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**Foreign Direct Investment in Africa:
What are the Key Factors of Attraction aside from Natural
Resources?**

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**Les investissements directs étrangers en Afrique :
quels facteurs d'attractivité en dehors des ressources naturelles ?**

Résumé

Cette contribution de nature essentiellement empirique analyse les déterminants des IDE en Afrique indépendamment de l'attrait déjà bien identifié pour les ressources naturelles. Les anticipations faites sur les perspectives générales de ces économies influencent-elle les flux de capitaux entrants ? Quel rôle l'instabilité sociopolitique, approchée par les conséquences sociales causées par les conflits, joue-t-elle ? Les processus de régionalisation renforcent-ils l'attractivité des pays qui y adhèrent ? Sur un panel de 28 pays africains, les résultats des estimations obtenus à l'aide de la méthode des variables instrumentales de Hausman-Taylor, montrent que l'impact que les prévisions peuvent avoir sur la décision encourt d'investir dans le continent n'est pas statistiquement significatif. Nos résultats montrent également que, bien que négative, la corrélation directe entre le risque social, proxy de l'instabilité sociopolitique, et les flux d'investissements étrangers n'est pas systématiquement significative. En effet, les flux d'IDE ne se comportent pas de la même manière dans les pays traversés par des crises sociopolitiques. Il ressort toutefois que ces instabilités fragilisent les compétences nationales (capital humain) et aggravent certains maux tels que le VIH/Sida dont l'impact sur les investissements étrangers augmente négativement en présence du risque social. Cependant, l'introduction simultanément des processus de régionalisation dans nos estimations tend à réduire les méfaits de l'instabilité sur certaines variables explicatives des IDE.

Mots-clés : Investissements étrangers directs (IDE), économies africaines, prévisions/anticipations, risque et instabilité sociopolitique, l'intégration régionale

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Abstract

This input, essentially empirical by nature, analyses the FDI determinants in Africa independently from the already clearly identified attraction of natural resources. Do powers of anticipation as to the general prospects for these economies influence incoming flows of capital? What role is played by socio-political instability connected to the social consequences caused by conflicts? Are the processes of regionalization enhancing the appeal of countries that are going down that path? From a panel of 28 African countries, the results from estimations obtained using the Hausman-Taylor method of instrumental variables show that the impact of projections on any ongoing decision to invest in the continent is not statistically significant. Our results also show that, although negative, the direct correlation between social risk, a proxy of socio-political instability, and flows of foreign investment is not systematically significant.. However, the fact remains that these instabilities undermine national competencies (human capital) and compound certain ills such as HIV/Aids, whose impact on foreign investment increases along a negative curve in the presence of social risk. However, the simultaneous introduction of regionalization processes into our estimations tends to lower the adverse effects of instability on certain explicative FDI variables.

Keywords: Foreign Direct Investment (FDI), African economies, projections/anticipations, risk and socio-political instability, regional integration

JEL : C33; F15; F2; O16

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A lot of research work has long shown the positive role of direct foreign investment with developing economies, providing the said economies meet a number of prerequisites - (Findly, 1978, Balasubramanyuan, Salisu and David Sapsford, 1996, Borensztein, De Gregorio and Lee, 1998; De Mello, 1999 - or do not appear to be excessively and worryingly vulnerable (Guillaumont, 2001). FDI significantly affects a country's productivity factors through several channels of transmission, still called spill-over effects: the acquisition and increase of human capital, the importation of new knowledge and production technologies...

The purpose of this paper is not to go over this theoretical link once again but to analyse in empirical fashion the attraction factors for FDI in African countries. It is no secret that the lion's share of foreign capital flows entering the continent's sub-Saharan region is explained by the abundance of raw materials (see for example Asiedu, 2005, or the World Investment Directory report, 2008). According to the UNCTAD report (2009), the top ten beneficiary countries (Nigeria, Egypt, RSA, Morocco, Libya, the Sudan, Equatorial Guinea, Algeria, Tunisia and Madagascar) alone absorbed 82% of total investment and nine countries recorded FDI equal to or higher than \$1 billion. The appeal of natural resources explains the uneven breakdown of FDI across the continent. According to the World Bank, the 24 African countries whose revenues are virtually all generated by oil and other mineral resources have, over the past 20 years, secured on average almost three-quarters of FDI flows.

The originality of our study lies with our attempt to analyse the attraction factors of Africa for FDI over and above the appeal of natural resources. Through this slant we are able to query the existence of other structural factors – real or potential – likely to guarantee the reproducibility of investment and the durability of the development process. In a novel way, we set out to analyse the influence of anticipation processes on investment decisions for Africa. In fact, with a panel of 28 African countries, all with different factorial and natural endowments, the question is to examine statistically and econometrically the patterns of FDI in a configuration of socio-political instability and also to see how this instability – that we address through social consequences – affects the variables likely to be arguments for FDI. Right behind this, we also take a look at the effects of regional economic integration to see whether they may create credibility for the economies involved in order to attract more foreign capital.

