RISK, UNCERTAINTY AND FOREIGN DIRECT INVESTMENT IN AFRICA: What Do We Know and Any Policy Lessons?

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ABSTRACT

This paper revisits the relationship between risks, uncertainties and FDI inflows in Africa, using recent data and twelve different measures of risk and uncertainty. Empirical estimation involves the use of panel fixed and random effects estimation techniques, with annual data covering 2000 – 2012. The results show that economic openness and level of external reserves are important macroeconomic variables that attract FDI inflows on the continent. As regards the significance of some of the measures of risk and uncertainty, it was found that while sound public administration, good competitive environment and investment climate have a positive impact on FDI inflows, sound fiscal policy, improved infrastructure and better environmental policy discourage FDI net inflows. An important implication of the results is that African countries need to balance their policy objectives and make a choice between better welfare for their citizens through the provision of better infrastructure and environmental policies, and that of attracting more FDI inflows.

JEL classification: D81, F21, F23

1. Introduction

The importance of finance in shaping economic prosperity cannot be over-emphasized as it aids production activities (King and Levine, 1993). A common

characteristic of many developing countries is the inadequacy of the financial resources needed to stimulate growth and development; this is often due to limited domestic saving to fund productive investment (Deaton, 1989; Loayza et al., 2000). Consequently, countries have to rely on external sources of investment in the form of portfolios and foreign direct investment (FDI). However, FDI does not just flow into countries; there are several factors that affect such flow, typical among which is the extent of risks and uncertainties prevailing in the receiving economies. Since investors are often risk averse and have preference for securities that yield high returns on their investment (both at individual and organizational levels), risks and uncertainty repel investment (Bernanke, 1983; Abel, 1983). Risks to investment may arise from macroeconomic, political or social uncertainties. In this regard, countries usually embark on different policy measures and endeavour to create a conducive environment to attract FDI (Lewandowski, 1997; Solomon, 2007).

Although the degree of risks and uncertainties varies across countries in the continent, many African countries are characterized by political uncertainty, macroeconomic instability, and ethnic and social tensions. In spite of this, FDI flow to the region has continued to increase in absolute terms over the years. For example, from an average of about US$1,844 million in the period 1981-85, the flow of FDI to Africa rose to US$47,150 million for 2011-12. However, the share of FDI flows to sub-Saharan Africa (SSA) has been on the decline when compared to other regions such as Europe, Latin America and the Caribbean, and East Asia and the Pacific. Given this trend, African governments have continued to put in place policies and programmes to improve their macroeconomic and political environment, as an incentive for FDI inflows. The resultant outcome has been variations in the pattern of FDI flows across various countries in the region. As noted by Lemi and Asefa (2001) and Asiedu (2002), many of the factors that affect FDI in other regions of the world have little impact in Africa; hence, it becomes pertinent to determine the specific nature of the effect of risks and uncertainties on FDI in Africa. Also, there is the need to account for the effect of the divergent characteristics of countries in the determination of the relationship between risk, uncertainty and FDI in the African region.

In this paper, while not trying to re-invent the wheel in terms of repeating what has been done in the literature on the impact of risk and uncertainty on FDI in Africa, a comprehensive survey of the literature on the subject matter is

presented. The paper also provides further empirical evidence using a recent data set and different measures of risk and uncertainty, and incorporating the heterogeneous nature of countries within the region. This then leads to drawing lessons that could aid policy makers across the region in designing measures that would effectively attract more FDI and reverse the current phenomenon.

The rest of the paper is divided into five sections. Section 2 provides an overview of FDI flows across the world and average political risk index. In section 3, a comprehensive review of theoretical and empirical literature is presented, while Section 4 provides the theoretical framework and methodology for the paper. In section 5, empirical results are presented and discussed, while section 6 provides concluding remarks.

2. Overview of Foreign Direct Investment Flows

This section provides an overview of the quantity of FDI net inflows over the period 1996 to 2012, starting with comparative analyses of Africa and some selected regions of the world, and then a comprehensive review of Africa and its sub-regions is done. Finally, a trend analysis of the movement between FDI net inflows and political instability index in Africa is presented.

An important point to note is that even though all the sub regions of the world experienced an increase in FDI over time, the distribution has not been even (see table 1. As the FDI flow increased, some regions received more concentration than others. For example, in all the annual averages, Europe and Central Asia received the highest percentage inflows of World FDI; followed by East Asia and the Pacific, Latin America and the Caribbean, Africa, and South Asia, in descending order. The concentration of FDI in Europe and the Central Asia region could be attributed to the relative economic and political stability that exists in these regions compared with other regions. However, within the period covered, the middle-income group of countries experienced more growth in FDI inflows than Europe and Central Asia, especially within the period 2000 - 2012. FDI flows into the middle-income countries grew by 6,222 per cent from 1981 to 2012 as against the 3,605 per cent growth experienced by Europe and Central Asia.

Table 1. Annual Averages of FDI Net Inflows and FDI Percentage Inflows in the World and Some Selected Regions (Millions of US Dollars), 1981-2012

FDI Inflows	1981-85	1986-90	1991-95	1996-00	2001-05	2006-10	2011-12
World	56,175	150,262	214,717	757,083	796,947	1,829,710	1,710,480
All Middle-income Countries	10,449	15,025	61,924	139,848	186,297	502,412	660,597
	18.6%	10%	28.84%	47%	23.38%	27.46%	38.62%
Europe and Central Asia	14,047	60,089	88,798	327,831	405,458	814,989	520,411
	25.01%	39.99%	41.36%	43.3%	50.88%	44.54%	30.42%
Latin America & Caribbean	6,510	6,410	20,418	75,636	68,451	132,507	194,085
	11.59%	4.27%	9.51%	9.99%	8.59%	7.24	11.35%
East Asia & Pacific	7,291	20,305	52,177	111,255	141,917	390,720	593,715
	12.98%	13.51%	24.3%	14.7%	17.81%	21.35%	34.71%
South Asia	179	406	1,353	3,881	7,417	35,977	33,961
	0.32%	0.27%	0.63%	0.51%	0.93%	1.97%	1.99%
Africa	1,844	2,828	4,282	9,006	18,920	49,040	47,150
	3.28%	1.88%	1.99%	1.19%	2.37%	2.68%	2.76%
Sub-Saharan Africa	1,172	1,558	2,888	7,208	14,392	30,904	40,306
	2.09%	1.04%	1.34%	0.95%	1.81%	1.69%	2.36%

Source: World Development Indicators.

Table 1 shows that middle-income countries attracted more investment in recent times (with the exception of 2012), perhaps because of the improvement in economic and political environment in many of the countries. FDI inflows in the region grew by an average of 6,222 per cent compared to the average of 2,457 per cent for Africa in the period 1981 to 2012.

