



Foreign Direct Investment and Neighbouring Influences - Empirical Testing and Policy Recommendations

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*World-class economic
models for Africa*

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Outline

- Introduction
- Theory and case studies of FDI
- FDI trends and magnitudes
- Empirical estimation of determinants of FDI
- Policy implications
- Conclusion



**“Your poster of the Swiss Alps
is disconcerting investors.”**

Motivation of study

- If Africa wants to reduce the number of people living in poverty by 50 per cent by 2015,
 - a sustained annual growth rate of above 7 per cent per year and
 - a resource gap of US\$64 billion need to be filled.
- Countries that integrate faster in the global economy produce faster growth and *vice versa*.

Objective and research methodology

- To identify the determinants of FDI.
- Test determinants empirically by making use of panel econometric techniques.
- Test neighbouring influences on host country FDI flows.

GOAL: TO ENHANCE FDI POLICY IN AFRICA

Role of FDI (1)

- Developing countries are increasingly aware of the role of FDI
 - as an engine of growth in their economies,
 - to improve trade and development,
 - to improve the general welfare of the population.

Role of FDI (2)

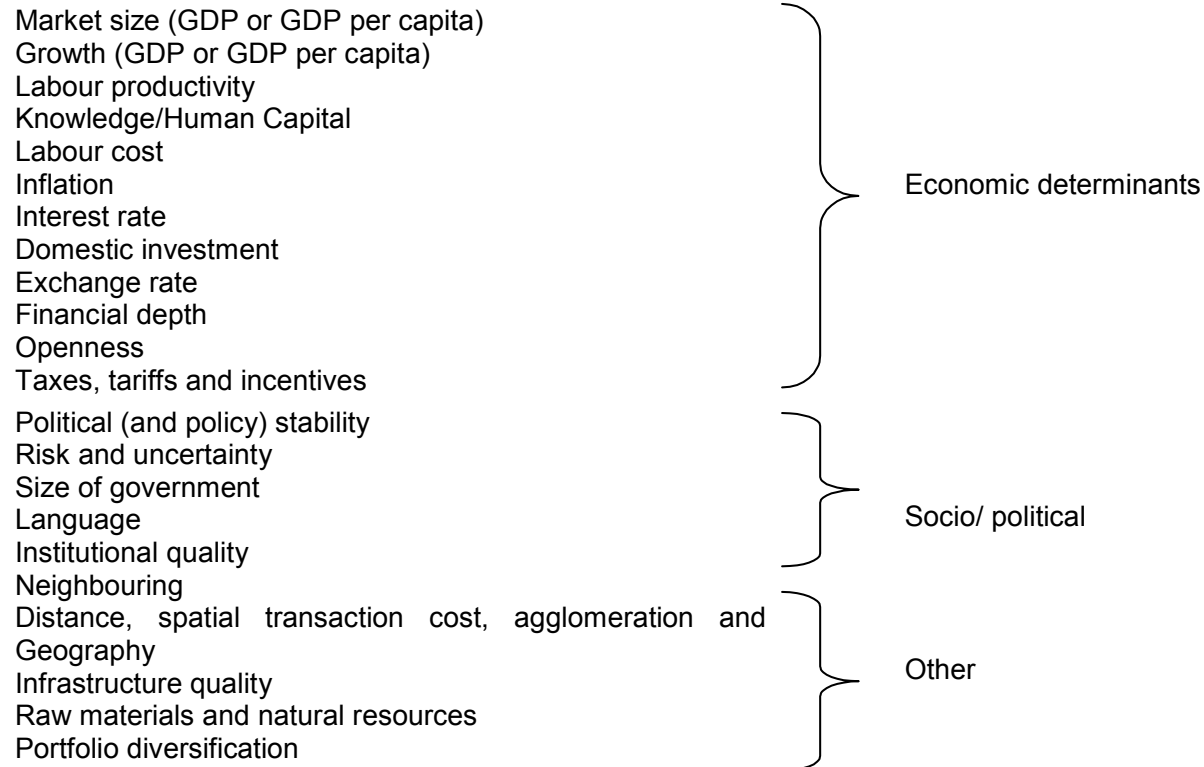
FDI:

- Brings new skills and technology to an economy.
- Increases the host country's access to external markets.
- Broadens the domestic capital base.
- Shares project risk.
- Provides employment.
- Increases tax revenues for governments to reinvest in social sectors and infrastructure improvements.