Our approach is three-phased. The first section delivers a little perspective to the direct foreign investment made in Africa over more than 25 years. The second section established the methodological bases of the empirical study by laying out the factors of attraction that are to be tested. The third section presents the data, justifies the selected econometric approach and analyses the results thus obtained.

Section 1. Overview of FDI made in Africa over the past decades

Even though recent UNCTAD statistics (2008) indicate that the flows of FDI in Africa tripled between 2004 and 2007, table 1 below shows that Africa lags well behind other areas in terms of received levels of FDI. In 2008, the FDI inventory came to only \$510.5 billion versus \$978 billion for the Americas and \$1,351 billion for Asia. In 1980, Africa's FDI inventory was higher than that of the Americas (\$41 billion vs. \$36.4 billion) and was just 15% lower than that for Asia. Africa has benefited much less from FDI than the two other zones, a fact which, on the surface at least, questions the continent's attractiveness.

According to the UNCTAD report (2001), a country's or region's attractiveness can be appreciated based on its FDI¹ inflow index, which measures its capacity to attract investment in regard to its economic situation and its competitiveness. The FDI inflow index in Africa is unfavourable (0.4 between 1998 and 2000 versus 1.2 for the Americas and 0.6 for Asia – Africa is the only zone to have lost ground compared with 1988-90), yet all the while the presence of considerable natural resources in certain slow-developing African economies “artificially credits” the international attraction of these countries.

Table1: Evolution of FDI in developing regions between 1980 and 2008

	Africa	Central/Latin America	Asia Pacific
Mean annual growth rate for the variation of FDI inventory between 1980 and 2008	9.81	12.68	13.84*
FDI inflow index between 1988 and 1990	0.60	0.80	0.60
FDI inflow index between 1998 and 2000	0.40	1.20	0.60
FDI inventory level in 1980 (\$US millions)	41097.21	36456.72	48059.23*
FDI inventory level in 2008 (in \$US millions)	510511.10	978056.66	1351405.39*

*excluding China.

Source: calculated from UNCTAD data, except the FDI inflow indices which come from UNCTAD (2001)

The relation between incoming flows of FDI and developing economies, particularly African economies, is complex. International competition and the effects of globalization are forcing multinationals to integrate new factors into their investment decisions; besides traditional factors (such as natural resources, cheap labour and market size), we are now seeing parameters such as the dynamism of human capital, infrastructural and capitalistic development, the stability of institutional and juridical regimes, and the effects of proximity or the business climate in the receiver country. In the case of Africa, the backwardness accumulated in these areas is tending to weaken the international credibility of certain countries. While the range of investors has diversified in Africa over the past ten years, with most notably the Asian offensive (see for example Kaplinsky and Morris, 2009), we can but

¹ This index is the average of the three indicators that measure the share of each country in world DFI compared with its share in GDP, employment and exports. According to the organization, “an index of 1 signifies that a country's share in world DFI corresponds to its economic weight as measured by the three indicators in question...” p.16

observe the fact that the raw material sector is still the most attractive, as shown by the recent report from the UNCTAD (2009).

Investment in Africa may be grouped into three categories.

Firstly, we observe investment generated by the presence of significant raw materials that are independent of the receiver country's performances or productive structures. In the eyes of investors, the country's attractiveness lies solely with the potential of fossil and mineral resources and not with economic or human competencies. This is most notably the case of Angola, Equatorial Guinea, the Congo and the Democratic Republic of Congo. The drawback with this type of investment is that it promotes the sectorial concentration of an activity while undermining the economy's full articulation. There may be positive effects of externality or knock-on effects if, and only if, the State takes care to assure the reallocation of resources to other productive sectors to ensure economic pick-up.

The second form of investment entering Africa is that which tends to follow the structural evolution of the receiving country. This form of FDI lies with the perception and approach that investors have of the country's dynamism in terms of creating new opportunities. To illustrate this strategic behaviour, which tends to attract new capital, we might cite the example of Mauritius Island and, to a lesser extent, of Zimbabwe (before the agrarian reform, i.e. before 2000) with the development of the financial sector, and the case of Nigeria, where the development of telecommunications and the restructuring of the banking sector have triggered significant international investment. Indeed, the reform of the banking sector instigated in 2005 by the country's monetary authorities (to reduce the number of banking establishments from 84 to 25 "credible" banks) is designed to galvanize the sector by carving out an international niche. According to the Central Bank of Nigeria, this reform has led to a massive inflow of investment funds, in the region of \$2.11 billion², making the banking sector the prime receiver of significant capital outside the oil sector.

The last form of FDI we can list is that which takes account of the maturity of certain African economies and/or the closeness of these economies to developed economies, like South Africa, Tunisia or Egypt and, to a lesser extent, Morocco. In this configuration, the credibility of these countries with regards investors lies primarily with their international economic competitiveness. As emphasized by P. Hugon (2006), African economies are still dominated by a rationale of annuities, where enrichment stems more from capturing wealth rather than from creating it. Countries leaning towards economic maturity are effectively attempting to go beyond this annuity-based line of thought by creating new opportunities to boost their economy.