In terms of the contribution of FDI to GDP, the average annual inflow of FDI across the world was 0.52 per cent in 1981-1985 and 3.13 per cent in 2006-2010 (table 2). At the sub-regional level, the contribution varied; it ranged from as low as 0.07 per cent for South Asia in 1981-1985 to as high as 7.38 per cent for Africa in 2011-2012. This has an implication for the findings in table 1. Even though Africa is next to South Asia as regards the least FDI inflow (table 1), it is clear that for all the yearly averages, FDI contributed more to Africa's economy than in the other regions. A disaggregated analysis of the contribution of FDI to GDP across the different sub-regions in Africa (West Africa, East Africa, Southern Africa, and North Africa) shows that FDI accounts for a relatively higher percentage than the average in Europe and Central Asia. In all, it can be concluded that in terms of the output contribution of FDI, Africa experienced greater benefit than other regions of the world.

Table 2. Annual Averages of FDI Net Inflows In The World and Some Selected Regions (% of GDP), 1981-2012

FDI Inflows	1981-85	1986-90	1991-95	1996-00	2001-05	2006-10	2011-12
World	0.516	0.841	0.823	2.402	2.028	3.132	2.363
All Middle Incomes	0.579	0.625	1.690	2.718	2.741	3.580	3.04
Europe and Central Asia	0.450	0.995	0.994	3.383	3.129	4.079	2.384
Latin America & Caribbean	0.828	0.711	1.291	3.342	2.936	2.753	3.165
East Asia & Pacific	0.363	0.500	0.778	1.480	1.619	2.916	3.023
South Asia	0.066	0.110	0.315	0.684	0.913	2.289	1.474
Africa	1.170	1.787	1.865	4.196	4.361	5.570	7.380
Sub-Saharan Africa	1.156	1.870	1.929	4.570	4.652	5.750	7.873
West Africa	1.059	2.599	0.833	3.124	4.555	5.408	12.018
East Africa	0.995	1.299	1.041	2.601	2.587	5.149	5.874
Central Africa	1.381	1.133	5.283	10.231	8.947	8.260	6.586
Southern Africa	1.693	2.673	3.039	6.773	3.856	4.683	4.185
North Africa	1.065	0.782	0.991	1.022	2.370	3.833	1.987

Source: World Development Indicators.

Table 3 shows the flows of FDI into the different sub-regions in Africa over the period 1996 to 2012. North Africa and West Africa received the highest portion of FDI coming to Africa, while East Africa received the least. A comparison of FDI movements with the political instability index presents an interesting scenario. Southern Africa, which had the highest political stability, occupied the third position out of the five subs-regions in terms of FDI received, coming behind West Africa and North Africa. On the aggregate, North Africa, that was next to Central Africa as the weakest in terms of political stability, received the highest FDI.

The picture becomes more striking with a closer look at Appendix table A2, which shows that Southern Africa outperformed other regions using all the different indices of risk and uncertainty using the MO Ibrahim index of African governance. This evidence shows that the exact role of risk and uncertainty in the determination of FDI inflows in Africa and its sub-regions is unclear and requires further investigation.

Table 3. Annual Regional and Aggregate Averages of FDI Net Inflows, FDI Percentage Inflows and Political Stability Index in Africa (Millions of US Dollars), 1996-2012

FDI Inflows	1996-00	2001-05	2006-10	2011-12
Africa	9,006	18,920	49,040	47,150
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PSI	1.93	1.98	2.05	1.98
West Africa	1,990	3,900	13,800	15,600
	(22.1%)	(20.6%)	(28.0%)	(31.0%)
PSI	2.01	2.04	2.00	1.90
East Africa	1,430	1,960	5,720	8,130
	(15.9%)	(10.4%)	(11.7%)	(16.2%)
PSI	1.93	1.93	2.10	2.15
Central Africa	1,410	3,580	5,380	5,490
	(15.7%)	(18.9%)	(11.0%)	(10.9%)
PSI	1.58	1.64	1.77	1.82
Southern Africa	1,960	4,030	6,900	7,330
	(21.8%)	(21.3%)	(14.1%)	(14.6%)
PSI	2.61	2.70	2.88	2.88
North Africa	2,210	5,440	17,300	13,800
	(24.5%)	(28.8%)	(35.3%)	(27.4%)
PSI	1.67	1.82	1.82	1.24

Sources: World Development Indicators and World Wide Governance Index.

Note: percentage of total in parenthesis; PIS = average political stability index

3. Literature Review

3.1 Theoretical literature

In the literature, three main broad categories of theories explaining FDI flows can be found. The first is the set of theories based on macroeconomic environment, which include the macroeconomic dynamics of FDI theory, FDI theory based on exchange rate, gravity approach to FDI, and FDI theory based on institutional analysis. The second category is the developmental theory of FDI, such as the life cycle theory and the Japanese theory. Third, there is the group of FDI theories based on micro level conditions, and they include the existence of firm specific advantages and theory of internalization and eclectic FDI. It is important to note that no single FDI theory offers sufficient explanation for the determinants of FDI, nonetheless, the basic import of some of these theories are discussed here.

Production cycles or the imitation theory appears to be the first known main discussion on FDI flows which was developed by Vernon in 1966. The theory

emanated from the investment pattern in the manufacturing industry after the Second World War, especially between US companies and Western Europe. According to Vernon (1966), there are four stages in the production cycle: innovation, growth, maturity, and decline. The first stage is characterized by companies creating new innovative products for local consumption and the export of the surplus to foreign countries. Hence, this theory requires demand to be similar across countries. For instance, after the Second World War, Europe had increased demand for manufactured products like those produced in the USA. Since this kind of trade creates an avenue for the new technology of producing the traded goods to be known and copied, it becomes easier for domestic firms to start imitating foreign firms' products that are being exported. Hence, the foreign firms may be forced to establish production facilities on the domestic markets to maintain their market shares in those areas.

Similarly, the *Japanese theory* of FDI, which can be traced to the work of Kojima and Ozawa (1973), emphasizes the nature of FDI flows in the course of economic development. This theory analyses the relationship among FDI, competitiveness and economic development by identifying three main phases of development associated with FDI inflow and outflow. During the stage of underdevelopment, it is assumed that a country will be the target of foreign companies, to take advantage of inadequate investment. Hence, there will be almost no FDI outflows. However, during the stage of marginal growth, new FDI is drawn by the growing internal markets and by the growing standard of living. In this case, FDI outflows are motivated by the rising labour cost. The last stage is the phase of high growth and innovation, which is assumed to be characterized with incoming and outgoing FDI (with more of outgoing FDI, notwithstanding), motivated market, and technological factors.

