

The Linkage between FDI and Domestic Factor Markets: Unravelling the Developmental Impact of Foreign Investment

Leonce Ndikumana

University of Massachusetts, Amherst and UNECA, Addis Ababa
ndiku@econs.umass.edu; lndikumana@uneca.org

and

Sher Verick

UNECA and IZA, Addis Ababa
sverick@uneca.org

Abstract:

Recent evidence indicates a large increase in FDI to African countries, especially since the 1990s, although in relative terms Africa continues to lag behind other regions. Despite the increase in private capital inflows, these resources have not had meaningful impact on economic development in African countries. This study posits that a key reason for this limited impact of FDI on the host economies is that FDI has had limited effects on domestic factor markets, especially domestic capital accumulation and employment, which are key drivers of economic growth. The study undertakes detailed econometric analysis using a sample of 38 African countries to provide empirical evidence that sheds light on this important issue by exploring the two-way relationship between FDI and domestic factor markets. The results suggest a strong relationship between foreign direct investment and domestic investment that seems to run both ways, but the impact of private investment on FDI is stronger and more robust than the reverse relation. We find no convincing evidence on the linkages between FDI and labour market characteristics and outcomes in this sample of African countries. High wages do not appear to be a deterrent to FDI. Moreover, while high FDI appears to lead to higher wages, the effect does not survive robustness tests. The results have important policy implications. In particular, the evidence suggests that African countries will gain much from measures aimed at improving the domestic investment climate. This will increase private investment, which in turn will attract more foreign capital. The results suggest that repressing wages will not buy much FDI while having adverse social effects. Efforts towards more labour market flexibility also ought to be motivated by other economic and social goals rather than the need to attract more FDI.

JEL: E22; F21; F23;

Keywords: FDI; private investment; public investment; employment; labour markets; Africa

1. Introduction

The current debate on African economic development has devoted much attention to the role of external resource inflows, including foreign direct investment (FDI) and their potential contribution to accelerating growth and African countries' progress towards reaching their development goals (UNECA 2006). Recent evidence indicates that FDI to African countries has been on the rise, especially since the 1990s (Ndikumana 2003), consistent with the general trend of private capital flows in developing regions.

However, two main issues arise with regard to recent trends of FDI to Africa. First, although the volume of FDI to Africa has increased substantially since the 1990s, Africa remains largely marginalized in the context of financial globalization. Africa's share in world FDI flows is currently less than 3%, which is less than half share reached in the 1970s. Therefore, to the extent that attracting more FDI remains a desirable objective, the first challenge is to make African countries more attractive to foreign investors. Second, despite the increase in private capital inflows, these resources have not had meaningful impact on economic development in African countries. Thus the second challenge is how to increase the development impact of FDI in African economies.

This paper seeks to provide empirical evidence that sheds light on these two critical challenges faced by African economies. With regard to the first challenge, the study starts from the view that to design effective strategies for making Africa more competitive, it is essential to understand the drivers of FDI. This study contributes to the debate by providing further evidence on the determinants of FDI to African countries. A growing body of literature has uncovered a large range of determinants of FDI in

developing countries in general, although relatively less is known for the specific case of African countries (see Asiedu 2002, 2005). A distinguishing feature of this study is the emphasis on the role of domestic factor markets, namely labour markets and domestic investment (private and public), in attracting private foreign capital. The literature suggests that the availability of a skilled labour force and an investment friendly labour market regulation should improve a country's position in the eyes of foreign investors. Moreover, a strong private investment record serves as a signal of high returns to capital while adequate public infrastructure (through high public investment) reduces the cost of doing business, which raises marginal return to FDI. Therefore, domestic factor markets play an important role in determining the volume of FDI inflows. This study seeks to provide evidence on these linkages with a view to shed light on strategies that may help African economies to increase private capital inflows.

With regard to the second challenge, the study posits that a major reason for the limited effects of FDI on development in the host economies is the lack of synergies between FDI and domestic factor markets, especially labour markets and private domestic investment. While FDI can stimulate growth,¹ these growth effects are sustainable only if FDI stimulates the utilization of domestic factors of production, especially by increasing employment and stimulating private investment. This will complement other important effects of FDI on the domestic economy, including technological spillover effects and facilitating access to global markets. Thus, by empirically investigating the effects of FDI on domestic factor markets, this study contributes to uncovering the channels through which FDI can affect economic growth.

¹ Some references for the evidence on the impact of FDI on growth include Balamoune-Lutz (2004); Mold (2004); Ankilo (2003).

To empirically investigate the two questions, that is, the impact of domestic factor markets on FDI on the one hand and the effects of FDI on domestic factor markets on the other hand, we use a sample of 38 African countries for the period 1970-2005. We use three estimation methodologies to explore the robustness of the results: a robust OLS estimator controlling for outliers; the fixed-effects specification taking account of country-specific effects; and the system generalized method of moments (GMM) estimator of Blundell and Bond (1998) controlling for possible bias arising from endogeneity of the regressors.

The results shed light on the two key questions investigated by the study. First, the evidence suggests a strong relationship between foreign direct investment and domestic investment. The relationship runs both ways, but the impact of private investment on FDI is stronger and more robust than the reverse relation. This suggests that high domestic private investment is a signal for high returns to capital, which attracts foreign investment. Thus, efforts to improve incentives for private investment will pay off by, among other things, making African countries more competitive in the eyes of foreign investors.

We find much less robust evidence on the linkages between FDI and labour market characteristics in this sample of African countries. There is no robust evidence in support of the view that high wages are a deterrent to FDI. Moreover, while high FDI appears to lead to higher wages, the effect does not stand statistical scrutiny. Contradicting the usual finding for the impact of human capital on FDI, our evidence points to a negative relationship between the youth literacy rate and foreign investment

inflows. However, this is largely driven by natural resource-rich countries, which have been attracting high FDI inflows in spite of low levels of human capital.