Generally speaking, the African continent, especially the sub-Saharan zone, is looking at the absolute necessity to restructure its institutional and regulatory framework to strengthen international credibility.

In addition to necessary reforms, these countries also need to manage and contain the risks that curb the enthusiasm of investors and additionally degrade the continent's exterior image. Indeed, for economic operators, the African continent is generally more marked by high country-risks than it is by economic opportunities, most notably because of political instabilities, the failure to respect private property and the inefficiency of surveillance

² In addition, at the end of 2005, a flow of \$US 500 million in direct foreign investment was felt likely according to the Central Bank of Nigeria.

institutions³. With respect to the violation of property, the real fear factors are not so much the risk of nationalization, more the risks of depreciation further to riots, civil wars or social unrest, and the risk of predation from the receiving State which is omnipresent in the country's economic sphere. Other types of risk are frequent on this continent, such as government defaulting on payments, a phenomenon which refuses to go away owing to the importance of the role of public authorities in the economy. This is compounded by the risks of performance tied to the problem of good governance and the interference of respective governments. This problem of interference and non-transparency leads on to other extremely constrictive risks. They involve firstly the absence of rule of law, or more precisely the absence of stability or the non-respect of business law and private property. And secondly administrative hold-ups and corruption – even though their impact is open to argument. Thus, these country-related risks, compounded by the existence of markets that are unstructured, scattered (very little inter-connection) and too small, give the majority of African economies low credibility and very little attractiveness for FDI compared with their Asian counterparts.

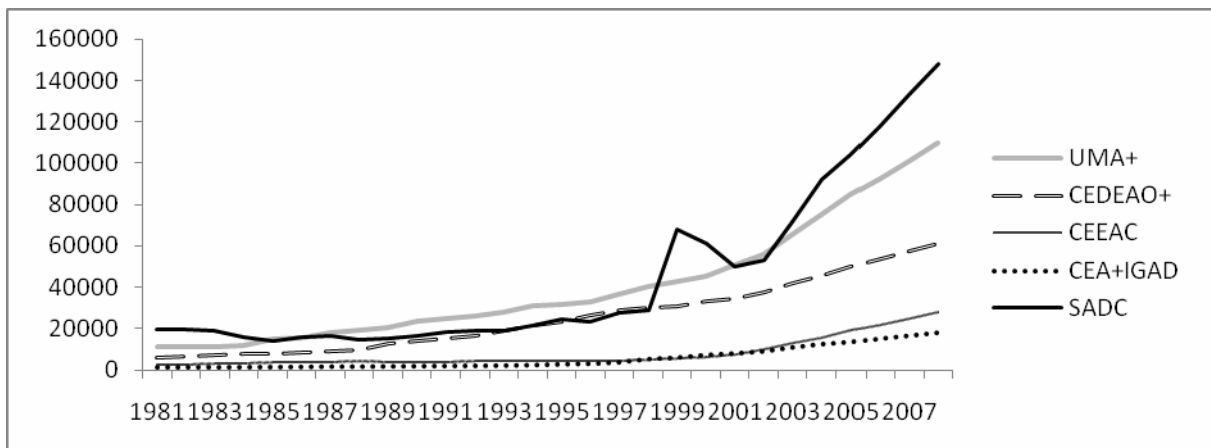
According to a study conducted by F. Bonaglia, A. Goldstein and C. Richaud (2002)⁴ which aimed to gauge structural and institutional reforms in African from a qualitative and quantitative perspective, it emerged that the countries that introduced the greatest number of reforms between 1985 and 1997 are those in the south of the continent. Amongst others, they include Botswana, Mauritius Island, South Africa (RSA) and Tanzania, and to a lesser extent Zambia and Zimbabwe. Addressing these reforms, the aim of which is to improve conditions of domestic production, on the one hand creates high international credibility for the countries concerned and on the other reflects a firm political commitment to laying new bases for development and economic policy.

Indeed, reforms that are in tune with incoming flows of FDI are those that dwell more on : *i*) openness of the economy to competition; *ii*) incentives to invest in an environment characterized by the “*lesser State*” where conditions are conducive to doing business; *iii*) the limitation of the effects of distortion from the tax regime on the decisions taken by private economic agents; and *iv*) the very clear definition of local regulations governing investment. It is certainly the improvement made to these key points that has enabled certain regions to be more dynamic than others in terms of attractiveness for FDI, as shown by graph 1. It shows that SADC, UMA and to a lesser extent CEDEAO have built up a greater inventory of capital than the rest of the continent.

³ Issues of democracy and human rights remain secondary, even marginal

⁴ F. Bonaglia, A. Goldstein & C. Richaud (2002), *Measuring Reform*, Study from the OECD Development Centre.

Graph 1. Comparative evolution of FDI inventory between African regions (\$US millions) \$)



Source: produced using data from UNCTAD. **Note:** UMA+ includes member states plus Egypt. CEDEAO+ concerns all West African countries. CEA+IGAD encompasses all East African countries.