Furthermore, following the production cycles and Japanese theory of FDI is the *internalization theory*, which was developed by Buckley and Casson (1976) and further expanded by Hennart (1982) and Casson (1983), which is categorized under the micro theory of FDI. This theory is explained in the context of the growth of multinational companies and their motivations for achieving foreign investment. Buckley and Casson (1976) show that multinational companies organized their internal activities so as to develop specific advantages for them to exploit. This means that an entrepreneur having satisfied the local demand for tradable goods, may look for other countries that have similar demand patterns in

order to reap the benefits of increasing returns to scale in foreign countries. Hence, in line with Hymer (1976), FDI takes place only if the benefits of exploiting firm-specific advantages outweigh the relative costs of the operations abroad. However, there are inherent problems an investing firm has to face, among which are information costs (inadequate information pertaining to market, culture, institution, and so on) of foreign firms with respect to local firms, and differential treatment by governments. However, these costs can be offset by market power, which includes patent-protected superior technology, brand names, marketing and management skills, economies of scale, cheaper sources of finance, and so on.

Initially, exchange rate uncertainty and risk were tied only to international trade, until the early 1980s when Itagaki (1981) and Cushman (1985) analysed the potent effect of exchange rate risk or uncertainty and imperfect capita market on FDI respectively. This is based on the fact that changes in the exchange rate are related to disparities between domestic and foreign interest rates (return on investment). Hence, an increase in the domestic interest rate above foreign interest rates indicates that the domestic currency has depreciated, making investment in the domestic economy cheaper in terms of foreign currency. The resultant effect would be the inflow of FDI. However, an increase in foreign interest rates above that of the domestic rate does the converse. In the empirical analysis of Cushman (1985), it is shown that real exchange rate increase stimulates FDI, while currency appreciation has a negative impact on FDI.

The FDI theory of Dunning (1973; 1980; 1988) assumes an imperfect market structure and is a mix of three different theories of FDI. It is popularly referred to as the "*O-L-I" theory of FDI*. "*O*" in the acronym implies ownership advantage; that is, a firm is assumed to have monopoly over its own specific comparative advantages and uses them abroad. This leads to it having higher marginal profitability or lower marginal cost than other competitors. This advantage focuses on three specific areas: privileged access to markets through the ownership of natural limited resources, patents and trademarks; technology advantage to contain all forms of innovation activities, and economies of large size such as economies of learning, economies of scale and scope, greater access to financial capital.

The second letter of the acronym, "*L*" implies location advantages. When the ownership advantage is fulfilled, it becomes advantageous for owners of companies to take advantage of them, rather than selling them or renting them to

foreign firms. Hence, location advantage determines the choice of host country for the multinational corporation. Factors influencing the choice of the destination, among others, include: quantitative and qualitative factors of production, costs of transport, telecommunications, market size, political advantages such as common and specific government policies that affect FDI flows, and other advantages which include distance between the host and investing firms (Denisia, 2010).

Finally, the third letter, "*I*" implies the internalization of foreign investment. This suggests that when internalization benefits are higher, the firm will want to engage in foreign production rather than offering this right under license or franchise. Dunning assumes that if the first two conditions are met, then it becomes profitable for the investing company to use these advantages in collaboration with at least some factors outside the country of origin. Hence, this theory seems to be an all encompassing theory of FDI flows.

The basic questions on FDI are: Who? (Investor), What? (Type of FDI, which can be resource, market, efficiency or strategic asset/capabilities seeking FDI), Why? (Is investment necessary), Where? (Location), When? (Time to invest), and How? (Mode of entry). However, these previously reviewed theories do not form a complete explanation for FDI because they fail to explain where and when to invest in detail. This has been attempted by Baniak et al. (2005). They argue that the magnitude and pattern of foreign investment will depend on the challenges and opportunities offered by different destination countries. Hence, FDI involves a complex analysis of the risk status of destination countries. These risks broadly include political risk, economic risk, and financial risk.

Moreover, all business transactions involve some degree of risk and uncertainty. However, these risks and uncertainties take different dimensions when business transactions occur across borders. These additional risks are popularly referred to as country-specific risks. These risks arise from heterogeneity in economic structures, policies and socio-political institutions, and currencies. A number of theoretical models exist that analyse the relationship between country risk and uncertainty and FDI inflows. One of such theoretical models, developed by Baniak et al. (2005), takes into account the impact of uncertainty of the economic and legal environment on the pattern and magnitude of FDI in transition economies. The basic argument is that many developing economies have embarked on the legal changes accompanying market reforms; however, the new regulatory acts developed in some of these countries do not reflect the specific social,

economic, and political conditions that prevail in them (Solomon, 2007). Hence, the model by Baniak et al. (2005) is particularly relevant to African economies which are characterized mostly with the uncertainty that arises from economic variables such as exchange rates risk, as well as uncertainty from political and institutional environments (such as government inefficiency, policy reversals, graft or weak enforcement of law), civil unrest, conflicts, and wars. This is also acknowledged by Asiedu (2002) and Rogoff and Reinhart (2003). The uncertainties, unpredictability, and volatility of these economies increase the perceived risk by the multinational companies engaging in FDI, thereby translating to less FDI inflows to these economies.

3.2 Empirical and methodology literature

Several empirical studies have attempted to investigate the determinants of FDI both in developing and developed countries. The factors considered range from traditional factors such as market size to uncertainties. A comprehensive summary of these empirical attempts is presented in Appendix Table A1. It is important to note that the presented empirical evidence does not exhaust all studies on FDI, but only focuses on the major ones relating to FDI, and country risk and uncertainty.

4. Theoretical Framework and Methodology

4.1 Theoretical framework

Several theoretical frameworks have been developed to explain FDI flows; however, the framework developed by Baniak et al. (2005) appears to be the most appropriate for most African economies given the level of uncertainties and risks that characterize such economies. Some of these uncertainties include political, institutional, economic uncertainties as well as other civil unrests and conflicts. Therefore, the risks and uncertainties associated with these countries have to be considered by multinational enterprises (MNEs). Hence, the framework for this study is a variant of drivers of FDI model by Baniak et al. (2005) which describes the process of decision-making concerning FDI in a country with an unstable economic and political environment.

The model assumes that MNEs consider two alternatives regarding where to invest. The two possibilities are: investment in the home country or abroad. If it invests in the home country, there is less risk, but if it decides to invest in a

foreign country there is greater risk. Hence, the only motivation to invest abroad is that the expected returns must be higher than in the home country. This follows most business principles; the higher the expected pay-off, the higher the associated risk. Other important assumptions are that investors are risk-averse, each plant (whether at home or abroad) faces a perfectly elastic demand curve in the world market and each plant is assumed to exhibit decreasing average cost.