Theories and hypothesis of FDI

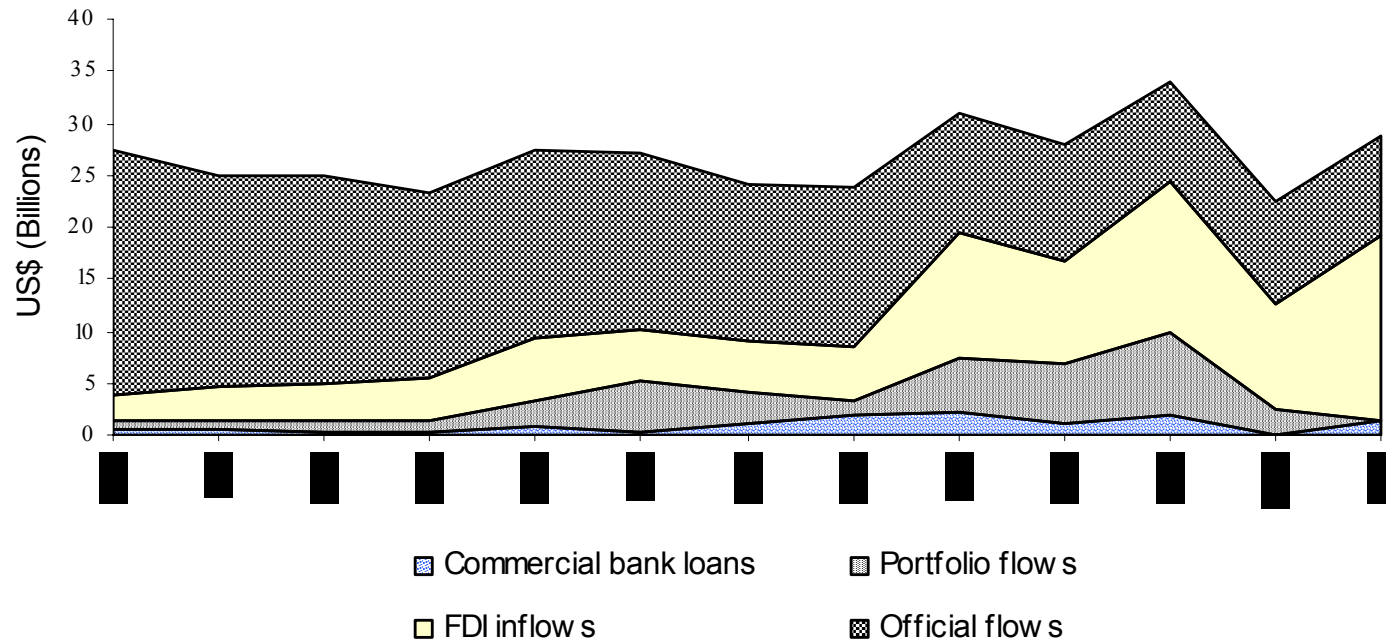
Macro theories	Micro theories
Theories of Industrial Organisation	
<i>Why are firms of one nationality able to penetrate (through FDI) the value added territory of firms of another nationality?</i>	
	Theories of Industrial organisation
Theories of the Firm	
<i>Why (and how do) firms expand their territorial boundaries outside their home countries?</i>	
Product cycle	Transaction related
Internationalisation process	Resource based/Raw materials
	Strategy related (and Oligopolistic production)
	Option theory
	Internalisation
Theories of Trade	
<i>Why do firms engage in FDI rather than trade; and how does FDI effect existing trade theories?</i>	
Macro (country oriented)	Micro (firm/industry oriented)
Theories of Location	
<i>What determines where firms locate their value added activities?</i>	
Theory of location (General)	Clustering and agglomeration
Internationalisation	Knowledge enhancing
Market size	Output
Exchange rate/currency area	Spatial transaction cost
	Taxes, subsidies and/or tariffs and incentives
	Cheap labour
Theories of FDI	
<i>What explains the extent to which firms finance their foreign activities by equity capital exports from their home country?</i>	
<i>What determines the location of such FDI?</i>	
Risk uncertainty	Portfolio diversification hypothesis
Exchange rate/market imperfections	Differential rate of return
Liquidity	Behavioural
Radical view	
Dependency school	
Theories on FDI based on Macro and Micro Principles	
Eclectic Approach	
Integrative School	