The transformation of the worldwide economic sphere has also translated to the renewal of the driving forces of FDI. The role of technical progress, human capital, political ingenuity and regional clout is assuming ever greater proportions in the geographical implantation or relocation of firms. According to the UNCTAD report (2001), natural resources alone are increasingly not enough to attract FDI, and the same goes for cheap labour. In other words, countries which for years have banked on basic raw materials to fuel international capital are now having to restructure their economy to secure sustainable external input. Many empirical studies converge and all show that a country that adopts a policy of openness plus a good level of human capital plus a sufficiently diversified economic structure increases not only its appeal potential but also the spill-over effects generated by FDI on economic growth and the productiveness of factors (R. Findly, 1978, R. Barro and Sala-i-Martin, 1997, Borensztein *et alii*, 1998). The robustness of the impact of FDI on the economic growth of emerging countries is a relevant argument that supports competition between countries in one and the same region in terms of attracting foreign capital. For governments, there exists an array of instruments with which to appeal to multinationals: subsidies, lower charges and tax relief, repatriation rights for capital and a policy of competition to guarantee a substantial market share for newly relocated companies. Many African countries (Gabon, Swaziland, Botswana...) have reviewed their investment codes in a way that is more favourable to foreign investors.

Section 2. Implementation of the empirical approach to test factors of attraction for FDI

For a multinational, the choice of location for investment in a country (or a region) depends in part on the credibility it has achieved. This credibility translates to the perception that investors have of a country (or region), i.e. anticipations sensed at an early stage by the holders of capital as to the prospects for, and economic potential of, the receiving country. In the case of African countries, several questions may be asked. Do flows of received investment reflect the degree of credibility? In other words, do the projections made as to African economic prospects explain the interest shown in these countries in terms of cross-frontier investment?

Explicitly, we may formalize these questions as follows: $I_t = f(y_t, y_{t+1}^e)$ (1), implying the assumption whereby flows of FDI in time t (I_t) would depend on current (y_t) and anticipated (y_{t+1}^e)⁵ behaviour of the receiving country's economy (approached through growth in GDP per capita). Thus, the way in which this economy evolves between t and $t+1$ will weigh on its credibility, thus constituting a decision factor for companies.

i) Under the assumption of an adaptive approach to projections y , we place using the adaptive anticipation equation of: $y_{t+1}^e = (1 - \lambda) y_t + \lambda y_{t+1}$ with $\lambda \in [0, 1]$.

According to C. Gourieroux and A. Monfort (1995), this formulation is equivalent to the extrapolative form of the adaptive equation as follows, where⁶

$$y_{t+1}^e = \lambda \sum_{j=0}^{\infty} (1 - \lambda)^j y_{t-j} \quad (1.1), \text{ avec } j \text{ le nombre de retards}$$

(where j = the number of delays).

By replacing the projection value of y with its adaptive value (we simplify by placing $j = 1$), we can re-write the expression (1) in the context of a linear panel as follows:

$$I_{it} = a_i + \alpha_i y_{it} + \beta_i y_{it-1} + \varepsilon_{it} \quad (2), \quad \text{o} \quad \beta = \lambda(1 - \lambda) \quad (2.1)$$

i is each country and t the time argument. According to C. Hsiao (1986), the error term is composed ($\varepsilon_{it} = \mu_i + \varphi_t + v_{it}$) of a specific effect (μ_i) which captures the timeless effects, of a specific time effect (φ_t) which controls all evolutions in time likely to affect the whole country, and a stochastic process (v_{it}) designating the component of the total remainder and supposed to respond to the usual assumptions, i.e. following a normal law of null average and constant variance.

Equation (2) tests the validity of anticipation assumptions, i.e. whether the predictions over the economy significantly affect the decision of multinationals. For this, the issue implies the relation (2.1) as a function of the regression of β in (2). Formally, the tests consists in verifying with a null hypothesis⁶, $H_0: \lambda(1 - \lambda) = \beta$ (3)

ii). *Problems of endogeneity.* However, the econometric relation (2) may engender a problem of endogeneity between I_{it} et y_{it} inasmuch as the growth in per capita GDP in our model is potentially endogenic. Indeed, the link of causality between the two variables works both ways, even if we feel very strongly that $I_t = f(y_{t+1})$ and that $y_t = f(I_{t-j})$ avec $j = 1, 2, \dots, n$.

To guard against this slant of simultaneity, we shall instrumentalize the variable y_t by adding in information relative to the variables (X) that are likely to determine it. Note that in instrumentalizing y_t in this way, we are moving towards the assumption of rational

⁵ y_{t+1}^e designates the forecast Y_{t+1} at date t

⁶ This assumption of H_0 comes down to verifying the second order equation $-\lambda^2 + \lambda - \beta = 0$ As a function of the discriminator (Δ), we will have to test one of the roots of the equation, i.e.