The remainder of the paper is organized as follows. Section 2 provides stylized facts on the trends of FDI relative to domestic investment in African countries. It also examines correlations between FDI and characteristics of domestic factor markets in addition to factors that have been identified in the literature as key determinants of FDI. Section 3 undertakes a detailed econometric investigation of the impact of domestic factor markets on FDI, taking into account other established correlates of FDI. Section 4 examines the effects of FDI on private investment and labour market outcomes, that is, wages and employment. Section 5 summarizes the findings and concludes by highlighting key policy implications.

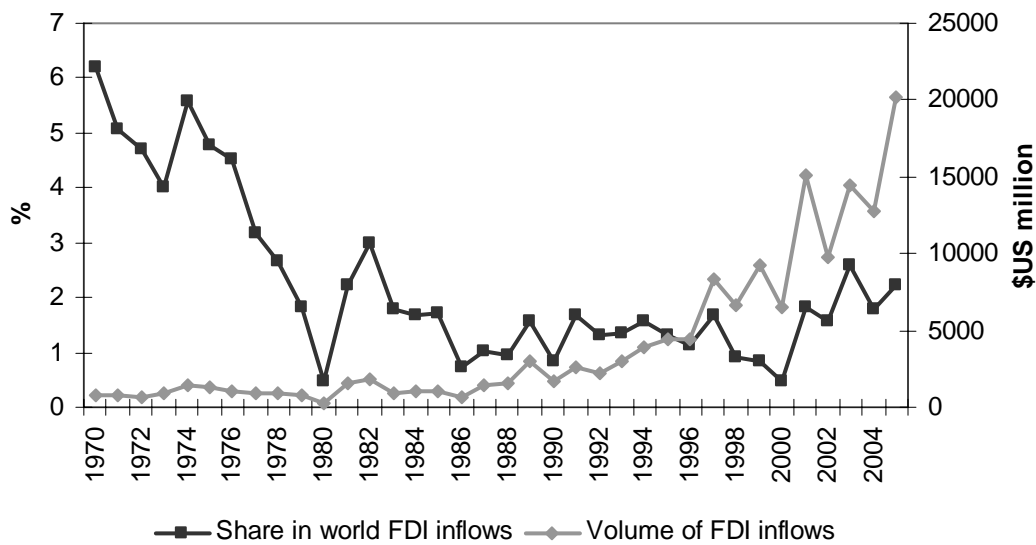
2. FDI in sub-Saharan African countries: stylized facts

2.1 Trends in FDI and domestic investment in SSA

In general, FDI in Sub-Saharan Africa (SSA) can be characterized as low in comparison to other developing regions, concentrated in few countries and largely targeting the natural resources sector. In recent years FDI flows to the region have been growing strongly in response to not only high commodity prices but also to improved macroeconomic stability. FDI inflows to SSA surpassed US\$20 billion in 2005, a 58.1% increase on the previous year. As a result of this development, the region's share in global flows has increased from 0.5 per cent in 2000 to 2.2 per cent in 2005, though this remains far below the peak of 1970 (6.2%) (Figure 1). The continuing low share for the

region reflects the dominance of China and other emerging economies in attracting foreign investment since the 1980s.

Figure 1: FDI to SSA: volume and share in world inflows, 1970 – 2005



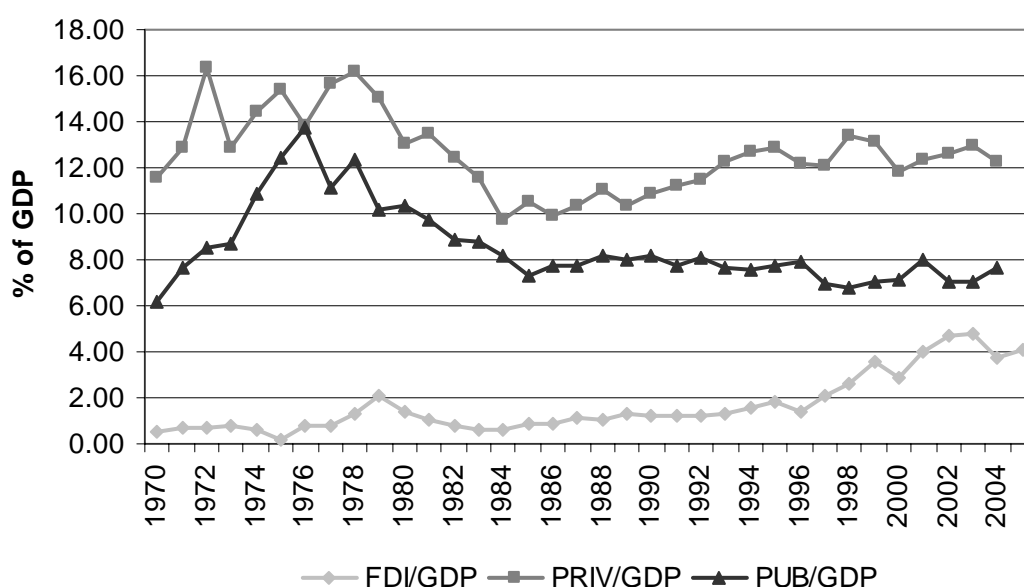
Source: UNCTAD FDI online database

Figure 2 displays the evolution of FDI inflows to the sample of 38 SSA countries used in this paper, in comparison to gross private and public investment as ratios of gross domestic product. As evident in this graph, FDI inflows have been increasing since the mid-1990s, peaking at 4.8% of GDP in 2003. Gross private investment reached a maximum of 16.4% of GDP in 1972 before declining to around 10% in the early 1980s. Since the 1990s, private investment rates have been slowly increasing. In comparison, gross public investment peaked at around 14% in 1976 before declining rapidly over the following decade and has stagnated at between 7% and 8% since 1984.