Further, irrespective of where the investment is located, each investment faces costs associated with the operation. However, while the cost in the home country is almost certain, the cost in the host country is not. This assumption coupled with the previous one implies that similar market conditions confront every investment, but the costs differ. Hence, the only avenue through which a higher pay off can be expected from the host country has to do with internal economies of scale. The profit derivable from the home and host country's investment is expressed in the home and host countries' currencies, given by:

$$\Pi = PQ - CQ \tag{1}$$

where:

$\Pi = \pi + \pi^*$

$Q = q + q^*$

$P \cong p, p^*$ (world price for the output of the MNE)

$$\Pi = \frac{p}{e}(q) + p^*(q^*) - c^I(q) - c(q^*) \tag{2}$$

The prices in the host country are associated with exchange rate uncertainties denoted by e and there are additional uncertainty costs in the host country denoted by c^I. Hence, profit maximizing output in the host country will be influenced by exchange rate uncertainty and other associated uncertainties, which are in the form of additional cost. That is, a profit-maximizing level of output of investment in the home country will not depend on exchange rates. However, that of the host country depends on exchange rate and production cost, which in turn depend on a number of macroeconomic indicators, and political and institutional situations. Hence, in this situation the MNE asks the question of where to invest? The solution is shopping for investment locations that are less risky. Since these risks

come with uncertainty, in order to make a decision on which country investment should be made in, the firm compares the maximum of expected profits with a target level given the probability distributions of the exchange rate and additional operating costs in the host country. The firm then finds the optimal level of production which maximizes the expected profit. Thus, if the level of profit computed in the host country's plant is higher than the target value, the firm builds a new plant in the host country; otherwise, the new plant will be built in its home country or in a less risky location.

4.2 Methodology

4.2.1 *Model Specification*

Given the framework previously presented, the estimated panel model is given by;

$$FDI_{it} = \alpha_0 + \alpha_1 T_{it} + \alpha_2 \lambda_{it} + \varepsilon_{it} \tag{3}$$

where:

FDI = FDI inflows to the host country

T_{it} = vector of the traditional determinants of FDI, such as real domestic output (a measure of market size) and openness of host country

λ_{it} = vector of measures of economic, political and other uncertainties in the host country. These uncertainty measures include, political instability, economic uncertainties (inflation pressure, exchange rate uncertainty), debt burden of host countries, external debt, market size indicators, investment risk, internal conflicts, corruption, religion tension, law and order, ethnic tension, infrastructure risk indicators, and institutional strength. While the expected signs of *RGDP* and *OPEN* are positive, those of other uncertainty indicators are negative.

The interest of the study is to evaluate the impact of uncertainties and other determinants of FDI inflows into Africa and compare the results across regions. In order to do this, the pooled least squares were estimated. However, since the general specifications of the between effect model do not account for heterogeneity across individual countries, there is the need to test for individual heterogeneity via the fixed and random effect models. This test is given by:

$$rho = \frac{(sigma\_u)^2}{(sigma\_u)^2 + (sigma\_e)^2}$$

where:

sigma_u = *sd* of residuals within groups u_i

sigma_e = *sd* of residuals (overall error term) e_i

Besides, the F-statistics test can also be used to check for heterogeneity which is given by:

$$F_{N-1,NT-N-K} = \frac{R^2_{Fixed} - R^2_{polled} / N-1}{(1-R^2_{Fixed}) / NT-N-K}$$

Hence, if *rho* is greater than 50 per cent and or the F-statistic is significant, it implies that the significant percentages of the variance across cross-sectional observations are due to differences across panels and that the coefficient of the determination of the pooled least squares is significantly different from that of the fixed or random effect model respectively. The implication of the test result is that FDI model parameters are heterogeneous across SSA countries. Hence, the analysis focuses on both the fixed and random effects models (based on the Hausman test) to estimate the FDI models.

4.2.2 *Data Sources*

The data for this study was mainly sourced from the Ibrahim Index of African Governance (2013) and the World Bank's *World Development Indicators* (2014). The study focuses on 28 SSA countries with data covering the period 2000 to 2012. The sample is based on data availability. While variables such as *FDI* and *GDP* were sourced from the World Bank's *World Development Indicators* measured in millions of US dollars, political and economic risks as well as uncertainty indexes in Africa were sourced from the Ibrahim Index of African Governance.

5. Results and Discussion

5.1 Descriptive analysis

The descriptive analysis presented in table 4 shows the basic characteristics of the African countries across different regions. Overall, it is observed that the levels of reserves, political rights, infrastructure and accountability are very low, while the inflation level, averaging 80.2 per cent, is very high. Also, African countries could be categorized as having relatively open economies given the trade-GDP ratio of 78.5 per cent, while fiscal policy indicators averaging 63.2 per cent could also be categorized as satisfactory. However, these vary from region to region (see table 4), for instance, North Africa has a fiscal policy indicator of 72.2 per cent and Central Africa recorded the lowest value of 56.0 per cent.

In terms of the extent to which African countries are open to FDI, the FDI-GDP ratio is generally low in Africa, given FDI openness averaging 5.2 per cent. Central African countries have the highest FDI/GDP ratio, while the Northern African countries have the least, although the measurement might have produced some biasedness in this direction, that is, while the lower value of RGDP of Central African countries is second to the lowest, that of Eastern African countries is the lowest. The general picture emerging is that Western and Southern African countries have a relatively high level of FDI given the level of their real gross output. Relating to measures of risks in Africa, social unrest is highest among North and Southern African countries, and lowest among West African countries. Besides, the competitive environment is generally weak in Africa. In this regard, Southern African countries show a close to satisfactory outcome, while Central African countries, with a competitive environment indicator of 39.6 per cent, represent the lowest.

It is important to note that the nature of the variables calls for some transformation; hence, the variables, except inflation, were logged before estimation. Also, since FDI flows are measured on a net basis, some countries' observations have negative values and logging such negative values declares them as missing. Therefore, to preserve the observations with negative values, the study employs the Busse and Hefeker (2007) transformation. To confirm the adequacy of the transformed FDI and the original FDI measurement, the correlation between the two is performed and it is discovered that there is a significant correlation between the two (see Table A3 in the appendix).