Determinants of FDI



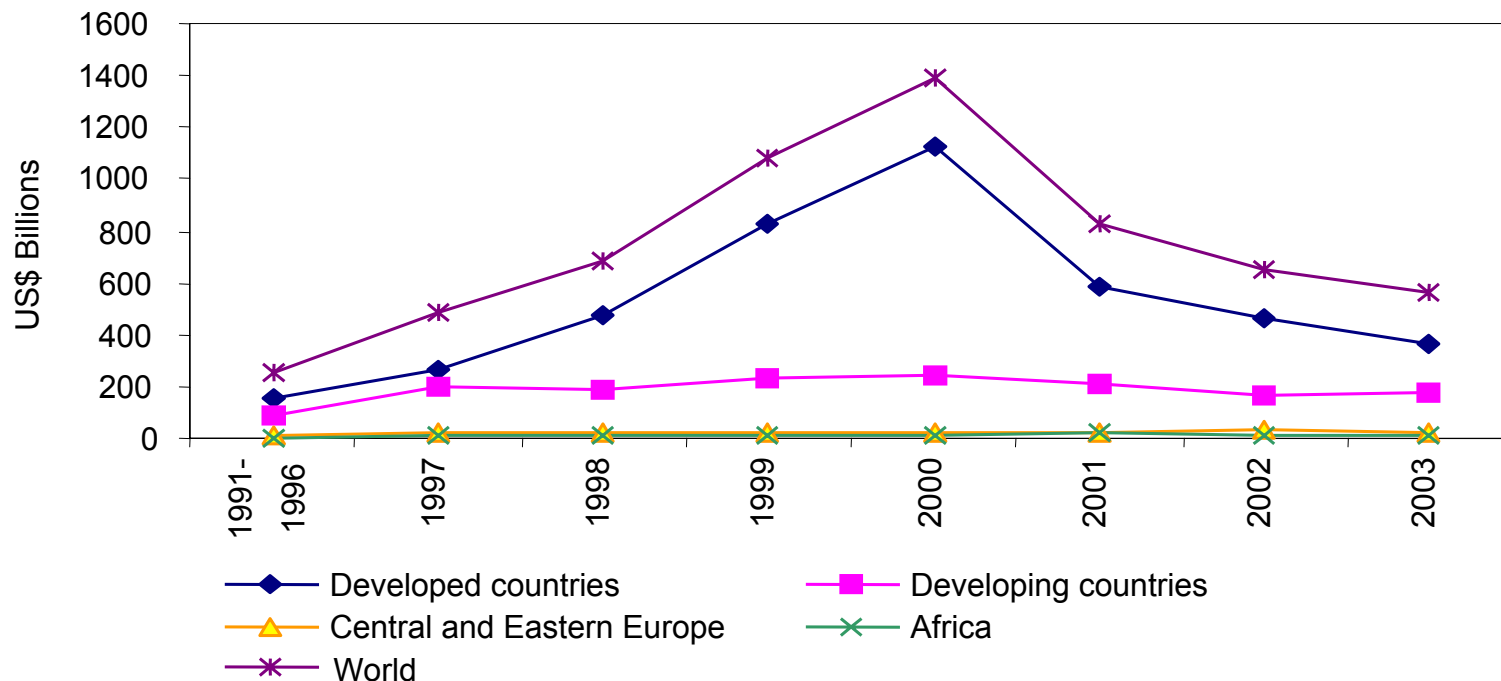
FDI trends and magnitudes (1)