The clear message from these trends is that while FDI is increasing in sub-Saharan African countries, domestic investment, particularly public investment, remains

insufficient and is not responding to the improvements in economic and political conditions observed on the continent over the past two decades. UNECA (2006) also reports a similar trend in gross investment on the continent.

Figure 2: Trends in FDI, private and public investment for 38 sub-Saharan African countries, 1970-2005



Notes: FDI/GDP = foreign direct investment/GDP; PRIV/GDP = gross private investment/GDP; PUB/GDP = gross public investment/GDP.
 Source: UNCTAD FDI online database, World Bank Africa Database 2006, World Development Indicators online database

Looking at the cross-country variation in these three dimensions of investment reveals significant variations across sub-Saharan countries (Table A1 in Appendix II). The countries with the highest average FDI/GDP ratios are Angola (6.9%), Chad (6.2%) and Seychelles (5.2%). The high ratios for Chad and Angola represent recent investments in the natural resource sector. Burundi, Burkina Faso and surprisingly Kenya have the lowest average FDI inflows as a percentage of GDP, all with figures below 1%. Overall, 15 out of the 38 countries in the sample have average ratios of less than 1% of GDP.

In comparison, the largest private investment/GDP ratios are found in Lesotho (33.9% of GDP), Gabon (23.2%) and Botswana (21.2%). Resource-rich countries like Angola have not yet translated their large export revenues into an increase in domestic private investment. Most of the countries with above average ratios of private investment are middle-income countries. Least-developed countries (LDCs) tend to have lower private investment rates, with Burundi, Niger and Central African Republic having the lowest averages (less than 5% of GDP).

Finally, public investment, which is driven by very different factors than in the case of foreign and domestic private investment, also varies considerably across the sub-Saharan countries in the sample. The average ratio of gross public investment to GDP ranges from 20.5% in Guinea-Bissau to 2.5% in Zimbabwe.

2.2 The relationship between investment and key determinants

In Section 3 we undertake a detailed econometric analysis of the determinants of FDI, with a particular focus on the role of domestic factor markets. In this section, we start by investigating correlations between FDI and characteristics of domestic factor markets as well as other determinants including macroeconomic, political, and human capital variables.

As can be seen in Table 1, FDI inflows are significantly and positively correlated with a range of determinants typically employed in the literature: GDP growth, openness as measured by total trade, infrastructure, natural resource endowment and the quality of polity (see, for e.g., Asiedu 2002, 2004, 2005; Dupasquier and Osakwe 2006; Kandiero and Chitiga 2006; Lydon and Williams 2005; UNECA 2006). A positive correlation is

evident between FDI/GDP and the stock of FDI inflows. This correlation is likely to be the result of foreign companies continuing to invest in countries where they have a presence in addition to the attraction of other foreign entities to an established market that already caters for foreign investors.

Table 1: Correlations between FDI/GDP and key determinants

Variable	Pearson's corr. coeff.	P-value	No. Of obs
GDP growth	0.11	0.00	1228
Openness	0.35	0.00	1203
Log of telephone subscribers	0.24	0.00	1059
Log of FDI stock	0.30	0.00	939
Detrended REER	0.02	0.58	644
REER volatility	-0.16	0.00	644
Detrended CPI	-0.08	0.03	866
CPI volatility	0.21	0.00	866
Polity score	0.07	0.02	1120
Oil, mineral and ore exports as % of total merchandise exports	0.13	0.00	595
Ogive concentration index	0.19	0.00	755

Source: Polity IV Project, UNCTAD FDI online database, World Development Indicators online database

In terms of political variables, FDI inflows are positively correlated with a composite indicator of democracy and autocracy (polity2).² This suggests that FDI inflows are higher in countries, which are more democratic. However, looking at this combined polity score as a categorical variable rather than as a single indicator reveals that this correlation is not linear. As illustrated in Table 2, countries that are classified as weakly autocratic have the highest average FDI/GDP ratio. Based on the average score for the period 2000-2004, countries in this category include Angola, Chad, Republic of Congo and Gabon, where high FDI inflows are largely driven by natural resource extraction.

² See Marshall and Jagers (2005) for detailed information on this polity indicator

In comparison, private investment is higher in strongly democratic countries, which underscores the importance of a supportive investment climate, including good governance and institutions, in promoting domestic private investment. On the other hand, public investment is higher in both strongly autocratic and strongly democratic countries, suggesting no clear relationship between public investment and the polity.

Table 2: Investment by political regimes (% of GDP)

Type of political regime	FDI/GDP	PRIV/GDP	PUB/GDP
Strongly autocratic	1.13	11.55	8.93
Weakly autocratic	2.76	12.08	6.21
Weakly democratic	1.41	10.38	7.21
Strongly democratic	1.94	13.85	8.44

Source: Polity IV, UNCTAD FDI online database, World Bank Africa Database 2006, World Development Indicators online database

FDI inflows are unsurprisingly also positively correlated with the proportion of natural resources in merchandise exports. Countries where oil, minerals and ore account for more than 50% of merchandise exports have on average a FDI/GDP ratio of 2.1% compared to 1.4% for countries with lower shares of resources in exports. In these natural resource rich countries, private and public investment/ GDP ratios are also higher. This relationship is also captured by the positive correlation between FDI and the Ogive concentration index, implying that inflows are higher in countries with lower levels of export diversification.