Table 4. Descriptive Analysis of Variables

Statistics	FDI	RGDP	OPEN	SU	PR	PA	INF	RES	FP	COENV	INVCL	INFRA	EP	REVEXPR	BM	ACCT
Aggregate																
Min	-6.0	1.03E+08	21.0	0.0	0.0	0.0	0.0	0.0	0.0	12.5	0.0	0.0	0.0	0.0	0.0	7.8
Max	91.0	3.08E+11	351.1	100.0	100.0	100.0	100.0	100.0	100.0	92.2	100.0	84.1	100.0	100.0	100.0	87.9
mean	5.2	2.00E+10	78.5	50.4	42.7	59.0	80.2	24.7	63.2	51.8	49.1	29.5	43.6	50.1	58.0	42.3
CV	1.7	2.1	0.5	0.4	0.7	0.3	0.3	0.9	0.3	0.3	0.4	0.6	0.5	0.4	0.3	0.4
North Africa																
Min	-0.5	1.72E+10	39.0	0.0	0.0	0.0	0.0	10.2	43.7	32.8	11.1	22.5	28.6	23.4	0.0	10.2
Max	9.6	1.26E+11	152.5	75.0	66.7	100.0	100.0	100.0	100.0	82.2	77.8	67.9	57.1	100.0	100.0	60.9
mean	2.6	6.76E+10	75.0	56.0	18.2	62.0	88.9	54.8	72.2	59.6	49.3	50.8	38.7	55.2	66.4	45.0
CV	0.9	0.5	0.3	0.4	0.8	0.3	0.2	0.7	0.2	0.3	0.5	0.2	0.3	0.4	0.3	0.2
Central Africa																
Min	-6.0	1.03E+08	21.0	18.8	0.0	25.0	0.0	0.0	31.0	12.5	16.7	0.0	0.0	0.0	20.8	7.8
Max	64.4	5.51E+10	351.1	100.0	100.0	64.6	100.0	55.6	76.2	56.3	77.8	33.5	42.9	100.0	70.8	47.6
mean	7.2	9.60E+09	90.6	51.9	26.2	45.8	77.7	17.0	56.0	39.6	43.6	15.3	29.1	59.2	46.0	25.8
CV	1.5	1.1	0.7	0.3	0.9	0.2	0.3	0.7	0.1	0.3	0.3	0.6	0.4	0.4	0.3	0.3
West Africa																
Min	-0.3	4.82E+08	22.5	0.0	0.0	29.2	5.2	4.3	25.4	20.4	22.2	1.1	14.3	12.9	20.8	16.0
Max	91.0	1.78E+11	179.1	75.0	100.0	87.5	100.0	65.4	94.4	81.3	77.8	48.4	57.1	100.0	93.8	86.9
mean	5.9	1.28E+10	69.4	41.1	52.4	59.5	84.3	21.9	64.6	52.9	50.2	21.0	36.7	46.3	59.1	41.0
CV	1.9	2.3	0.4	0.5	0.5	0.2	0.2	0.5	0.3	0.3	0.3	0.5	0.3	0.3	0.3	0.4
Southern Africa																
Min	-3.3	8.43E+08	38.6	0.0	0.0	0.0	0.0	0.9	0.0	16.9	0.0	21.0	28.6	11.5	6.3	15.5
Max	36.4	3.08E+11	209.9	100.0	100.0	100.0	100.0	100.0	100.0	92.2	100.0	84.1	100.0	100.0	100.0	87.9
mean	5.0	2.64E+10	98.8	56.1	60.7	67.5	74.8	20.2	62.6	61.7	56.4	46.1	63.1	47.6	62.9	55.7
CV	1.0	2.7	0.4	0.4	0.5	0.3	0.3	1.1	0.4	0.3	0.4	0.4	0.4	0.3	0.3	0.3

Statistics	FDI	RGDP	OPEN	SU	PR	PA	INF	RES	FP	COENV	INVCL	INFRA	EP	REVEXPR	BM	ACCT
							East Africa									
Min	0.0	3.38E+08	28.0	25.0	0.0	29.2	9.9	4.6	18.3	12.5	0.0	1.3	14.3	24.2	12.5	29.7
Max	23.0	2.57E+10	134.2	100.0	66.7	81.3	100.0	42.4	88.9	70.8	77.8	46.1	71.4	74.6	87.5	66.8
mean	3.1	8.22E+09	53.8	55.0	32.4	59.4	77.6	23.3	64.3	45.1	42.6	25.8	46.7	46.7	58.1	43.3
CV	1.2	1.0	0.3	0.4	0.6	0.3	0.2	0.4	0.3	0.4	0.5	0.4	0.4	0.2	0.4	0.2

Source: Authors' computation.

Note: FDI= FDI/GDP Ratio, SU=Social Unrest, PR= Political Right, PA= Public Administration, INF= Inflation, RES= Reserves, FP= Fiscal Policy, COENV= Competitive Environment, INVCL= Investment Climate, INFRA=Infrastructure, EP= Environmental Policy, REVEXPR= Revenue/Expenditure Ratio, ACCT= Accountability.

5.2 Empirical results

The main objective of this study is to assess the possible impact of risk and uncertainty measures on FDI inflows in Africa and to compare this across regions. Hence, this is depicted in table 5. The results reveal that market size (captured by RGDP) is not the main driver of FDI in Africa, except in Southern African countries where it is significant at 10 per cent. The main driver of FDI among the traditional determinants is the level of openness to trade. This was found to be elastic; that is, a 1 per cent increase in trade openness increases FDI openness by 3.9 per cent. This was found to be one of the most determinant factors attracting FDI to Africa, except in the case of Northern and Southern Africa. However, higher political rights was not found to repel FDI, especially in Central Africa. This is appealing because higher political rights make people demand for responsibility on the part of multinational companies (MNCs), which may be expensive for them to bear.

Further, it was observed that better public administration is an important factor that attracts FDI, especially among the Central African countries. This impact is found to be very elastic in Central Africa; that is, a 1 per cent increase in the public administration indicator increases FDI by 13.0 per cent. Another interesting finding is that better fiscal policy repels the FDI among West African countries by about 9.7 per cent. This result can be explained by the fact that often, fiscal policy is targeted towards enhancing the performance of the indigenous companies in order to give them a competitive edge over the MNCs.

Meanwhile, an improved competitive environment increases FDI by 4.9 per cent in West Africa, while enhanced revenue-expenditure reduces FDI by 2.8 per cent in West Africa. The implication of the latter outcome is that higher government revenue implies higher taxes from the MNCs, which can discourage FDI inflows. However, an opposite result, relating to revenue-expenditure effect on FDI, is obtained for East African countries, where a 1 per cent increase in revenue-expenditure ratio increases FDI by 2.5 per cent. This means that tax policies are well implemented in a way that does not discourage FDI in the East African countries, unlike what obtains in West African countries. Further, the reason for the opposite effect of revenue-expenditure on FDI depends on the target and aim of such a tax policy. This connotes that higher revenue in the form of high taxes from the MNCs can reduce their viability and discourage them, but if MNCs are not the target of such a policy, they are encouraged by being given some tax

concessions, and thereby encouraging more FDI inflow. Also, a higher level of reserves makes an economy less risky and it was found to attract FDI among the Southern African countries, although this was only significant at 10 per cent. However, if the competitive environment is favourable and there are fewer attempts by the host countries' governments to give undue favour to indigenous companies, this attracts FDI inflows. This was noticed specifically among the West and East African economies.