$\lambda_1 = \frac{-1 - \sqrt{1 - 4\beta}}{2}$ ou $\lambda_2 = \frac{-1 + \sqrt{1 - 4\beta}}{2}$. Etant donn que $\lambda \in [0, 1]$ le test portera sur λ_2 si $\Delta > 1$

anticipations which takes account of all available updated data to formulate a rational projection. By replacing $y_{it} = f(X_{it})$, we may re-estimate equation 2 as follows:

$$I_{it} = a'_i + \beta'_i y_{it-1} + \sum_{k=1}^K \delta_{ik} x_{ikt} + \varepsilon'_{it} \quad (4),$$

k identifies each variable contained in X . The empirical equation (4) tends to be richer and more augmented than equation (2) and we then discount $\beta \neq \beta'$. However, the validity method for anticipations remains the same at (3), i.e. $H_0 : \lambda'(1 - \lambda') = \beta'$ (5). For anticipation or projection processes to act in current behaviours of DFI flows, H_0 simply has to be statistically significant: a positive sign with the coefficient reflects a stimulator effect of projections (${}_t y_{t+1}^e$) on I_t , while a negative sign predicts just the opposite.

The evolution of GDP, which gives an insight into a country's credibility, depends on a certain number of both economic and structural factors. These factors are retained as a function of the potential impact they may also have on a country's international attractiveness. This is all a question of political and economic innovation (*IPE*), human development (*DHUM*) and infrastructural development (*DINF*), national specifics of a country's economic openness. *IPE*, *DHUM* and *DINF* are composite indicators that we shall build as the weighted sums of certain relative instruments. The weighting of these instruments basically takes account of the significant⁷ and respective impact of each variable on incoming foreign investment flows.

i) Political and economic innovation is a composite indicator that is supposed to measure the *will* or the policies implemented by the government to galvanize a country's attractiveness. This indicator is designed as a function of variables relative to the international incentive to invest (*INCIT*) and to domestic investment (*IDOM*). *INCIT* is an index which evaluates the policies recommended by States to encourage and attract foreign investment (code for foreign investment, restrictions on foreign company ownership, repatriation of profits, etc.). The scale of this index ranges from a very favourable State (scoring 100) to a very unfavourable State (scoring 0) regarding foreign investment. *IDOM* is the ratio of domestic private investment (e.g. FDI) to GDP. Its introduction makes it possible to grasp the effects of crowding out or crowding in, often a subject of debate in economic literature with regards the interaction between foreign and domestic investors (L. De Mello, 1999 ; J. R. Markusen et alii, 2000; A. Agosin & R. Mayer, 2000). To the best of our knowledge, no work to date has successfully reached a consensus on the relation between foreign investment and domestic investment. Additionally, the sense and direction of the relation is not systematic when the study targets a certain number of countries (B. Bosworth and S. Collins, 1999).

Alongside these two variables, we add the democracy variable (*DEMO*), which ranges from -10 (totalitarian regime) to +10 (democratic regime), should this prove to be significant and regardless of the sense and direction of impact. Our empirical predictions expect a positive effect from democracy on a country's attractiveness, even though when it comes to movements of capital around the world this factor of political freedom is far from being a condition sine qua non for the inflow of foreign investment. By contrast, it may be an additional asset for a country that cares about its political image on the international stage.

So generally speaking, we may place the following equation:

⁷ We have arbitrarily limited this threshold of significativity to below 10%

$IPE_{it} = b_{1i}INCIT_{it} + b_{2i}IDOM_{it} + b_{3i}DEMO_{it}$, where b is the weight of the variable on the incoming flow of DFI. Following the variables that go to make it up, the expected sign for the political and economic innovation indicator is positive.

ii) Human development ($DHUM$) is a composite indicator which informs as to the physical, moral and intellectual condition of a country's human capital. We measure this using three variables likely to be instruments of these three notions and depending on whether or not they are statistically significant. Thus, we address $DHUM$ through the weighted sum of variables relative to intellectual (education/human capital), physical (health) and moral (corruption) aspects.

For education, if we consider FDI as a strategy for companies to disperse their production processes into stages and to localize their activities as a function of international price factor differences (the vertical model of DFI), human capital is then a part of these determinants whose characteristics are peculiar to the labour market of the receiving country. Importantly, it makes it possible to apprehend the receiving country's capacity and dynamism in terms of economically and durably reproducing the spill-over effects captured by that country. The greater and more dynamic this capital, the higher the quality and the greater the added value of incoming investment. Likewise, several studies have shown that the dissemination of technological innovations is rather receptive and significant in countries endowed with efficient human capital (M. Borenztein et alii, 1998). Human capital is introduced into econometric models in different ways because its measurement is anything but easy. (J.C. Berthélemy et alii, 1997)⁸. In our case, we have approximated the inventory of educative development not through the inventory or level of the educated or trained population but rather through the absence thereof. In other words, we address human capital in an inverse manner (*1- education*) through the level of illiteracy. Through this approach, we have looked to highlight the effects of a non-schooled workforce on incoming foreign investment. This inversed approach also undertakes to report on whether human capital remains an important factor in the eyes of investors. A significant negative sign before the variable coefficient signifies that the lack of human capital is crucial to the attractiveness of the economies under consideration. From another side, (*1- education*) is justified inasmuch as, to interpret the impact of $DHUM$, each component variable needs to have an effect on DFI pulling in the same direction as the indicator's other variables.