2.3 The relationship between FDI and domestic factor markets

Turning to the main focus of this paper, we investigate the correlation between FDI and domestic factor markets. As evident in Table 3, FDI is positively correlated with a range of variables characterising the domestic factor markets.

Table 3: Correlations between FDI and domestic factor market characteristics

Variable	Pearson's corr. coeff.	P-value	No. of obs
Private investment/GDP	0.25	0.00	895
Public investment/GDP	0.06	0.07	877
Monthly manufacturing wage	0.37	0.00	194
Monthly manufacturing wage differential	0.35	0.00	194
Rigidity of employment index	0.10	0.34	90
Youth literacy rate	0.06	0.14	680

Source: UNCTAD FDI online database, UNESCO Institute for Statistics online database, World Bank Africa Database 2006, World Development Indicators online database

Firstly, foreign investment is higher when both private and public investment ratios are higher, though the correlation is much higher in the case of private investment. This is a first indicator of the important relationship between these three investment variables. In addition to the insight provided by these correlations, it is important to consider that these variables are related over time in a dynamic relationship with causality running in both directions. These issues are investigated further in Sections 3 and 4 below.

Secondly, there is also evidence of a large positive correlation between FDI inflows and monthly manufacturing wages, contrary to a negative relationship between labour costs and FDI implied by theory and as found by certain empirical studies.³ Moreover, there is also a positive correlation between FDI and the wage differential, which is defined here as the difference between the country-level monthly manufacturing wage and the average in the sample for that year. This implies that countries that have above average wages tend to also have higher FDI/GDP ratios. As found in some of the literature, this could be the result of foreign-owned firms paying a wage premium (see, for example, te

³ Asiedu (2002) reports that different cross-country studies find that labour costs can have either a positive, negative or insignificant effect on FDI. However, Kucera (2002) argues that the evidence “leans towards suggesting that higher labour costs negatively affect FDI” (Kucera *ibid*, p.4). The negative effects appear to be stronger in studies that have controlled for differences in labour productivity (Kucera *ibid*).

Velde and Morrissey (2003) for evidence based on data from five African countries). Alternatively, foreign investors could be attracted to countries with higher levels of human capital, which is reflected in higher wages. Another possibility is that foreign investors are able to absorb high wage rates due to high returns to capital. The positive correlation between the wage rate and FDI is also consistent with the fact that FDI to Africa flows mostly into natural resource industries, which are capital intensive.

In addition to the direct cost of wages, the literature has investigated whether labour market regulations and the resulting rigidity in terms of hiring, firing, hours and other key factors deter foreign investors. For example, if legislation prevents or severely constrains the dismissal of workers, firms will have lower incentives in the first place to hire new employees. Such regulations could, at least theoretically, deter foreign companies from investing in a specific country (see OECD (2004) and UNECA (2006) for a further discussion on these issues).

However, empirical evidence on this relationship is mixed. Javorcik and Spatareanu (2005) find that greater labour market flexibility in the host country in absolute and relative terms is correlated with higher FDI flows. In contrast, Kucera (2002) finds no support for the hypothesis that foreign investors favour countries with lower labour standards, which suggests that the benefits of sound labour standards outweigh the costs. Although in comparison to other developing regions, Africa has relatively rigid employment regulations, the correlation presented in Table 3 does not suggest any significant relationship between the rigidity of employment and FDI inflows.

Human capital is another important determinant of FDI inflows, as investigated by such studies as Noorbakhsh, Paloni and Youssef (2001), who find that this factor is one of the most important determinants of foreign investment. Contrasting this stylized fact, there is no statistical evidence of a positive correlation between FDI/GDP and the youth literacy rate in the case of the sample of African countries considered in this study (Table 3).

Table 4: Investment by level of youth literacy

Level of youth literacy	FDI/GDP	PRIV/GDP	PUB/GDP	FDI stock (US\$ millions)
1970-2005				
Low youth literacy rate (<25th percentile)	1.64	8.28	8.44	192.94
Medium youth literacy rate (>= 25th percentile & < 75th percentile)	1.53	10.37	7.68	1130.14
High youth literacy rate (>75th percentile)	1.99	14.16	6.53	4128.12
After 1997				
Low youth literacy rate (<25th percentile)	7.68	12.74	9.08	541.61
Medium youth literacy rate (>= 25th percentile & < 75th percentile)	2.62	10.47	6.99	1651.93
High youth literacy rate (>75th percentile)	3.25	13.37	6.09	7047.04

Source: UNCTAD FDI online database, UNESCO Institute for Statistics online database, World Bank Africa Database 2006, World Development Indicators online database

However, if we look at investment ratios by various percentiles in the distribution of youth literacy rate in the sample, a different relationship emerges. Firstly, as displayed in Table 4, both FDI inflows and the stock of FDI in addition to private investment are higher in countries with higher youth literacy rates (this includes countries like Botswana, Namibia and South Africa), while public investment is the lowest in such countries.

Restricting the sample to post-1997, a period where FDI inflows have accelerated, provides evidence of another relationship. In this case, FDI is considerably higher in countries with low literacy rates (<46%). This category includes countries such as Chad

where oil exploration and exploitation have attracted large FDI inflows. This does not imply that human capital is not an important driver of FDI in African countries. Rather, as clearly evidenced by the positive and increasing relationship between literacy rate category and stock of FDI, human capital is important for sustaining foreign investment over the longer term.

3. Econometric analysis of the impact of domestic factor markets on FDI

These summary statistics presented above provide an insight into the relationship between foreign investment and a range of structural or fundamental factors, in addition to the correlations with domestic factor markets. In this section, we investigate the impact of the variables discussed above on FDI inflows and private investment, controlling for outliers, unobserved heterogeneity and endogeneity of variables, which can bias estimates. The analysis is based on the following specification:

$$FDI_{it} = \alpha + \beta' X_{it} + \mu_i + \varepsilon_{it}, \quad (1)$$

where X is a vector of determinants, μ_i the time-invariant unobserved heterogeneity term and ε_{it} the random error term.

