.5
Regulatory Quality	530	29.18	27.6	18.71	79.2
Rule of Law	527	29.88	29.00	20.83	81.00

Note: These are raw data before transformations and winsorization.
Source: Author's Calculations.

6. EMPIRICAL RESULTS

6.1. OLS/FGLS Results for Level Data

Table 4 shows the results when Equation (1) is estimated using robust Ordinary Least Squares (OLS). The log transformation of all the variables allows us to interpret the coefficients as elasticities.

The key market size — urban population share — has significant positive relationship with FDI inflows to Africa. Thus, African countries with large markets (in terms of the urban population size) attract more FDI. Though GDP per capita does not have a positively significant association with FDI inflows (consistent with the findings of Alsan et al. 2006), the other proxy

FIG. 6. Scatter Plot of Mean Net FDI Inflows to African Countries (Billion US Dollars), 1996-2008

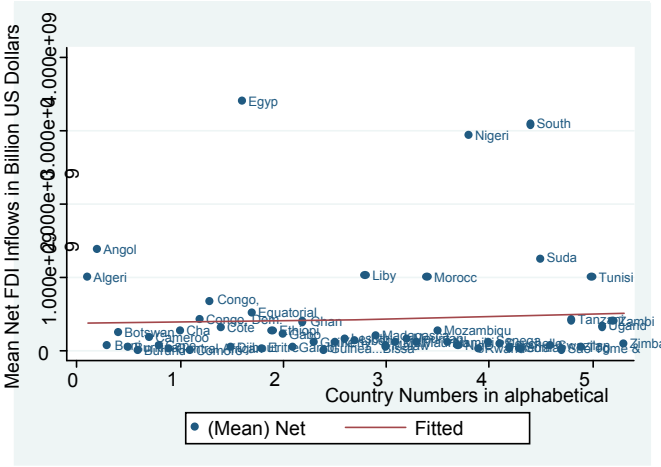
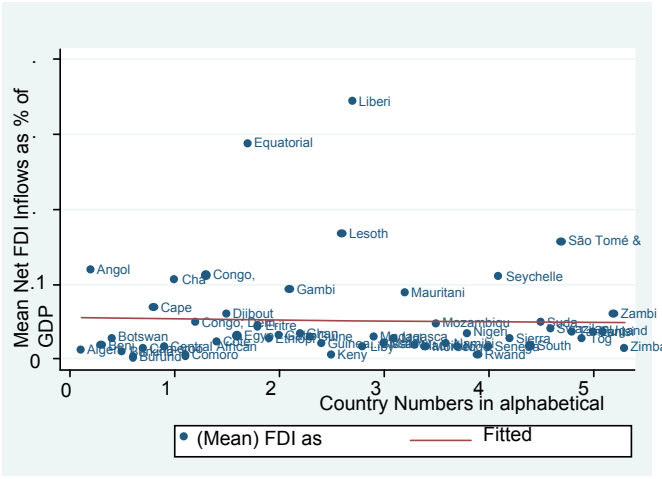


FIG. 7. Scatter Plot of Mean Net FDI Inflows to African Countries (as % of GDP), 1996-2008



for market size, urban population share, is significant at the 5 percent level. The lack of positive significance of GDP per capita could be due to a balancing of the market size effect with the cost of production effect, which should work in the opposite directions.

The coefficient on openness (the highest outside those for the dummy variables) is positive and highly significant and consistent with foreign investment to developing countries such as those in Africa being mainly

export-oriented. It is also consistent with the FDI theory that openness is indicative of the host country's ease of access to the world market for material inputs, so the MNCs can obtain the raw materials at low price. It also suggests that economies in which trade is important also have relatively higher FDI (for instance they pursue policies that are more attractive to foreign investors). Thus, implementation of more liberal economic policies would certainly attract more foreign investments.

The negative significance of financial depth shows that greater financial development in African countries leads to less FDI inflows, similar to the results of Walsh and Yu (2010) and Anyanwu and Erhijakpor (2004) for more advanced economies and in accordance with a priori expectations. The result confirms the hypothesis that high level of credit to the private sector is an indication of the abundance of domestic capital and as such, foreign capital in the form of FDI would not be needed.

The amount of foreign aid (ODA) to African countries is positively significant and confirms that aid has a spillover effect on the FDI decision of foreign investors in Africa. The agglomeration effect appears to have a great impact on where FDI goes in Africa for the variable is strongly significant.