Alongside the absence of human capital, we add the health variable, whose proxy is given by the level of prevalence of HIV/AIDS⁹. According to certain specialists in health economics (M. Over, 1998), the introduction of this non-linear variable in a regression model must firstly be transformed in the form of a *logit* function such as: $IVIH = \log\left(\frac{t.vih}{100-t.vih}\right)$ with $t.vih$ the level of prevalence of HIV/AIDS and $IVIH$ its *logit* transformation. We reckon on a negative impact of HIV/AIDS on foreign investment. Indeed, the speed at which the virus is spreading and the derisory policies implemented to counter the scourge may be factors of disinvestment in Africa. All the more so in that the antiretroviral treatments are inadequate to cover the strata of the population infected by the virus. In 2007, the percentage of infected persons receiving antiretroviral therapy was 3.43% in RSA, 7.8% in Zambia and 19.3% in Botswana.

⁸ We can measure it through the average number of years of schooling for populations of an age to go out and work (J-C. Berthélemy and L. Söderling, 2000; J. Sousa et J. Lochard, 2004), or through the level of schooling in secondary education weighted by the share of the corresponding age bracket (N.G. Mankiw, D. Romer, D.N. Weil, 1992 ; R.G. King & R. Levine, 1993).

⁹ The level of prevalence of HIV/AIDS is preferred to public health expenditures for two reasons. 1). Econometrically the variable coefficient for public health expenditures is not significant in our different estimations. 2). For the same reason as our preferring (*1-education*), we want all the component instruments of $DHUM$ to move in the same direction. Their impact on DFI must be correlated with the same sign to enable interpretation of $DHUM$.

To broaden the *DHUM* composite, we have integrated the moral aspect approximated by the corruption factor. The impact of corruption on DFI depends on the size and the nature of incoming investment. For example, despite the very high levels of corruption in the public administrations of Nigeria, the Cameroon and Angola¹⁰, the attractive sectors of these different countries continue to capture significant amounts of foreign private capital. Thus, depending on the nature and orientation of foreign investment in a country, the impact on DFI of corruption may be neutral or insignificant. Indeed, we surmise that there are two levels of corruption, one passive and the other active and harmful to the business environment. In other words, there is a critical threshold which calls for increased vigilance because beyond this level corruption becomes a noxious factor for the optimal allocation of resources. On this premise, by introducing corruption into our estimations, we estimate being able to ascertain whether African countries have reached this critical threshold, which significantly penalizes foreign investment. But firstly we must transform it because the way in which it is indexed prohibits any direct inclusion. Indeed, the statistics we have give an indexation of corruption from 0 (very high levels of corruption) to 100 (very low levels of corruption)¹¹. But, we want all *DHUM* component variables to pull in the same direction to give a clearer interpretation. To this end, we have transformed the corruption index as follows: $Corr = (1/corruption) \times 100$. Thus, scoring is inversed, with highly corrupt countries having a higher score than countries where corruption is low.

Generally, we place $DHUM_{it} = b_{4i}(1 - education)_{it} + b_{5i}LVIH_{it} + b_{6i}Corr_{it}$. The expected sign for the *DHUM* composite indicator is normally negative because considering the way in which components have been specified, it designates inadequacies in terms of human development.

iii) The last composite indicator concerns the development of a country's infrastructures (*DINF*). This indicator assembles variables such as the mileage of asphalted roads (*ROUTE*), the number of mobile phones per inhabitant (*PHONE*)¹² and the electricity consumption per inhabitant in KWh (*ELEC*). Specified in this way, the *DINF* variable is preferable to public expenditures because it is more relevant in directly integrating the reality of a country's infrastructure. Furthermore, directly accounting for a country's level of infrastructures makes it possible to fairly analyse the efforts made by the authorities to modernize the living conditions of populations. Whereas the introduction of public expenditures into the model in a general manner is fallacious and may distort the study given that a significant share of the budget allocated to public expenditures is not utilized in an efficient manner.

$$DINF_{it} = b_{7i}ROUTE_{it} + b_{8i}PHONE_{it} + b_{9i}ELEC_{it}$$

iv) Next to these constructed composite indicators, we implicate variables concerning national specifics, i.e. variables whose impact may vary from one country to the next and whose significativity is not systematic. This effectively involves the size of the national population (*POP*) and military-political-civil instability (*Trouble*). The population may be considered as a variable likely to explain flows of incoming FDI if we consider that multinationals are looking to win significant shares of the domestic and regional market. Thus, the number of inhabitants may reflect potential (gross) demand. However, in the case of Africa, its inclusion in the estimation may be open to argument notably on account of the low level of real income per inhabitant, a characteristic of the majority of the countries in our

¹⁰ From *Transparency International* (2007).