Another interesting finding is that a better investment climate is very germane to attracting FDI, especially among the Eastern African countries, where a 1 per cent improvement in investment climate increases FDI by about 3.1 per cent. Besides, better infrastructure is found to repel FDI among the Central and West African countries, though only significant at 10 per cent. It is important to note that if the FDI is the efficiency-seeking type, a high level of efficiency in the host country, in the form of better infrastructure, will not be favourable for such FDI. The result among East African countries also shows that a 1 per cent improvement in environmental policy reduces FDI by 3.3 per cent, indicating that a better environmental policy increases the cost of compliance for MNCs which are mostly resource-seeking FDI; hence, such a policy reduces FDI inflow elastically, especially among the East African countries.

Finally, in terms of model adequacy, rho in table 5 shows that a significant proportion of the variance across cross-sectional observations are due to differences across panels and that the coefficient of the determination of pooled least squares is significantly different from that of the fixed or random effect model. Besides, the F-statistics and Wald statistics for fixed and random effect respectively, show that the estimated models are adequate, while the choice of either model is determined using the Hausman test.

Table 5. Panel Estimation Results of FDI

	1(RE)	2(FE)	3(RE)	4(RE)	5(FE)	6(FE)
LOGRGDP	-0.352 (-1.100)	6.790 (1.220)	-0.056 (-0.060)	1.174 (1.280)	4.562 (1.740)*	-2.702 (-1.560)
LOGOPEN	3.920 (5.410)***	6.012 (1.640)	5.521 (2.490)**	3.208 (2.430)**	3.313 (1.300)	5.790 (2.640)**
LOGSU	0.015 (0.030)	2.260 (1.890)*	-0.041 (-0.020)	1.319 (1.320)	-1.862 (-0.780)	0.377 (0.210)

	1(RE)	2(FE)	3(RE)	4(RE)	5(FE)	6(FE)
LOGPR	-0.928 (-1.890)*	-0.055 (-0.020)	-3.436 (-2.020)**	0.369 (0.440)	-2.223 (-1.260)	0.362 (0.620)
LOGPA	1.111 (0.660)	-3.391 (-0.660)	13.029 (2.210)**	-0.069 (-0.030)	-1.059 (-0.120)	-4.695 (-1.400)
INF	-0.004 (-0.440)	0.016 (0.340)	-0.025 (-0.890)	0.014 (0.690)	0.026 (0.830)	0.005 (0.410)
LOGRES	0.563 (1.900)*	1.613 (1.090)	-0.102 (-0.150)	-0.164 (-0.230)	1.828 (1.820)*	0.610 (0.770)
LOGFP	-1.351 (-0.900)	-3.622 (-0.470)	-6.069 (-1.330)	-9.698 (-5.270)***	2.553 (0.680)	1.221 (0.270)
LOGCOENV	2.325 (1.300)	4.217 (0.560)	-9.655 (-1.490)	4.942 (2.410)**	8.094 (1.110)	9.108 (2.110)**
LOGINVCL	0.911 (1.400)	0.739 (0.510)	1.320 (0.510)	-0.515 (-0.410)	0.858 (0.560)	3.058 (3.070)**
LOGINFRA	0.023 (0.050)	-3.259 (-0.380)	-1.174 (-1.780)*	-3.383 (-1.840)*	0.200 (0.050)	1.214 (0.480)
LOGEP	-0.120 (-0.180)	0.146 (0.060)	4.433 (1.650)*	0.220 (0.160)	1.045 (0.530)	-3.312 (-2.550)**
LOGREVEXPR	-0.673 (-1.110)	-0.925 (-0.640)	-2.724 (-1.510)	-2.814 (-2.200)**	1.441 (1.220)	2.548 (2.210)**
LOGBM	0.412 (0.340)	-2.654 (-0.470)	-2.820 (-0.760)	1.391 (0.770)	-3.647 (-1.110)	0.457 (0.120)
LOGACCT	-2.511 (-1.930)*	-4.279 (-0.550)	0.436 (0.120)	3.658 (1.260)	-6.204 (-0.960)	-1.835 (-0.370)
CONS	-3.13 (-0.340)	-154.47 (-1.180)	7.684 (0.240)	-19.146 (-1.160)	-117.526 (-1.920)*	9.011 (0.340)
Rho	0.43	0.93	0.48	0.41	0.91	0.84
R2	0.22	0.001	0.7	0.72	0.01	0.17
F/Wald-statistics	48.9***	3.6**	101.91***	131.15***	2.72**	4.68***
Hausman Chi2 (FE, RE)	23.08*	3.6	27.38**	27.26**	9.21	8.32
OBS	346	47	59	66	112	62

Source: Authors' Computation.

Note: *,**,*** represents respectively significance at 10, 5 and 1%. 1=aggregate for all countries, 2=North African Countries, 3=Central African Countries, 4=West African Countries, 5= Southern African Countries and 6=Eastern African Countries. SU=Social Unrest, PR= Political Right, PA= Public Administration, INF= Inflation, RES= Reserves, FP= Fiscal Policy, COENV= Competitive Environment, INVCL= Investment Climate, INFRA=Infrastructure, EP= Environmental Policy, REVEXPR= Revenue/Expenditure Ratio, BM = Budget Management, ACCT= Accountability. RE=random effect model, FE=fixed effect model. t and z-statistics of fixed and random effect models are in the parenthesis respectively.

6. Conclusion

This paper revisited the relationship between risks, uncertainties and FDI inflows in Africa, using more recent data and twelve different measures of risk and uncertainty. The estimation of the FDI model was done at aggregate (continent wide) and sub-regional levels. The results from the study indicate that different measures of risk and uncertainty have divergent effects on FDI inflows and the degree of their effect varies across sub-regions in the continent.

The study also shows that economic openness and level of external reserves are important macroeconomic variables that attract FDI inflows on the continent. The implication of this for African governments is the need to ensure that their economies remain open to the rest of the world, and that they maintain adequate external reserves as this shows the resilience of their economies. In terms of the significance of some of the measures of risk and uncertainty, it is observed that while sound public administration, good competitive environment and investment climate have a positive impact on FDI inflows, improved infrastructure and better environmental policy discourage FDI net inflows. The policy implications of these results are that African governments should strive to ensure continuous improvement in terms of designing policies that lead to improved public administration, and create a competitive environment and investment climate. Nevertheless, it is also expected that African governments would need to balance their policy objectives and make a choice between seeking better welfare for their citizens, in the form of the implementation of good fiscal policies that would add value to the economy, provision of better infrastructure and environmental policies, and attracting more FDI inflows.