3.1 Fundamental determinants of FDI

As highlighted in Sections 1 and 2, the literature on FDI has identified a range of key determinants including economic growth, openness, and infrastructure. Our base empirical specification includes these variables in addition to the lagged stock of FDI to capture the impact of existing foreign investment on new FDI inflows. We also include a dummy for post-1997 to reflect the shift in the trend in FDI inflows. The estimates for

equation (1) using robust OLS where outliers have been weighted, fixed-effects regression and a system-GMM estimator are reported in Table 5.

The coefficient estimates reported in Table 5 are largely consistent with the results found in the literature. Looking at the robust OLS results in column (1), GDP growth, openness, and the stock of FDI all have a large positive effect on FDI inflows. The structural break dummy capturing the shift in the trend after 1997 has the expected positive effect on inflows. Contrary to the typical finding, the coefficient on the infrastructure variable (log of telephone subscribers) is negative. This may reflect the fact that the resource-rich countries that have attracted FDI also have an underdeveloped telecommunication network. It is also possible that FDI inflows to Sub-Saharan Africa are being attracted by opportunities in the undeveloped telecommunications sector in many countries, suggesting reverse causality. However, in the case of the fixed effects regression (column 2) the coefficient on this variable becomes positive and significant, suggesting that the correlation with the unobserved country time-invariant heterogeneity (μ_i) was affecting the OLS estimates.

Table 5: Structural determinants of FDI: contemporaneous effects

Dependent variable: FDI/GDP			
	OLS (1) Coeff.	FE (2) Coeff.	SYS-GMM (3) Coeff.
GDP growth	0.019** (0.009)	0.040** (0.017)	0.046 (0.058)
Openness	0.020*** (0.002)	0.038*** (0.007)	0.038* (0.020)
Log of telephone subscribers	-0.100** (0.047)	0.319* (0.170)	0.184 (0.351)
Log of stock of FDI inflows (t-1)	0.213*** (0.035)	0.617*** (0.158)	-0.159 (0.418)
Post-1997 dummy	0.945*** (0.131)	0.832** (0.348)	1.879* (1.068)
Hansen test of over-identifying restrictions chi2(20)			25.03

Test for AR(1) in first differences:			-2.26***
Test for AR(2) in first differences:			1.04
Instruments			t-2 to t-6
F-Statistic	74.59***	47.15***	
No. of observations	868	867	868

Notes: Standard errors reported in parentheses; *** - significant at the 1% level, ** - significant at the 5% level, and * - significant at the 10% level;

OLS = robust OLS regression where outliers are weighted; FE = fixed effects regression; SYS-GMM = Blundell and Bond system GMM estimator

Source: UNCTAD FDI online database, World Development Indicators online database

While a within transformation of the data removes the bias due to unobserved country-level effect, it does not account for the possibility that right-hand side variables may be correlated with the random error term (ε_{it}). Given the role of FDI in promoting growth and trade orientation, this suggests a two-way relationship between these variables and FDI causing bias in the above estimates. The common approach to dealing with this bias is to estimate equation (1) using instrumental variables, which can be accomplished by using general method of moments (GMM). In Table 5, we report estimates using the system-GMM estimator of Blundell and Bond (1998), which uses moment restrictions based on the differenced equation as well as those resulting from the levels equation, which should improve identification in comparison to using the differenced equations alone such as the Arellano-Bond GMM estimator (Arellano and Bond 1991).

The GMM estimates are reported in column 3 of Table 5 and indicate that only the coefficients on openness and the post-1997 dummy are significant. The Hansen test does not suggest a rejection of the validity of the instruments and there is no evidence of second-order autocorrelation, indicating that the estimates are consistent.

As an alternative way of controlling for potential simultaneity bias, we estimate equation (1) using lagged explanatory variables. The results for this specification are listed in Table 6, which are in line with those reported above in Table 5.

Table 6: Fundamental determinants of FDI, lagged effects

Dependent variable: FDI/GDP		
	OLS (1)	FE (2)
Explanatory variables	Coeff.	Coeff.
GDP growth (t-1)	0.020** (0.009)	0.061*** (0.019)
Openness (t-1)	0.022*** (0.002)	0.033*** (0.007)
Log of telephone subscribers (t-1)	-0.158*** (0.048)	0.300 (0.199)
Log of stock of FDI inflows (t-1)	0.246*** (0.036)	0.711*** (0.178)
Post-1997 dummy	0.971*** (0.128)	0.980*** (0.373)
F-Statistic	76.90***	39.50***
No. of observations	869	869

Notes: Standard errors reported in parentheses; *** - significant at the 1% level, ** - significant at the 5% level, and * - significant at the 10% level;

OLS = robust OLS regression where outliers are weighted; FE = fixed effects regression; SYS-GMM = Blundell and Bond system GMM estimator

Source: UNCTAD FDI online database, World Development Indicators online database

The results in Tables 5 and 6 suggest that the positive effects of structural factors such as GDP and openness are robust to any possible relationship between these factors and FDI. However, there is no robust relationship between FDI and telecommunications infrastructure.

3.2 Macroeconomic variables, political instability and natural resources as determinants

In addition to the above determinants of FDI inflows, additional variables such macroeconomic fundamentals, political stability, and natural resources have proven to be important drivers of foreign investment (see Asiedu 2005).

The results presented in Table 7 show that, consistent with theory and existing evidence, inflation and instability in prices deters FDI. However, the results do not confirm the expected negative effect of exchange rate instability on FDI. This again may illustrate the particular situation in Africa where FDI is predominantly resource-seeking and highly profitable and thus offsetting costs due to exchange rate instability.