Natural resource endowment (especially oil) attracts FDI inflows in Africa. The sub-regional dummies for East, Northern, Southern and Western Africa are highly statistically significantly related to FDI inflows, showing that reforms being carried out by countries in these regions are paying off in wooing foreign investors. The other variables are insignificant in attracting FDI to Africa.

6.2. Robustness Checks using Lagged Data

6.2.1. OLS/FGLS Results

As stated earlier, there is the proposition that any FDI decision is made based on historical data and hence all the independent variables that are supposed to have effect on FDI inflow would materialize their effect the next period onward. Therefore, for robustness check we present results in which all the independent variables are lagged by one period (see also Lederman et al, 2010).

Table 5 shows the results when Equation (1) is estimated using one-period lagged variables and with Ordinary Least Squares (OLS) and FGLS. The results confirm the continued significance of urban population share, trade openness, financial development, agglomeration, natural resource endowment/exploitation in influencing where FDI goes to in Africa. They also confirm the continued significance of sub-regional dummies for East and Southern Africa.

TABLE 4.

Robust Ordinary Least Squares (OLS) and FGLS Estimates of the Factors That Make FDI Go Where They Do in Africa

Variable	(1) (Robust OLS)	(2) (FGLS)
Urban Population Share	0.439	0.439
	(2.03**)	(2.20**)
GDP per capita	−0.147	−0.148
	(−1.04)	(−1.01)
Openness	0.757	0.757
	(4.24***)	(4.40***)
Financial development	−0.261	−0.261
	(−3.24***)	(−3.32***)
Inflation	−0.072	−0.072
	(−1.25)	(−1.16)
Exchange Rate	0.005	0.005
	(0.18)	(0.15)
Infrastructure	0.018	0.018
	(0.21)	(0.24)
Human Capital	0.248	0.248
	(1.36)	(1.24)
Aid	0.230	0.230
	(2.77**)	(2.51**)
GDP Growth	0.0002	0.0002
	(0.00)	(0.00)
FDI_1	0.344	0.344
	(6.21***)	(7.75***)
Control of Corruption	−0.129	−0.129
	(−0.73)	(−0.84)
Regulatory Quality	0.052	0.052
	(0.34)	(0.36)
Rule of Law	0.175	0.175
	(1.03)	(1.03)
OilExporters	0.784	0.784
	(2.60**)	(2.73**)
East Africa	1.534	1.534
	(3.92***)	(5.30***)
North Africa	1.369	1.369
	(3.10***)	(3.86***)
Southern Africa	1.320	1.320
	(3.40***)	(4.18***)
West Africa	0.930	0.930
	(2.76**)	(3.65***)
Constant	−8.378	−8.358
	(−6.02***)	(−6.68***)
R-Squared	0.5908	Wald chi2=363.87
F-Statistic	19.29	Prob > 0 = 0.0000
Prob > 0	0.0000	
N	252	$N = 252$

Note: *** = 1% significant level; ** = 5% significant level; * = 10% significant level.
Source: Author's Estimations.

An interesting new result is the finding that government quality, represented by the rule of law variable, is statistically significantly associated with higher FDI inflows to Africa. Therefore, FDI inflows to the continent correlate positively with the prevalence of the rule of law, meaning that the quality of government matters for making FDI inflows go where they do in Africa. However, FDI inflows are not reliably related to the control of corruption and regulatory quality in the continent.

6.2.2. IV-GMM Results

However, one possible problem with Equation (1) is that it assumes that all of the right-hand side variables in the model—including foreign aid—are exogenous to FDI inflows, even when the lagged independent variables are used. It is possible that foreign aid may be endogenous to FDI inflows. Reverse causality may be taking place: foreign aid may be increasing FDI, but FDI may also be affecting the level of foreign aid being received.

Without accounting for this reverse causality, all of the estimated coefficients in Table 5 may be biased. One way of accounting for possible endogenous regressors is to pursue an instrumental variables approach. Therefore, to deal with this problem, we follow Catrinescu et al (2006), Aggarwal et al (2006) and Anyanwu (2010) in estimating the equations instrumentalizing the foreign aid variable with its relevant lagged levels, using a the two-step (IV) efficient generalized method of moments (GMM) estimation method.