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Appendices

Table A1. Summary of Evidence and Methodologies

Author	Objective	Scope	Main variables	Methodology	Significant determinants	Conclusion
Erramilli and D'Souza (1995)	To examine the effect of internal and external uncertainty on FDI, and to examine how these relationships are moderated by capital intensity and firm size	567 US service firms.	FDI, **Internal uncertainty variables**: cultural distance between the home country (USA) and the host country, firm size and capital intensity **External uncertainty variable** : dummy variable coded into lower-risk and high-risk countries **Moderators variables**: capital intensity, firm size and inseparability	maximum likelihood procedure in the logistic Procedure	Inseparability, Internal uncertainty/ inseparability interaction External uncertainty/capital intensity interaction and external uncertainty/ firm size interaction	Internal and external uncertainty may be significantly moderated by factors such as capital intensity, firm size and inseparability.
Lewandowski (1997)	To analyse the correspondence between the flow of FDI and risks	Emerging *Former Soviet Union* economies.	**Foreign Direct Investment**: cumulative net inflows of FDI. **Risks**: economic, political, infrastructure and legal risks	**Discrete-choice logit models** to estimate how risks influence· the probability of investment	economic, political, and legal risks	Emerging economies must remove the uncertainties that multinational firms face.
Lemi and Asefa (2001)	To examine the impact of economic and political uncertainty on FDI flow	African economies	FDI, political instability, government policy commitment, economic uncertainties, debt burden of host countries, labour,	GARCH model is used to generate economic	political instability, government policy commitment, economic uncertainties, debt	Trade link between the host country and the source country plays a significant role in affecting the flow of FDI

Author	Objective	Scope	Main variables	Methodology	Significant determinants	Conclusion
			trade connection, size of export sector, external debt and market size indicators.	uncertainty indicators of the inflation rate and the real exchange rate	burden of host countries, labour, trade connection, size of export sector, external debt and market size	
Asiedu (2002)	To explore whether factors affecting FDI in developing countries affect countries in SSA differently	71 developing and SSA countries between 1988 and 1997	FDI/GDP, openness (X+M/GDP), return on investment, infrastructural development, inflation rate, M2/GDP, government consumption, GDP growth and political risk	OLS estimation in Panel form	Openness, infrastructure and return on investment have positive effect.	Liberalization of trade regime is necessary for FDI inflows, policies useful in other regions should not be blindly replicated and Africa is perceived as risky and will attract less FDI
Busse and Hefeker (2005)	To explore the linkages between political risk, institutions and foreign direct investment inflows	83 developing countries and the period, 1984 to 2003	FDI and 12 different indicators for political risk and institutions (Government stability, socio-economic pressures, investment risk, internal and external conflicts, corruption, military in politics, religion tension, law and order, ethnic tension, demographic accountability and institutional strength)	Fixed effect panel data	Government stability, the absence of internal conflict and ethnic tensions, basic democratic rights and ensuring law and order	Changes in the components of political risk and institutions are highly relevant for investment decisions of multinationals.
Solomon (2007)	To investigate the impacts of risk and uncertainty FDI	12 developing African	FDI, Infrastructural development, market size, labour force availability,	Fixed Effect and Arellano-Bond GMM	Exchange rate uncertainty and political risk	These countries can i ncrease FDI inflows by improving their

Author	Objective	Scope	Main variables	Methodology	Significant determinants	Conclusion
	and remittances flows	countries, Asia and Latin America between 1989 and 2004	political risk and exchange rate uncertainty.			institutional and political environment thereby reducing the political risk associated with investing in their countries.
Mateev and Ivan (2007)	To examine the impact of country risk on FDI inflows in Bulgaria	Bulgaria for the period 1992 – 2006 using the research data from a survey of 132 foreign companies invested in Bulgaria	Type of investment, cost of entry mode, opportunities, risks of investment and overall business climate	Survey methodology using questionnaire	market size, low unskilled labour cost, avoidance of trade barriers, geographical proximity, and prospects for market growth are the most important invectives for FDI in Bulgaria	Continuing economic growth and political stability are good signals and Bulgaria is likely to continue to enjoy sustainable growth and development, and will continue to attract a significant amount of inward FDI.
Chen and Funke (2009)	To analyze the impact of institutional uncertainty on vertical FDI strategies	Firm level data in developed countries	FDI, institutional uncertainty and economic integration.	Standard methods of stochastic calculus	Sound economic policies, good governance, and reliable legislative enactment procedures strengthen the investment climate.	Uncertain environment is an essential factor in the flying geese pattern of FDI
Hayakawa Kimura (2011)	To examine the impact of political and financial risk on inward FDI.	93 countries including 60 developing countries	FDI, political risk, government stability, socio-economic conditions, investment profile, internal	GMM dynamic estimator of Arellano and Bond	Socio-economic conditions, investment profile, internal and external conflicts.	Multinationals seem not to consider financial risk of host countries seriously.

Author	Objective	Scope	Main variables	Methodology	Significant determinants	Conclusion
		between 1985 and 2007	and external conflicts, corruption, religious tension, demographic accountability and ethnic tension.	methodology		
Azam, Khan and Iqbal (2012)	To examine the potential effect of political risk and macroeconomic policy uncertainty on FDI	South Asia	FDI, political risk, macro policy uncertainty indices, market size and trade openness	Autoregressive distributed lags (ARDL)	political risk and macroeconomic policy uncertainty, trade openness (positive in the short run and negative in the long run) and market size.	South Asian economies need to focus on political and macroeconomic factors along with FDI incentives policies to attract more FDI.
Ogunleye (2009)	To investigating the relationship between exchange rate volatility and FDI	SSA with particular focus on Nigeria and South Africa between 1970 and 2005	FDI, REER, infrastructure (electricity provision), inflation, nominal, foreign reserves and terms of trade shocks	Two-Stage Least Squares	exchange rate volatility	There is a need for policy cohesion and coordination on exchange rate and FDI management.
Julio and Yook (2013)	To examine the effects of government policy uncertainty on cross-border capital flows	USA and its Direct investment to 43 countries and portfolio investment to 44 countries between	FDI drawn from the Survey of U.S. Direct Investment abroad, policy uncertainty (i.e. timing of national elections held between January, 1994 and June, 2010) and GDP growth	Fixed effect panel regression analysis	Policy uncertainty (i.e timing of elections in both destination countries and the source country)	Policy uncertainty has a negative impact on FDI flows from the U.S. parent firms to their affiliates in 43 countries

Author	Objective	Scope	Main variables	Methodology	Significant determinants	Conclusion
		1994 and 2010				
Ajuwon and Ogwumike (2013)	To examine the role of uncertainties as they affect the inflow of FDI into the agricultural subsector	Nigeria between 1970 and 2008	Agricultural FDI, CPI, annual volatility in exchange rate, Political freedom, total number of Bilateral Investment Treaties, external debt servicing, None oil export, GDPPC, Average rainfall	Cointegration and error correction model (ECM) approach	economic uncertainty (inflation) and political freedom	To attract FDI inflow into the agricultural sector of the Nigerian economy, government needs to be more committed to the Multi-National Investment Guaranty Agency (TBMAS)

Source: Authors' compilation.