Table 7: Macroeconomic, political and natural resource determinants of FDI inflows

Dependent variable: FDI/GDP								
Explanatory variables	OLS	FE	OLS	FE	OLS	FE	OLS	FE
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.
GDP growth	0.019** (0.009)	0.041** (0.021)	0.026** (0.010)	0.030 (0.022)	0.017* (0.009)	0.048*** (0.018)	0.060*** (0.020)	0.009 (0.023)
Openness	0.015*** (0.002)	0.044*** (0.010)	0.019*** (0.002)	0.038*** (0.009)	0.019*** (0.002)	0.043*** (0.007)	0.023*** (0.003)	0.022*** (0.007)
Log of telephone subscribers	-0.312*** (0.052)	0.564** (0.233)	-0.228*** (0.055)	0.122 (0.194)	-0.226*** (0.050)	0.451*** (0.191)	-0.027 (0.082)	0.023 (0.180)
Log of stock of FDI inflows (t-1)	0.268*** (0.038)	0.937*** (0.231)	0.250*** (0.037)	0.667*** (0.186)	0.241*** (0.034)	0.638*** (0.173)	0.147** (0.068)	0.740*** (0.185)
Post-1997 dummy	0.974*** (0.146)	0.548 (0.407)	1.139*** (0.136)	0.939*** (0.403)	0.908*** (0.128)	0.833** (0.366)	0.845*** (0.194)	0.301 (0.310)
REER detrended	0.0002 (0.001)	0.005 (0.003)						
REER volatility	-0.0017 (0.0015)	0.012** (0.005)						
CPI detrended			-0.001*** (0.000)	-0.002*** (0.0007)				
CPI volatility			0.004*** (0.000)	-0.006*** (0.002)				
Weakly autocratic ^b					0.114 (0.137)	0.402 (0.339)		
Weakly democratic ^b					0.294* (0.179)	-0.799** (0.392)		
Strongly democratic ^b					0.079 (0.134)	-1.069*** (0.361)		
Oil, mineral and ore exports (% of total merchandise							0.009*** (0.003)	0.014* (0.007)

exports)								
F-Statistic	28.02***	20.63***	65.40***	24.85***	42.40***	28.34***	24.26***	15.26***
No. of obs.	577	577	646	646	794	794	391	391

Notes: Standard errors reported in parentheses; *** - significant at the 1% level, ** - significant at the 5% level, and * - significant at the 10% level;
 OLS = robust OLS regression where outliers are weighted; FE = fixed effects regression; SYS-GMM = Blundell and Bond system GMM estimator
 Source: Polity IV, UNCTAD FDI online database, World Development Indicators online database

In terms of political regime, the fixed effects estimates in Table 7 (column 6) indicate that countries, which have either strongly or weakly democratic governments, attract in fact lower FDI inflows than countries, which are strongly autocratic. This latter group includes resource-rich countries such as Nigeria. Rather than suggesting that promoting democracy doesn't help attract foreign investors, this result reflects that natural resource rich countries tend to be more autocratic. In this respect, both the OLS and FE results (columns 7 and 8) unsurprisingly indicate that countries with a higher share of oil, mineral and ore in total merchandise exports tend to have higher FDI/GDP ratios. The results using the Ogive concentration index are very similar (these estimates are not reported in Table 7 for reason of space).

3.3 Domestic factor markets as determinants of FDI

Having established the role of structural determinants of FDI, we now turn to examining whether domestic factor markets have an additional effect on FDI. We focus on the impact of domestic and public investment, manufacturing wages and human capital on FDI. We add indicators of these factors to the base equation including structural determinants.

The estimates presented in Table 8 underscore the important relationship between FDI inflows and both private and public investment. Though the coefficient on public

investment is larger in the OLS estimates (column 1), the fixed-effect estimator indicates a stronger impact of private investment on FDI inflows.⁴ This is evidence that higher levels of private investment can help attract FDI inflows, possibly due to a signalling effect as higher private investment is seen as an indication of high returns to capital. Higher levels of public investment, particularly in areas like infrastructure, is expected to reduce production and trade costs and hence provide a more profitable environment for foreign investors.

Table 8: Domestic investment as determinants of FDI inflows

Dependent variable: FDI/GDP		
	OLS (1)	FE (2)
Explanatory variables	Coeff.	Coeff.
GDP growth	0.025** (0.010)	0.048** (0.019)
Openness	0.018*** (0.002)	0.029*** (0.007)
Log of telephone subscribers	-0.192*** (0.052)	0.477** (0.201)
Log of stock of FDI inflows (t-1)	0.246*** (0.041)	0.560*** (0.183)
Post-1997 dummy	1.012*** (0.135)	0.727** (0.368)
Private investment/GDP	0.023** (0.009)	0.159*** (0.026)
Public investment/GDP	0.031** (0.014)	0.067** (0.034)
F-Statistic	45.05***	36.58
No. of obs.	748	748

Notes: Standard errors reported in parentheses; *** - significant at the 1% level, ** - significant at the 5% level, and * - significant at the 10% level;

OLS = robust OLS regression where outliers are weighted; FE = fixed effects regression

Source: UNCTAD FDI online database, World Bank Africa Database 2006, World Development Indicators online database

Turning to the labour market, we investigate the impact of wages and human capital on FDI inflows. According to theory, we would expect a negative impact of wages on FDI,

⁴ In this system GMM estimates private investment turns out to be significant also with a larger coefficient than for public investment. The results are not reported in Table 8.

while higher levels of human capital should be associated with larger FDI/GDP ratios. The fixed-effects estimates reported in Table 9 indicate that a higher wage has a negative but marginal effect on FDI, which is consistent with the a priori prediction. However, the negative sign on the literacy rate is contrary to the expectations about the role of human capital in attracting foreign firms to invest in a country.