Table 6 shows the first-stage results from the IV-GMM estimations using the lagged explanatory variables. Again, the variables are in logarithms. First, we present the F-statistic for weak instruments. This is a test of the significance of our instruments in predicting foreign aid. The F-statistics is above the critical value, at 1 percent significance, indicating that our estimates do not suffer from a weak instruments problem. Second, we report the Hansen J test of overidenditfying restrictions. The joint null hypothesis in this case is that the instruments are uncorrelated with the error term and that excluded instruments are correctly excluded from the estimated equation. Again, these tests confirm the validity of our instruments.

Table 7 presents the second-stage IV-GMM results. As for the impact of foreign aid, we continue to find that it has a positive and significant impact on FDI inflows to Africa. These results confirm that the positive impact of foreign aid on FDI inflows to Africa is not due to endogeneity biases. In addition, Table 7 demonstrates that our findings with respect to the main significant variables are not affected by the IV-GMM method. For example, apart from foreign aid, urban population share, trade openness, financial

TABLE 5.

Ordinary Least Squares (OLS) and FGLS Estimates of the Factors That Make FDI Go Where They Do in Africa Using Lagged Independent Variables

Variable	(1) (OLS)	(2) (FGLS)
Urban Population Share_1	0.641	0.641
	(2.53**)	(2.99**)
GDP per capita_1	−0.167	−0.167
	(−0.91)	(−1.06)
Openness_1	0.370	0.370
	(1.88*)	(1.88*)
Financial development_1	−0.276	−0.276
	(−3.11***)	(−3.15***)
Inflation-1	−0.083	−0.083
	(−1.04)	(−1.20)
Exchange Rate_1	−0.009	−0.009
	(−0.28)	(−0.24)
Infrastructure_1	0.034	0.034
	(0.39)	(0.41)
Human Capital_1	0.127	0.127
	(0.66)	(0.57)
Aid_1	0.216	0.216
	(2.31**)	(2.07**)
GDP Growth_1	0.087	0.087
	(0.68)	(0.95)
FDI_1	0.370	0.370
	(4.85***)	(5.90***)
Control of Corruption_1	−0.241	−0.241
	(−1.54)	(−1.45)
Regulatory Quality_1	−0.046	−0.046
	(−0.28)	(−0.28)
Rule of Law_1	0.462	0.462
	(2.79**)	(2.47**)
OilExporters	0.661	0.661
	(2.06**)	(2.17**)
East Africa	1.100	0.566
	(2.84**)	(2.02**)
North Africa	0.534	
	(1.10)	
Southern Africa	0.842	0.307
	(2.01**)	(1.08)
West Africa	0.474	−0.060
	(1.38)	(−0.21)
Central Africa		−0.534
		(−1.37)
Constant	−6.517	−5.983
	(−4.45***)	(−4.47***)
R-Squared	0.4736	Wald chi2=288.48
F-Statistic	11.42	Prob> 0 = 0.0000
Prob > 0	0.0000	
N	254	$N = 254$

Note: *** = 1% significant level; ** = 5% significant level; * = 10% significant level.
Source: Author's Estimations.

development, agglomeration, the rule of law (institutional quality), natural resources (oil producing countries), and sub-regional dummies for East and Southern Africa continue to significantly affect FDI inflows to Africa as in the OLS results using lagged independent variables.

6.3. Conclusions And Policy Implications

What determines why FDI inflows go to where they do in African countries? To shed light on the potential drivers of FDI to Africa, we perform pooled ordinary least squares (OLS) estimations and feasible generalized least squares (FGLS) for the cross-sectional time-series linear model, using level data. For robustness check, we take cognizance of the view that FDI decision may be made based on historical data and hence use one-period lag of independent variables for re-estimation by OLS/FGLS. For further robustness check and to take care of any possible endogeneity in the aid variable, we also use the two-step (IV) efficient generalized method of moments (GMM) estimation method on the lagged data set.

The empirical model attempts to predict the level of FDI inflows (as percent of GDP) as a function of market size (urban population share and GDP per capita), trade openness, financial development, macroeconomic stability, exchange rates, infrastructure, human capital, economic track records (GDP growth rate), agglomeration, institutional quality (control of corruption, regulatory quality and the rule of law) and natural resource endowment/exploitation. In addition, we look for sub-regional-specific effects. We find that the East and Southern African sub-regional coefficients are consistently significant, which implies that the sub-regions perform above expectation, given their market size (urban population share and GDP per capita), trade openness, financial development, macroeconomic stability, exchange rates, infrastructure, human capital, economic track records (GDP growth rate), agglomeration, institutional quality and natural resource endowment/exploitation. However, we find that the other sub-regional coefficients are insignificant, which implies that those sub-regions perform as expected, given the same set of variables.