Table A2. Annual Regional and Aggregate Averages of FDI Net Inflows, FDI Percentage Inflows and Political & Economic Risk and Uncertainty Indexes in Africa (Millions of US Dollars), 1996-2012

FDI Inflows	2000-02	2003-05	2006-08	2009-11	2012
Africa	13,553	21,100	49,733	47,600	47,500
FDI (% Inflows)	----------	----------	----------	---------	---------
Social Unrest	50.5	50.5	50.7	48.1	44.2
Political Right	41.3	43	43	41	42.6
Public Administration	57.4	57.5	58.6	58.5	57.7
Inflation	80.1	80.2	76.9	83.1	82.2
Reserves	21.9	23.9	26.5	26.8	23.4
Fiscal Policy	59.2	59.4	63.1	64.9	65.5
Competitive Environment	49.8	49.9	51	52.5	52.3
Investment Climate	52.5	49.3	46.5	47.5	50.5
Infrastructure	26.8	27.4	29	31.4	32.6
Environmental Policy	42.9	42.9	42.1	42.3	42.2
Budget Management	54.5	54.3	57.6	60.5	59.4
Accountability	40.8	41.1	42.2	42.2	41.5
Revenue/Expenditure Ratio	46.1	50.3	58.1	47.1	46.8
West Africa	2,240	4,951	13,718	14,980	15,160
FDI (% Inflows)	16.5%	23.5%	27.6%	31.5%	31.9%
Social Unrest	40.6	40.6	41.7	45	39.5
Political Right	54.9	55.9	58	57.3	55.2
Public Administration	57.4	57.5	60.3	61.2	62
Inflation	85.7	81.5	79	85.4	84.5
Reserves	20	22	23.9	24.2	19.4
Fiscal Policy	61.2	61.5	66.5	68.3	69.9
Competitive Environment	51.4	51.6	52.2	55.1	55.5
Investment Climate	52.1	47.4	45.1	50.2	55.6
Infrastructure	19.2	19.5	20.1	21.9	24
Environmental Policy	35.7	35.7	35.9	37.5	38.1
Budget Management	55.5	56	60.4	64.9	66.6
Accountability	39.9	39.6	40.9	42.6	42.4
Revenue/Expenditure Ratio	41.9	47	53.8	43	43.5
East Africa	1,577	2,230	5,076	7,460	12,100
FDI (% Inflows)	11.6%	10.6%	10.2%	15.7%	25.5%
Social Unrest	52.3	52.3	51.5	49.2	52.3
Political Right	27.3	36.9	36.4	34.3	33.3

FDI Inflows	**2000-02**	**2003-05**	**2006-08**	**2009-11**	**2012**
Public Administration	50.2	51	53.2	53.4	53.7
Inflation	86.3	79.7	70.9	74.4	71.1
Reserves	20	22.6	19.1	19.8	18.1
Fiscal Policy	55	54.5	53.6	56.9	60.4
Competitive Environment	38	37.9	39	39.2	39.9
Investment Climate	44.8	44.8	44.1	44.4	47.8
Infrastructure	25.7	26.2	27.2	29.1	30.6
Environmental Policy	41.1	41.1	38.7	38.4	35.7
Budget Management	49.1	49.1	52.8	52.2	50.5
Accountability	40.1	40.3	41	40.1	38.4
Revenue/Expenditure Ratio	43.5	48.7	48.4	47.6	46.1
Central Africa	3,083	3,380	4,610	6,127	2,510
FDI (% Inflows)	22.7%	16%	9.3%	12.9%	5.3%
Social Unrest	53.6	53.6	54.8	47.9	38.4
Political Right	20.6	18.2	16.7	14.3	14.3
Public Administration	44.6	44	44	44.3	44.6
Inflation	81.3	89.8	81.2	86.8	88.2
Reserves	4.7	9	22.5	21.7	20.6
Fiscal Policy	53.4	54.2	56.1	59.9	60.4
Competitive Environment	37.8	37.9	38.5	39.3	39.9
Investment Climate	48.1	49.2	40.2	36.8	41.3
Infrastructure	8.9	9.2	15.1	19.7	22.1
Environmental Policy	25.7	25.7	28.1	30	31.4
Budget Management	45.7	44.6	42.7	47.2	45.8
Accountability	21.8	23	24.9	25.6	26.4
Revenue/Expenditure Ratio	55.6	64.6	80.6	57.8	54.4
Southern Africa	3,649	3,484	7,044	6,623	5,418
FDI (% Inflows)	26.9%	16.5%	14.2%	13.9%	11.4%
Social Unrest	56.3	56.3	55.6	53	52.6
Political Right	59.7	59.2	56.9	52.8	54.2
Public Administration	67.7	67.7	67.5	67.8	66
Inflation	59.9	68.5	71.8	82.3	83.2
Reserves	20.9	18.9	22.2	23.5	20.3
Fiscal Policy	61.1	61.1	66.6	67	64.6
Competitive Environment	61.4	61.1	62.2	57.1	54.6

FDI Inflows	**2000-02**	**2003-05**	**2006-08**	**2009-11**	**2012**
Investment Climate	58.6	52.5	51.9	55	55.6
Infrastructure	39.8	40.8	41.2	43.9	44.7
Environmental Policy	63.6	63.6	59.9	55.2	53.2
Budget Management	59.5	59.2	63.8	67.1	66.7
Accountability	50.6	51.1	53.4	52.8	51.4
Revenue/Expenditure Ratio	43.8	45.9	55.4	46.7	46.1
North Africa	2,998	7,036	19,303	12,420	12,360
FDI (% Inflows)	22.1%	33.3%	38.8%	26.1%	26%
Social Unrest	58.3	58.3	58.3	44.8	32.3
Political Right	41.3	43	43	41	42.6
Public Administration	64.9	64.6	63.2	59	51.9
Inflation	94	89.9	86	88.2	86.1
Reserves	51.2	59	57.7	55.9	49.5
Fiscal Policy	64.7	65.9	72.7	73.3	69.8
Competitive Environment	58.1	58.5	62.2	57.1	54.6
Investment Climate	59.3	55.6	51.2	42.6	42.6
Infrastructure	43.6	44.9	48.2	49.9	46.8
Environmental Policy	35.7	35.7	38.1	44	47.6
Budget Management	61.8	61.1	64.3	66	57.8
Accountability	47	47.3	46	42.8	42.6
Revenue/Expenditure Ratio	54.6	53.8	63.6	46	48

Sources: *World Development Indicators* and *World Wide Governance Index*

Table A3. Correlation between Original FDI and Transformed FDI

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. pwcorr fdi fdi_t, sig
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	fdi	fdi_t
fdi	1.0000	
fdi_t	0.6894 0.0000	1.0000