Total external resource inflows to Africa, by type of inflow, 1990 to 2002



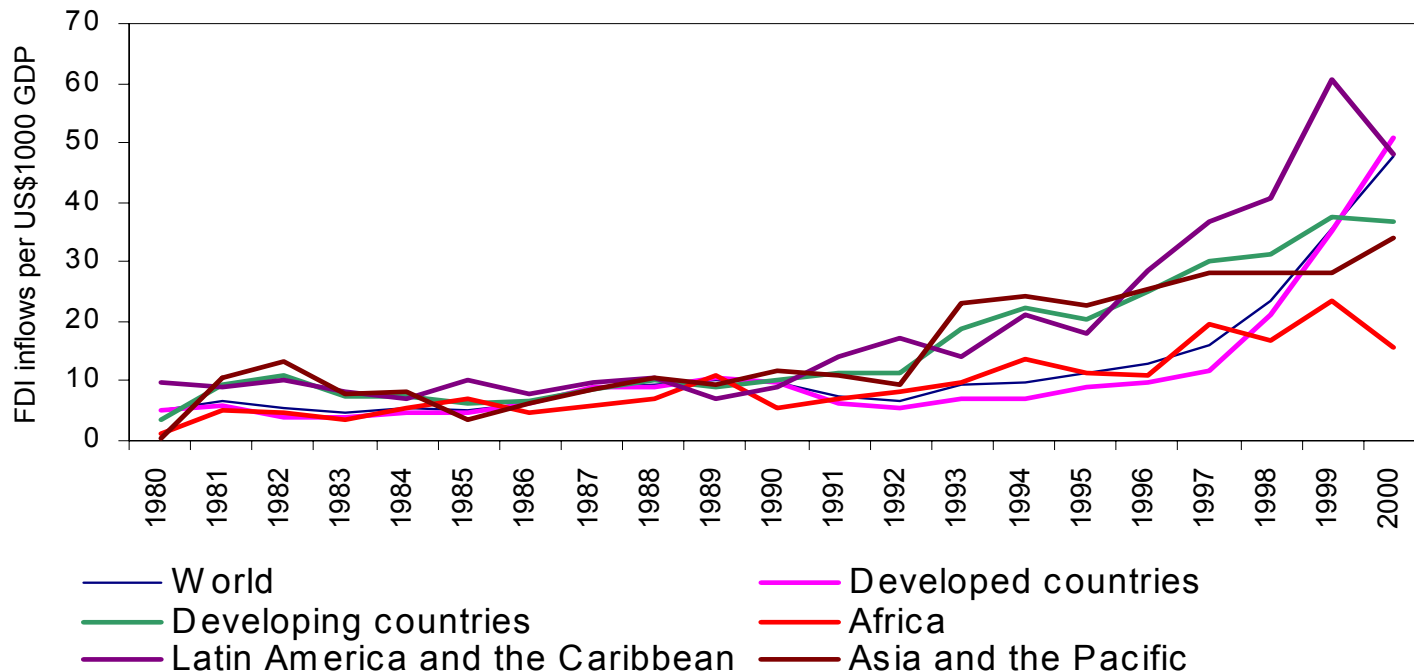
FDI trends and magnitudes (2)

FDI inflows for selected regions from 1991 to 2003



FDI trends and magnitudes (3)

FDI inflows per US\$1000 of GDP, 1980 to 2000



FDI trends and magnitudes (4)

- *FDI Performance index* (140 countries - average for 1999 to 2001).
 - Angola 2nd, Congo 16th, Mozambique 24th, Namibia 34th, United Republic of Tanzania 40th, Morocco 46th
- *FDI Potential index*
 - Not one of the African countries, is ranked in the top 50 places.
 - Botswana 59th, Egypt 70th, South Africa 72nd, Tunisia 73rd, and Gabon 77th

Data and panels

- Panel data has been used for 64 different countries from 1980 to 1998
- 4 Panels
 - 16 developed
 - 12 emerging
 - 36 African
 - top 10 African FDI countries

Indicators and data used

- World Bank Development Indicators (WB),
- World Bank African Database,
- International Financial Statistics (IMF),
- United Nations Conference on Trade and Development (UNCTAD) data,
- Institutional Investor's Country Credit ratings and
- Freedom House (FH) indices.

An exposition of data

Developed, Emerging and African from 1980 to 1989 and 1990 to 2000 respectively.