Table 9: Impact of wages and human capital on FDI inflows

Dependent variable: FDI/GDP						
	OLS	FE	OLS	FE	OLS	FE
Explanatory variables	(1)	(2)	(3)	(4)	(5)	(6)
	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.
GDP growth	-0.008 (0.023)	0.007 (0.039)	-0.007 (0.029)	0.009 (0.039)	0.027*** (0.008)	0.062*** (0.018)
Openness	0.041*** (0.003)	0.035** (0.014)	0.041*** (0.004)	0.033** (0.015)	0.014*** (0.001)	0.037*** (0.008)
Log of telephone subscribers	-0.048 (0.118)	1.399** (0.696)	0.217 (0.147)	1.347* (0.700)	-0.269** (0.047)	0.947*** (0.214)
Log of stock of FDI inflows (t-1)	-0.230* (0.126)	-0.743 (0.480)	-0.411*** (0.152)	-0.862* (0.488)	0.246*** (0.032)	0.616*** (0.193)
Post-1997 dummy	-0.748* (0.430)	1.013 (0.886)	0.055 (0.536)	0.064 (0.881)	0.996 (0.121)	0.386 (0.388)
Monthly wage	0.004*** (0.001)	-0.005* (0.002)				
Wage differential			0.003*** (0.001)	-0.003 (0.002)		
Youth literacy rate					0.001 (0.003)	-0.010*** (0.029)
F-Statistic	87.43***	3.63***	59.36***	3.43**	43.46***	30.31***
No. of obs.	134	134	134	134	631	631

Notes: Standard errors reported in parentheses; *** - significant at the 1% level, ** - significant at the 5% level, and * - significant at the 10% level

OLS = robust OLS regression where outliers are weighted; FE = fixed effects regression

Source: UNCTAD FDI online database, UNESCO Institute for Statistics online database, World Bank Africa Database 2006, World Development Indicators online database

4. Impact of FDI on domestic factor markets

Section 3 has provided an insight into how domestic investment, wages and human capital effect foreign investment in a sample of 38 Sub-Saharan African countries. The

relationship between FDI and domestic factor markets is likely to be bi-directional since FDI inflows also have an impact on factor markets. The most debated aspect of this relationship is whether foreign investment crowds in or out domestic activity. This has been investigated by a range of studies, including some for Africa, which generally find that the effect is mostly neutral (see Agosin and Machado 2005; UNCTAD 2003; UNECA 2006; and other references therein). This section explores this relation in the case of African countries. The section also analyses the impact of FDI inflows on wage differentials to test whether there is any evidence that foreign investment increases wages.

As can be seen in Table 10, there is evidence in the case of the fixed effects regression of a positive impact of FDI on the private investment suggesting crowding-in of private investment by FDI. Public investment doesn't appear to affect private investment once country specific effects are accounted for. A strong and volatile exchange rate reduces the private investment rate, which probably reflects the negative effects of an overvalued exchange rate on the investment decisions of export-oriented firms (columns 3 and 4).

Table 10: The determinants of private investment

Dependent variable: Private investment/GDP				
	OLS (1)	FE (2)	OLS (3)	FE (4)
Explanatory variables	Coeff.	Coeff.	Coeff.	Coeff.
FDI/GDP	-0.052 (0.054)	0.360*** (0.058)	-0.049 (0.059)	0.402*** (0.053)
Public investment/GDP	-0.182*** (0.040)	-0.051 (0.051)	-0.225*** (0.050)	0.041 (0.053)
GDP growth	0.097*** (0.031)	0.046 (0.029)	0.074** (0.035)	0.026 (0.028)
Openness	0.047*** (0.006)	0.060*** (0.012)	0.056*** (0.008)	0.046*** (0.014)
Log of telephone subscribers	1.094*** (0.148)	0.063 (0.292)	1.250*** (0.165)	-0.198 (0.302)
Post-1997 dummy	-0.501 (0.448)	-0.081 (0.583)	-0.112 (0.547)	-0.361 (0.545)

REER detrended			-0.022***	-0.011**
			(0.006)	(0.005)
REER volatility			-0.010	-0.037***
			(0.006)	(0.007)
F-Statistic	50.60***	17.96***	35.80***	23.35***
No. of obs.	806	806	536	536

Notes: Standard errors reported in parentheses; *** - significant at the 1% level, ** - significant at the 5% level, and * - significant at the 10% level

OLS = robust OLS regression where outliers are weighted; FE = fixed effects regression

Source: UNCTAD FDI online database, World Bank Africa Database 2006, World Development Indicators online database

Table 11: The impact of investment on the labour market

Explanatory vars.	Dependent variable					
	Manufacturing Wage		Wage differential		Size of labour force	
	OLS (1) Coeff.	FE (2) Coeff.	OLS (1) Coeff.	FE (2) Coeff.	OLS (1) Coeff.	FE (2) Coeff.
FDI/GDP	36.897*** (6.121)	-5.600* (3.348)	36.161*** (6.984)	-9.954** (3.803)		
PRIV/GDP	8.690*** (2.895)	2.824* (1.591)	7.185** (3.304)	2.542 (1.807)		
PUB/GDP	-4.425 (3.380)	6.501 (1.888)	-4.775 (3.857)	7.251*** (2.143)		
Log of FDI					-0.042* (0.024)	0.054*** (0.005)
Log of private inv.					-0.022 (0.037)	0.083*** (0.011)
Log of public inv.					0.917*** (0.051)	0.007 (0.014)
F-Statistic	29.80***	4.98***	20.08***	5.66***	215.53	102.65***
No. of obs.	127	127	127	127	645	645

Notes: Standard errors reported in parentheses; *** - significant at the 1% level, ** - significant at the 5% level, and * - significant at the 10% level

OLS = robust OLS regression where outliers are weighted; FE = fixed effects regression

Source: UNCTAD FDI online database, World Bank Africa Database 2006, World Development Indicators online database

In terms of the impact of investment on the labour market, the effect of FDI on wages is not robust, while domestic private investment appears to be associated with both higher monthly manufacturing wages and wage differential (Table 11, columns 1 and 2).