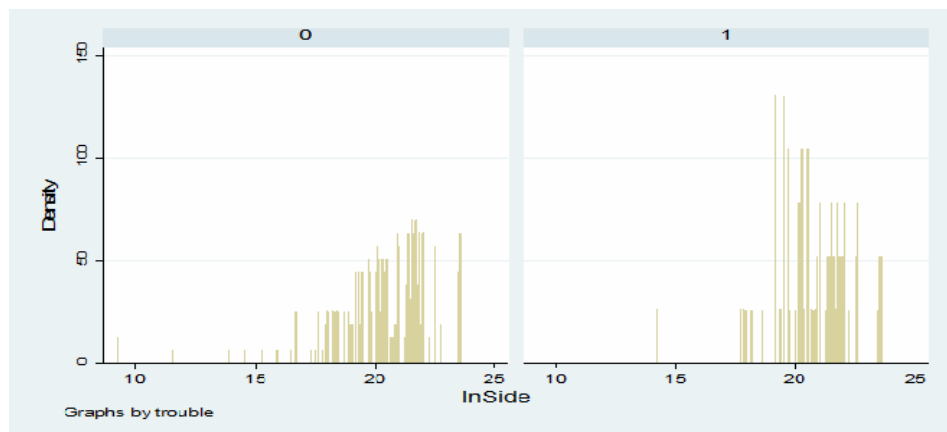
¹¹ Taken from *Heritage Foundation* (2008)

¹² The number of mobile phones is preferred to fixed phone lines per inhabitant because this figure is growing faster.

sample. From this, the real impact of the population on incoming FDI may be undermined or even cancelled out by the level of national (monetary) poverty, of inequality or inadequacy of spending power. For this variable to be relevant, it has to be corrected by the spending power of households or their marginal propensity to consume. So the population variable may be relevant when considered regionally inasmuch as a company may relocate in a country with sights set on the regional market. However, we suspect a positive sign in its coefficient.

The other nation-specific aspect concerns socio-political and military unrest translating to civil wars, ethnic conflicts and other troubles (*Trouble*) which we approach with a silent variable equal to 1 for periods of unrest, otherwise 0. Many studies have shown that social instability marked by civil wars or ethnic violence or again sudden changes of political regime help to increase the country risk, which is one of the obstacles to investment. Obviously, a stable and secure environment is more conducive to good business than an unstable and uncertain environment. However, the case of Africa leads us to put this analysis into perspective, or at least to pose certain conditions. Indeed, FDI does not behave in the same way for every country in the event of civil instability. In the table in appendix 1, we see that during critical periods, some countries blessed with significant and strategic natural resources continue to absorb foreign capital (Algeria, Angola, Ivory Coast, Congo-Brazzaville, Nigeria). Moreover, in Angola inflows of FDI attained an historical high in 2003 before the end of the civil war. But countries that are devoid of strategic natural resources see FDI slump during periods of unrest. So, by comparing the density of flows of incoming FDI over the two periods, we can but conclude that FDI during times of stability is higher than accumulated sums during periods of instability (graph 2).

Graph 2. Density of incoming flows of FDI in times of stability (0) and instability (1) between 1980 and 2007



Note: lnSide = log of the sum of incoming FDI p.a. in times of stability (0) and instability (1) respectively.

Source: author.

Additionally, the mean comparison test backs up the information given by graph 2. When comparing statistically the difference in mean sums of incoming FDI between periods (0) and periods (1) from 1980 to 2007, we achieve the following results:

Table 2. Mean comparison test for incoming flows of FDI in times of stability (0) and periods of instability (1).

(0)	(1)	Difference: (0) - (1)
17.503 (<i>observation</i> = 589)	17.966 (<i>observation</i> = 133)	-0.463 (<i>t-stat</i> = 2,154)

This test lies with the assumption of equality of variances. We also find the same results when dropping this assumption, i.e. considering variances to be unequal.