	Developed 1980 to 1989			Developed 1990 to 2000			% change between periods	Emerging 1980 to 1989			Emerging 1990 to 2000			% change between periods	African 1980 to 1989			African 1990 to 2000			% change between periods
	Mean	σ_i	$\bar{\sigma}_i$	Mean	σ_i	$\bar{\sigma}_i$		Mean	σ_i	$\bar{\sigma}_i$	Mean	σ_i	$\bar{\sigma}_i$		Mean	σ_i	$\bar{\sigma}_i$	Mean	σ_i	$\bar{\sigma}_i$	
FDI	0.8	0.8	0.5	2.8	3.64	3.1	273.3	1.5	2.1	0.8	3.3	3.4	2.1	124.5	1.1	2.3	1.4	2.2	4.5	1.7	103.7
MS	23389.1	6690.5	1609.9	27419.1	7884.8	1744.4	17.2	3921.6	4261.5	370.2	5096.6	5841.3	436.4	30.0	839.3	1088.9	80.7	724.5	904.3	43.3	-13.7
G	2.5	1.6	1.8	2.1	1.6	1.7	-17.5	4.5	4.6	3.9	5.1	3.8	3.8	13.7	3	5.6	5	2.6	5.2	4.2	-14.6
GC	2.0	1.5	1.8	1.5	1.5	1.7	-27.7	2.4	4.6	3.8	3.1	3.9	3.8	27.0	0.1	5.8	5.2	-0.6	6.1	4.7	-489
OPN1	0.5	0.2	0.03	0.6	0.29	0.07	25.0	0.5	0.3	0.06	0.7	0.7	0.1	45.8	0.7	0.4	0.1	0.6	0.4	0.07	-16.7
OPN2	20743.2	40195.9	1820.3	26596.3	45484.6	4433.6	28.2	5499.4	4800	728.6	6716.8	16126.2	1339	22.1	540	669.8	90.7	522.2	733.5	68.9	-3.3
T	416.7	79.7	41.5	529.6	73.9	35.4	27.1	75	97	76.6	130.4	142.1	26.2	75.1	8.1	12.9	1.4	14.4	21.1	3.2	76.9
EP	100.4	5.8	1.3	102.2	4.3	2.7	1.8	103.5	8.2	2.2	104.6	13.3	3.3	1.0	72.2	34.3	5.5	77.3	30.5	7.9	7.1
ES	91.7	9.4	2.2	111.7	14.9	12.3	21.8	53.9	18.3	3.4	65.3	16.7	7.2	21.2	24.1	18.1	2.6	27.1	21.8	2.4	12.7
ET	33.7	13.2	3.7	52	15.6	8.6	54.5	16.6	10.4	2.3	23.3	9.4	3.2	40.2	2.5	3.2	0.4	3.9	4.9	0.7	53.5
FH	1.16	0.2	0.03	1.16	0.25	0.05	0.0	4.1	1.6	0.6	3.63	1.5	0.5	-11.9	5.6	1.2	0.4	4.9	1.4	0.7	-12.2
CC	84	8.5	2.8	83.6	7.16	3.4	-0.5	44.7	18.2	8	42.6	18	5.4	-4.6	24.7	15.1	4.4	21.5	11.6	3.1	-13.0
R	5.3	2.7	2.6	6.3	2.4	2.1	18.6	6.5	9.2	6.6	6.2	11.3	6	-4.0	1.3	12.3	8.1	6.34	15.3	8.5	387.7
INFL	7.1	4.2	3.5	2.7	1.4	1.8	-61.9	69.6	162.9	96.8	71	213.7	124.9	2.0	21.0	27.6	11.8	133.8	634.6	255.2	535.9
PURB	74	13.4	0.6	76.5	10.5	0.9	3.4	56.6	26.3	2.1	62.8	26	1.6	10.9	28.4	15.3	1.9	35.2	16.9	2.1	23.9
PIT	-	-	-	-	-	-	-	27.6	18.2	4.2	-	-	-	-	-	-	-	-	-	-	-

Note: - no values

Source: Own calculations

$\bar{\sigma}_i$ represents the average standard deviation over countries.

$\bar{\sigma}_t$ represents the average standard deviation over time.

Estimation techniques and hypothesis testing

- Pooled estimation
- Least Square Dummy variables
- Cross-section Seeming Unrelated Regressions (SUR)
- Unit root test for panel data (Im, Pesaran and Shin 1997)
- Test for cointegration (McCoskey and Kao 1999)
- Cross-section specific fixed effects (F-test)
- Serial correlation test for panel data (Durbin-Watson and Lagrange Multiplier)
- Test for heteroskedasticity (Lagrange Multiplier)

Empirical results – Country determinants (1)

$$\left(\frac{fdi}{gdp}\right)_{it} = b_1 + b_2 \ln\left(\frac{cc}{ms}\right)_{it} + b_3 \ln(fh_{it}) + b_4 \ln\left(\frac{et}{ep}\right)_{it} + b_5 \ln(t_{it}) + b_6 \ln(opn_{it}) + \varepsilon_{it} \dots(1)$$

$$\left(\frac{fdi}{gdp}\right)_{it} = b_1 + b_2 \ln\left(\frac{cc}{ms}\right)_{it} + b_3 \ln(fh_{it}) + b_4 \ln\left(\frac{et}{ep}\right)_{it} + b_5 \ln(t_{it}) + b_6 \ln(opn_{it}) + b_7(g_{it}) + b_8 \ln(purb_{it}) + b_{12}(doil) + \varepsilon_{it} \dots(2)$$

$$\left(\frac{fdi}{gdp}\right)_{it} = b_1 + b_2 \ln\left(\frac{cc}{ms}\right)_{it} + b_3 \ln(fh_{it}) + b_4 \ln\left(\frac{et}{ep}\right)_{it} + b_5 \ln(t_{it}) + b_6 \ln(opn_{it}) + b_7(g_{it}) + b_8 \ln(purb_{it}) + b_{11}(pit_{it}) + \varepsilon_{it} \dots(3)$$

$$\left(\frac{fdi}{gdp}\right)_{it} = b_1 + b_2 \ln\left(\frac{cc}{ms}\right)_{it} + b_3 \ln(fh_{it}) + b_4 \ln\left(\frac{et}{ep}\right)_{it} + b_5 \ln(t_{it}) + b_6 \ln(opn_{it}) + b_7(g_{it}) + b_8 \ln(purb_{it}) + b_9 \ln(ree_{it}) + b_{10}(r_{it}) + \varepsilon_{it} \dots(4)$$