Another question explored in the literature is whether FDI generates more employment than domestic investment. In this regard, Spiezia (2004) finds that the impact of FDI on

employment is increasing with per-capita income, and in low-income countries, the effect of FDI is in fact insignificant. However, our own evidence reported in Table 11 (columns 3 and 4) suggests that the elasticity of employment with respect to both FDI and private investment are positive, though the coefficient on the latter is larger in magnitude. These results suggest that capital accumulation has been accompanied by employment creation, or at least that investment in physical capital has not displaced labour in this sample of African countries. Therefore promoting an investment friendly environment that both attract foreign capital and encourages domestic investment is a viable means for stimulating employment creation in African countries.

5. Conclusion

The objective of this study was to contribute to the literature on the causes and effects of FDI in African economies by focusing on the linkages between FDI and domestic factor markets. In particular, the study investigated whether domestic investment and labour market characteristics contribute to attracting FDI and are affected by FDI. While the literature has provided much evidence on the determinants of FDI (although much less is still known in the case of African countries) and the effects of FDI on growth, very little is known about how FDI itself affects domestic factor markets. Understanding the linkages between FDI and factor market is key to uncovering the channels through which FDI affect economic performance, which helps to identify the policy levers that may be activated to maximize both FDI inflows and the gains from FDI for the host economy. This paper attempted to fill this gap.

The empirical results in this study show that the relationship between FDI and domestic investment runs both ways, especially in the case of private investment. However, the results also clearly indicate that the impact of private investment on FDI is stronger and more robust than the reverse relation. This result has important policy implications. In particular, the evidence suggests that African countries will benefit from measures aimed at promoting domestic private investment given that a strong investment performance will serve as a sign of high returns to capital, which in turn will attract more foreign capital. In contrast, any temptation to offer disproportionate advantages to foreign investors would be ill advised given that, from the evidence in this study, FDI does not appear to strongly boost domestic private investment. National policies should aim at harnessing complementarities between domestic private investment and FDI rather than regarding them as substitutes.

The analysis in this study yields much less robust evidence on the linkages between FDI and labour market characteristics and outcomes in this sample of African countries. We find no robust evidence in support of the prediction that high wages discourage FDI. Moreover, while high FDI appears to lead to higher wages, this result is not robust. The implication of these results is that repressing wages will not buy African countries very much in terms of FDI, while such wage repression will definitely have adverse social effects. Efforts towards more labour market flexibility need to be justified on the basis of other economic and social goals but certainly not as a means of attracting more FDI. Strategies for attracting FDI should focus on improving conditions and incentives for private investment, including consolidating macroeconomic and political stability, and improving the supply, quality, and reliability of public infrastructure.

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Appendix I – Data

Countries in the sample: Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Central African Republic, Chad, Republic of Congo, Cote d'Ivoire, Ethiopia, Gabon, The Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mozambique, Namibia, Niger, Nigeria, Rwanda, Senegal, Seychelles, South Africa, Sudan, Swaziland, Tanzania, Togo, Uganda, Zambia, Zimbabwe

Appendix II – Tables

Table A1: Summary Statistics – FDI, private and public investment

Country	FDI/GDP	PRIV/GDP	PUB/GDP
Angola	6.93	12.25	6.07
Benin	1.18	8.60	7.52
Botswana	2.32	21.18	12.65
Burkina Faso	0.27	11.65	8.58
Burundi	0.19	1.86	10.71
Cameroon	0.40	16.89	4.13
Central African	0.39	4.90	5.73
Chad	6.16	8.08	6.85
Congo, Rep.	3.45	15.88	7.92
Cote d'Ivoire	1.30	9.69	6.58
Ethiopia	1.29	12.51	5.64
Gabon	0.57	23.21	9.61
The Gambia	2.79	10.81	8.82
Ghana	1.38	8.48	9.26
Guinea	0.99	10.43	6.60
Guinea-Bissau	1.09	6.78	20.51
Kenya	0.37	9.70	6.27
Lesotho	2.35	33.86	15.60
Madagascar	0.50	6.06	7.13
Malawi	0.93	6.02	10.59
Mali	1.25	12.72	9.43
Mauritania	1.68	13.07	7.76
Mauritius	0.80	18.63	5.62
Mozambique	2.32	12.59	10.83
Namibia	3.40	11.45	9.03
Niger	0.84	3.64	8.31
Nigeria	2.46	9.84	9.30
Rwanda	0.50	8.21	9.65
Senegal	0.85	8.88	5.03
Seychelles	5.21	15.52	10.59
South Africa	0.55	10.03	7.07
Sudan	1.58	11.42	3.87
Swaziland	3.78	15.90	7.59
Tanzania	2.23	12.46	5.83
Togo	1.66	11.23	6.60
Uganda	1.65	10.07	5.28
Zambia	2.80	6.68	8.14
Zimbabwe	0.59	14.13	2.54

Notes: FDI/GDP = foreign direct investment/GDP; PRIV/GDP = gross private investment/GDP; PUB/GDP = gross public investment/GDP.

Source: UNCTAD FDI online database, World Bank Africa Database 2006