The major estimation results can be summarized as follows: (i) there is a positive relationship between market size (urban population share) and FDI inflows to Africa; (ii) openness to trade has a positive impact on FDI flows; (iii) Higher financial development has negative effect on FDI inflows to Africa; (iv) the prevalence of the rule of law increases FDI inflows to Africa; (v) higher FDI goes where foreign aid also goes in Africa; (vi) agglomeration has a strong positive impact on FDI inflows to Africa; (vii) natural resource endowment and exploitation (especially for oil) attracts

huge FDI into Africa; (viii) East and Southern African sub-regions appear positively disposed to obtain higher levels of inward FDI.

These empirical findings have important key policy implications for African countries. First, an important contribution of this paper relates to the finding that FDI flows more to African countries that receive foreign aid. Indeed, although the literature on the effects of foreign aid and the causes and effects of FDI is vast, little or no empirical work has been done on the effect of foreign aid on FDI inflows to Africa. A good reason for this is the positive "infrastructure effect" by which aid improves African countries' economic and social infrastructure and hence raising the marginal product of capital in those countries. However, this foreign aid effects may depend on other factors, such as economic and social conditions of the recipient African countries, and modality and volatility of foreign aid. It is therefore important that African country-recipients of aid formulate policies that improve their economic relationships with the donor countries in order to attract higher FDI inflows from the MNCs located in those countries. In addition, in a context of growing shortage of foreign aid given the effect of the recent financial and economic crisis as well as the current Euro-debt crisis, a detailed analysis of the aid-FDI nexus in the development cooperation relationship is indeed an enriching and useful exercise.

Second, another important finding is that FDI is negatively correlated with financial development, which indicates that FDI is a substitute of domestic financial market development in Africa. Thus, low financial sector development is a strong predictor of FDI inflows to African countries. However, in order for FDI to complement local financial development, African countries should improve the quality of domestic financial systems (including integrating them into global financial markets) to make the economies more attractive to MNCs to invest in them.

Third, enhanced regional cooperation and integration will also increase market size in Africa and help attract investors currently constrained in part by the small size of some domestic African markets. This is all the more important given our finding that large market size attracts FDI to Africa.

Fourth, an export-oriented regime opens up the economy of a nation to the outside world especially in terms of increase in demand, which is necessary for a higher return of investment to be achieved by investors. However, Africa's international development partners should continue to facilitate the establishment of a more open and equitable trade regime. Countries that have diversified their exports suffer from problems of quality and lack knowledge of export markets and appropriate technology. African

TABLE 6.

First-Stage IV-GMM Estimates for Foreign Aid Using Lagged Independent Variables

Variable	Coefficient
Instruments Second Lag of aid (% of GDP)	0.398
	(6.25***)
Fourth Lag of aid (% of GDP)	0.182
	(3.20***)
Included exogenous variables Urban Population Share_1	0.024
	(0.25)
GDP per capita_1	−0.421
	(−6.24***)
Openness_1	0.033
	(0.36)
Financial development_1	−0.001
	(−0.03)
Inflation_1	0.051
	(1.61)
Exchange Rate_1	0.013
	(0.73)
Infrastructure_1	0.123
	(3.25***)
Human Capital_1	−0.365
	(−3.59***)
GDP Growth_1	−0.023
	(−0.53)
FDI_1	0.047
	(1.64)
Control of Corruption_1	0.112
	(1.44)
Regulatory Quality_1	−0.145
	(−1.94*)
Rule of Law_1	0.085
	(0.99)
OilExporters	−0.187
	(−1.31)
East Africa	−0.118
	(−0.76)
North Africa	−0.317
	(−1.70*)
Southern Africa	−0.254
	(−1.57)
West Africa	−0.141
	(−1.05)
Constant	4.066
	(6.67***)
N	252
Shea Partial R-Squared	0.4707
F-Statistics of excluded instruments	102.72
P-value	0.0000
Wu-Hausman F Test	0.44468
P-value	0.50554

Note: *** = 1% significant level; ** = 5% significant level; * = 10% significant level.
Source: Author's Estimations.