Estimation Outputs (Dependent Variable is FDI/GDP)

	Developed			Emerging			Africa (Total sample)	Africa (Top ten FDI sample)		
	Eq 6.2	Eq 6.2	Eq 6.2	Eq 6.3	Eq 6.3	Eq 6.3	Eq 6.4	Eq 6.4	Eq 6.4	Eq 6.4
	Pooled	LSDV	CS SUR	Pooled	LSDV	CS SUR	Pooled	Pooled	LSDV	CS SUR
Log(CC/MS)	1.795 (4.109)	-0.296 (-0.275)	* (-3.738)	0.841 (5.620)	1.509 (3.975)	2.058 (8.847)	0.508 (1.867)	-0.298 (-0.231)	-2.607 (-1.681)	-0.319 (-0.638)
Log(ET/EP)	0.270 (1.086)	0.578 (1.374)	-0.941 (-3.738)	-1.830 (-5.964)	0.991 (1.221)	* (2.409)	-0.551 (-2.630)	-3.133 (-5.025)	-0.257 (-0.144)	0.914 (1.745)
Log(T)	4.585 (3.036)	-4.352 (-1.846)	* (2.409)	2.881 (9.966)	1.879 (3.104)	-1.121 (-2.409)	0.655 (3.993)	1.311 (1.380)	-0.700 (-0.526)	* (2.198)
Log(OPN1)	1.575 (4.494)	9.220 (4.862)	8.234 (8.397)	4.763 (13.11)	5.351 (4.968)	7.904 (11.487)	0.834 (3.583)	1.839 (3.456)	3.868 (2.503)	0.78 (2.198)
Log(FH)	-0.686 (-2.508)	-0.516 (-1.429)	0.214 (1.294)	0.038 (0.179)	-0.114 (-0.388)	* (-4.785)	-0.528 (-1.025)	-10.54 (-4.021)	-5.795 (-2.527)	-2.676 (-4.785)
G	0.090 (2.521)	0.050 (1.644)	0.029 (2.629)	0.021 (1.216)	0.027 (1.460)	0.0009 (1.492)	0.083 (3.155)	0.104 (1.199)	-0.008 (-0.125)	See A8
Log(PURB)	1.206 (1.664)	4.950 (1.371)	9.338 (2.029)	0.869 (5.268)	2.565 (2.050)	5.533 (4.587)	-0.075 (-0.190)	2.663 (1.274)	23.35 (5.168)	14.097 (5.99)
Log(REE)	-0.738 (-0.718)	0.899 (0.686)	* (-3.089)	-	-	-	-	-	-	-
R	-0.025 (-0.992)	-0.010 (-0.418)	-0.026 (-3.089)	-	-	-	-	-	-	-
Log(PIT)	-	-	-	-1.214 (-8.312)	-1.084 (-3.957)	-0.691 (-6.763)	-	-	-	-
DOIL	-	-	-	-	-	-	0.905 (2.285)	-	-	-
C	-3.091 (-0.666)	*	*	1.570 (1.581)	*	*	1.382 (0.640)	-0.908 (-0.099)	*	*
Method	OLS	OLS	GLS	OLS	OLS	GLS	OLS	OLS	OLS	GLS
R ² adj	0.26	0.51	0.91	0.66	0.68	0.93	0.06	0.19	0.55	0.83
F stat	12.08	13.25	46.144	56.7	25.85	77.102	5.98	6.9	13.8	25.03
N	16	16	16	13	13	13	36	10	10	10
T	19	19	19	19	19	19	19	19	19	19
Number of observations	281	281	281	230	230	230	622	169	169	169

Source: Own calculations

Notes: t-statistics are shown in parentheses, country fixed effects are omitted from this table.

* The country specific results are omitted from this table, for more detail see Jordaan 2004.

Empirical results – Country determinants (2)

- Decreasing risks, improved infrastructure, a higher degree of openness, higher levels of urbanisation and higher growth rates lead to increases in FDI.
- Higher levels of human capital attract FDI to developed countries but decrease FDI to emerging and African countries.
- In Africa, the elasticities with respect to the freedom house variable, are much larger compared to developed and emerging country elasticities.
- African countries endowed with natural resources, especially oil, explain part of the FDI inflows.