TABLE 7.
IV-GMM Estimates of the Factors That Make FDI Go Where They Do in Africa Using Lagged Independent Variables

Variable	Coefficient
Instrumented Endogenous Variable Aid (% of GDP)_1	0.295
	(2.27**)
Exogenous Regressors Urban Population Share_1	0.636
	(2.61**)
GDP per capita_1	−0.103
	(−0.55)
Openness_1	0.388
	(2.06**)
Financial development_1	−0.284
	(−3.30***)
Inflation_1	−0.087
	(−1.12)
Exchange Rate_1	−0.010
	(−0.30)
Infrastructure_1	0.020
	(0.26)
Human Capital_1	0.167
	(0.91)
GDP Growth_1	0.096
	(0.75)
FDI_1	0.356
	(4.88***)
Control of Corruption_1	−0.245
	(−1.56)
Regulatory Quality_1	−0.044
	(−0.029)
Rule of Law_1	0.445
	(2.80**)
OilExporters	0.715
	(2.19**)
East Africa	1.163
	(3.09***)
North Africa	0.677
	(1.40)
Southern Africa	0.897
	(2.20**)
West Africa	0.256
	(1.57)
Constant	−7.244
	(−4.91***)
Centered R-Squared	0.4727
Hansen J Statistic	0.023
p-Value	0.87917
Pagan-Hall Statistic	187.290
p-Value	0.9350
N	252

Note: *** = 1% significant level; ** = 5% significant level; * = 10% significant level.
Source: Author's Estimations.

exporters of agricultural products suffer from the high subsidies in developed countries exporting similar agricultural products. This is why the quick conclusion of the Doha Development Round is essential.

Fifth, governance infrastructure and institutional quality, especially the rule of law, not only attracts FDI to Africa, but also creates the conditions under which domestic MNCs emerge and invest abroad. It is therefore imperative that Africa's development partners, particularly the multilateral development banks such as the African Development Bank, step up their assistance (financial, knowledge, and capacity development) towards the development and sustenance of good institutional quality in African countries. This will be most effective when channeled through regional initiatives and institutions such as NEPAD and regional economic communities (RECs).

Given that oil, gas and mineral resources are non-renewable resources, it is vital to negotiate more beneficial and transparent contracts with oil/mining MNCs operating in Africa, and ensure that these companies do not evade taxes. For greater returns to African countries in terms of royalties, for example, the governments should engage in auctions for oil/mineral rights. In this regard, international financial institutions like the African Development Bank have a critical role to play in helping these countries acquire the much-needed capacity not only to negotiate beneficial contracts but also for effective management of natural resource revenues.

Appendix A: Definition of Variables and Data Sources		
Variable	Definition	Source
FDI	Log of net foreign direct investment (% of GDP).	World Bank, African Development Indicators 2009.
Urban Population Share	Log of urban population (% of total population)	World Bank, African Development Indicators 2009.
GDP per capita	Log of gross domestic product per capita (US$)	World Bank, African Development Indicators 2009.
Openness	Log of trade (% of GDP)	World Bank, African Development Indicators 2009.
Financial development	Log of domestic credit to the private sector (% of GDP)	World Bank, African Development Indicators 2009.
Inflation	Log of consumer prices (annual %)	World Bank, African Development Indicators 2009.
Exchange Rate	Log of official exchange rate to the US$, annual average.	World Bank, African Development Indicators 2009.
Infrastructure	Log of fixed and mobile phone subscribers (per 1,000 people)	World Bank, African Development Indicators 2009.
Human Capital	Log of secondary school enrolment.	World Bank, African Development Indicators 2009.
Aid	Log of net foreign official developmenr assistance (oda) (% of GDP).	World Bank, African Development Indicators 2009.
GDP Growth	Log of real GDP growth rate (%)	World Bank, African Development Indicators 2009.
FDI_1	First lag of net FDI(% of GDP)	Author's transformation.
Control of Corruption	Log of control of corruption (percentile rank 0-100)	World Bank, African Development Indicators 2009.
Regulatory Quality	Log of regulatory quality (percentile rank 0-100)	World Bank, African Development Indicators 2009.
Rule of Law	Log of rule of law (percentile rank 0-100)	World Bank, African Development Indicators 2009.
Natural Resources	Oilexporters (Dummy variable for net oil exporters)	Author's transformation based on African Development Bank Database
Regional Dummies	Central, East, North, Southern, and West Africa	Author's transformation.

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