Empirical results – Neighbouring country determinants (1)

- Globalised world, more regional integration with respect to policy, political, economic and social matters – neighbours more important.

$$n_{-}x_{it} = \sum_{\substack{j=1 \\ i \neq j}}^N \left(\frac{gdp_{jt}^n}{\sum_{j=1}^N (gdp_{jt}^n)} (x_{jt}^n) \right) \dots(5)$$

$$\left(\frac{fdi}{gdp} \right)_{it} = b_1 + b_2 \ln \left(\frac{n_{-}cc}{n_{-}ms} \right)_{it} + b_3 \ln(n_{-}fh_{it}) + b_4 \ln \left(\frac{et_{it}}{ep_{it}} \right) + b_5 \ln(t_{it}) + b_6 \ln(opn_{it}) + \varepsilon_{it} \dots(6)$$

$$\left(\frac{fdi}{gdp} \right)_{it} = b_1 + b_2 \ln \left(\frac{n_{-}cc}{n_{-}ms} \right)_{it} + b_3 \ln(n_{-}fh_{it}) + b_4 \ln \left(\frac{n_{-}et}{n_{-}ep} \right)_{it} + b_5 \ln(n_{-}t_{it}) + b_6 \ln(n_{-}opn_{it}) + b_7(n_{-}g_{it}) + \varepsilon_{it} \dots(7)$$

Estimation Output Neighbouring Countries (Dependent Variable FDI/GDP of Host Country)

	Developed			Emerging			Africa (Total sample)		Africa (Top ten FDI sample)		
	Eq 7.3	Eq 7.3	Eq 7.3	Eq 7.3	Eq 7.3	Eq 7.3	Eq 7.3	Eq 7.3	Eq 7.3	Eq 7.3	Eq 7.3
	Pooled	LSDV	CS SUR	Pooled	LSDV	CS SUR	Pooled	LSDV	Pooled	LSDV	CS SUR
Log(N_CC/N_MS)	-0.621 (-4.552)	-3.132 (-3.25)	-0.735 (-32.034)	-0.584 (-5.354)	1.074 (2.157)	*	-0.496 (1.584)	-0.477 (-0.844)	-4.522 (-3.53)	2.553 (1.186)	*
Log(N_ET/N_EP)	1.118 (4.891)	1.435 (3.15)	1.599 (20.415)	4.384 (5.594)	-3.843 (-2.510)	*	-0.048 (-0.212)	1.707 (3.969)	1.338 (1.481)	7.782 (5.984)	6.99 (8.99)
Log(N_OPN)	-0.226 (-0.931)	-1.250 (-1.68)	1.076 (7.676)	2.482 (4.955)	6.501 (4.978)	*	-0.498 (-1.428)	1.852 (2.299)	0.843 (0.966)	5.863 (2.575)	4.142 (4.867)
Log(N_FH)	1.392 (2.586)	1.681 (1.483)	0.757 (3.676)	2.032 (2.218)	0.439 (0.400)	1.361 (1.771)	-2.810 (-6.344)	-1.511 (-2.925)	-6.472 (-5.58)	-0.569 (-0.445)	0.376 (0.498)
Log(N_T)	-1.307 (-1.589)	-1.759 (-1.364)	-3.087 (-13.022)	-1.793 (-6.029)	4.189 (6.462)	0.782 (1.736)	0.362 (2.055)	-0.073 (-0.192)	-1.156 (-1.78)	-1.45 (-1.059)	-1.412 (-2.905)
Log(N_G)	-0.008 (-1.27)	-0.009 (-0.598)	*	0.041 (1.291)	-0.044 (1.811)	*	0.013 (1.226)	0.016 (0.987)	-0.089 (-0.912)	-0.05 (-0.65)	0.01 (0.515)
C	2.069 (1.06)	*	*	5.124 (5.093)	*	-0.007 (-0.985)	3.415 (2.283)	*	5.296 (1.079)	*	*
Method	OLS	OLS	GLS	OLS	OLS	GLS	OLS	OLS	OLS	OLS	GLS
R ² adj	0.10	0.49	0.98	0.27	0.49	0.95	0.12	0.38	0.28	0.54	0.78
F-stat	6.83	14.73	623.39	15.9	14.73	72.47	15.68	10.87	12.7	14.92	26.85
N	16	16	16	13	13	13	36	36	10	10	10
T	19	19	19	20	20	20	19	19	19	19	19
Number of observations	301	301	301	248	248	248	648	648	176	176	176

Source: Own calculations

Notes: t-statistics are shown in parentheses, country fixed effects are omitted from this table.

* The country specific results are omitted from this table, for more detail see Jordaan 2004.

Empirical results – Neighbouring country determinants (2)

- Higher levels of education in neighbouring countries increase host country FDI.
- If the openness of neighbours in the developed sample increases, FDI in the host country decreases, the opposite is true in the emerging and African sample.
- If the FH index in neighbouring countries in the African samples worsens, FDI in the host country decreases. The opposite is true in developed and emerging countries.

Empirical results – Neighbouring country determinants (3)

- If infrastructure in neighbouring countries improves, FDI in host country decreases. (African sample shows conflicting results).
- If growth in neighbouring countries increases, FDI in the developed sample declines. The opposite is true for emerging countries – if growth in the neighbouring countries increases, FDI in the host country increases. The results in the African samples show statistically insignificant results.

Policy for attracting FDI (1)

- The key of attracting FDI is to establish investor's confidence and to offer an attractive FDI environment.
- Long-term aim of stabilisation and decreasing risk.
- Stimulating domestic economic growth and encouraging sustainable flows of FDI.
- Creating opportunities for investors of making long-term profits.



Policy for attracting FDI (2)

- Problem in Africa – after privatisation and growth policies, FDI response is poor.
- “... although SSA has reformed its institutions, improved its infrastructure and liberalised its FDI regulatory framework, the degree of reforms has been mediocre compared with the reform implemented in other developing countries. As a consequence, relative to other regions, SSA has become less attractive for FDI.” (Asiedu, 2004: 41)

Policy for attracting FDI (3)

Determinants of FDI

Market size (GDP or GDP per capita)
Growth (GDP or GDP per capita)
Labour productivity
Knowledge/Human Capital
Labour cost
Inflation
Interest rate
Domestic investment
Exchange rate
Financial depth
Openness
Taxes, tariffs and incentives

Political (and policy) stability
Risk and uncertainty
Size of government
Language
Institutional quality
Neighbouring
Distance, spatial transaction cost,
agglomeration and Geography
Infrastructure quality
Raw materials and natural resources

Situation in Africa compared to other regions

Smaller
Lower
Lower
Lower
Higher
Higher and more unstable
More volatile
Lower
More unstable and volatile
Lower
Slightly less open in Africa
Higher (and more) tariffs and
taxes
More unstable
Higher risk and uncertainty
Larger
More diverse
Lower quality
Neighbours performing worse
Worse off

Poorer quality
More abundant

Policy for attracting FDI (4)

- 1st – countries liberalise their FDI regimes and adopt market-friendly policies.
- 2nd – countries actively seek to attract FDI by using proactive measures, like marketing (IPA).
- 3rd – countries target foreign investors at the level of industries and firms to meet their specific locational needs at the activity and cluster level in light of a country's development priorities.

Policy for attracting FDI (5)

1st Generation policy

- Maintenance of macroeconomic stability.
 - Pro-investment fiscal policies.
 - Monetary policies
 - Foreign exchange policies
- Improved infrastructure
- Legal and regulatory framework
- Improved political rights and civil liberty
- Competition policy
- Sound labour market institutions and regulations

Policy for attracting FDI (6)

1st Generation policy

- Role of the state must be redefined.
- Promoting greater openness.
- Government should focus on social development.
- Governments must be more transparent and more accountable.
- Implementing and ensuring a successful reform of the financial sector.

Policy for attracting FDI (7)

Performance of neighbouring countries:

- Negative influence of neighbouring countries seems to be especially problematic in Africa.
- Stable, low risk neighbours in Africa are of great importance to host country FDI,
 - increased cooperation and collaboration among neighbouring countries for policy development, improvement and coherence,
 - economic and political pressure on the neighbouring countries, by the host countries and the international community,
 - support from the international community,
 - to create a more positive image of Africa.

Policy for attracting FDI (8)

2nd Generation policy

- Investment promotion agencies (IPA).
- 35 African countries part of the WAIPA.
- The effectiveness of these FDI promotion agencies in Africa is generally low.
- Agencies can be government, quasi government organisations and private organisations.
- Under-funded in Africa, insufficient private sector participation.
- Improved targeting and improved investment promotion strategies are needed to market Africa as a potential FDI destination

Policy for attracting FDI (9)

3rd Generation policy for attracting FDI

- Target investors at industry or firm level
- Meet their specific locational needs
- Agglomeration
- Develop locational 'brand names'

Conclusion

- Africa receives in absolute terms much less FDI.
- Africa does not receive much less FDI in relative terms looking to small GDP levels.
- A number of economic, social and political variables of home country and neighbouring countries, have a significant influence in determining FDI inflows.
- A number of 1st generation policies still need to be addressed.



Thank you!

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models for Africa*