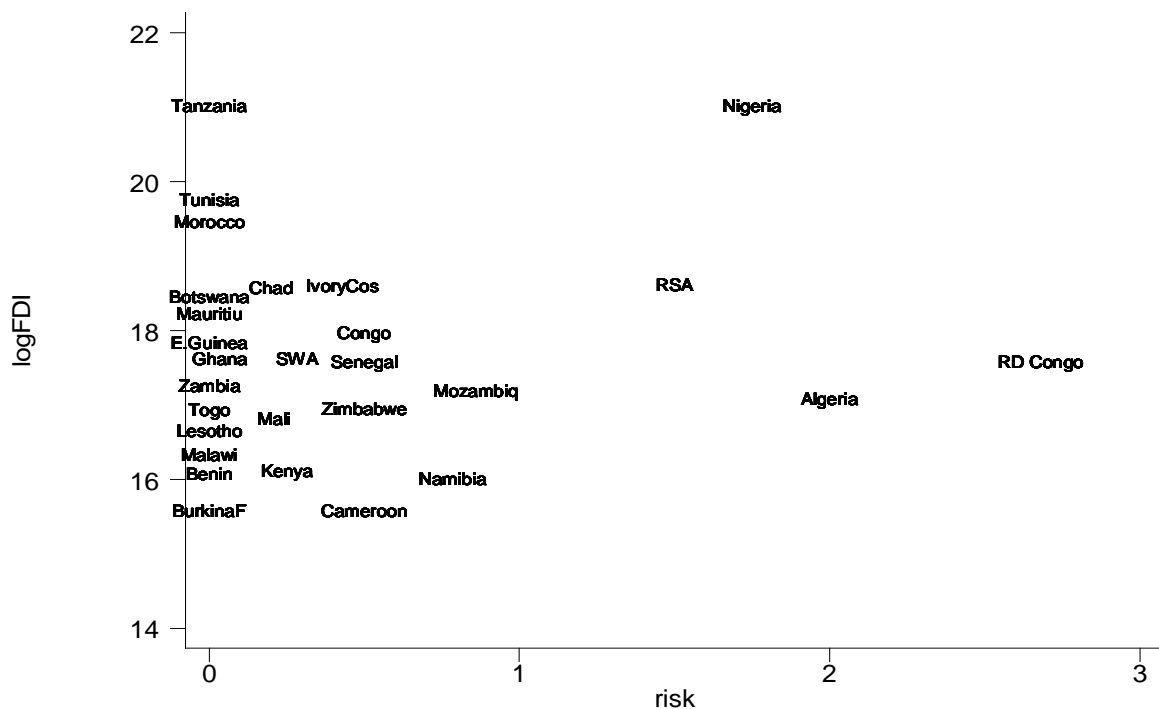
In other words, we can but conclude that the mean figure for flows of capital in times of stability is higher than that seen in times of instability.

To better show the impact of the *Trouble* variable on incoming FDI, we increase it with the social “magnitudes”¹³ it causes. This effectively means the human (number of deaths) and material consequences resulting from wars or ethnic/civil/military violence. The *Centre for Systemic Peace (2008)* measures this social magnitude on a scale of 1 (unsubstantial consequences) to 10 (serious consequences). Thus, to grasp the social risk (*RISK*) for each country, we modify each year of unrest with the related social magnitude (*MS*), which gives an idea of the real risk within the country. $RISK = Trouble \times MS$.

On this basis, we have built a graph (graph 3 below) which casts light on the relationship between the mean flows of FDI per country and the social risk. Observations back up the idea whereby international investment does not react in the same way, depending on the instability in each country. Countries rich in natural resources tend to retain their appeal despite the high social risk (Nigeria, RSA, Algeria), whereas countries with fragile economies seriously need to preserve social and political stability.

¹³ See appendix 1 and *Centre for Systemic Peace (2008)*

Graph 3. Social risk and FDI patterns (1980 – 2007)



Note: on this graph, risk is the average of social risk between 1980 and 2007 for each country. The countries further removed from 0 show a high social risk. *logFDI* presents the average of FDI flows between 1980-2007 per country expressed in log. SWA = Swaziland; RSA = Republic of South Africa.

Source: author's own calculation.

Through these demonstrations, we simply wish to show that the cited socio-political instability has a relative effect on FDI in Africa. Thus, we expect a negative sign for the coefficient but with no certainty as to significativity, and suspect that its introduction into the model might undermine the other variables.

To finish, we take account of the economic openness of the countries addressed by way of a dichotomy variable (*REGION*) equal to 1 if the country belongs to a form of regional integration, otherwise 0. Lastly, according to economic literature, we implicate the monetary volatility of countries (volatility of exchange rates with the dollar or *VER* \$)

Section 3. Econometric analyses: methodology, results and interpretations

We have worked on incoming flows of FDI in 28 African countries between 1980 and 2007. Our data comes from various official sources. The statistics concerning flows of FDI and national population come from the stats manual of the UNCTAD (available online); data for GDP, education, HIV/AIDS, domestic investment and infrastructures (roads, electricity, mobile telephony) are taken from World Bank sources (WDI, 2000, 2006) and from the African Bank for Development (2006, 2009). Data pertaining to corruption and the index relative to the freedom of foreign investment (incentives to invest) are taken from the Heritage Foundation data base (2006, 2008). The democratic regime and unrest or socio-political instability figures come from the annual classification of Polity III, IV and V and from the *Centre for Systemic Peace*. FDI and domestic investment are related to GDP. With the exception of Democracy, all variables are expressed in log.

We have preferred to work with a panel of estimation techniques to exploit the temporal specifics and heterogeneity of our sample, which implicates a set of countries whose nature of individual effects appears to be significant. Well before opting for panel estimation techniques, we conducted specification tests to verify the homogeneity of the process generating data for our sample. In other words, through the Lagrange multiplier test, examining specifications helps to determine whether or not the panel estimations are justified. The Fischer statistic applied to the model confirms the use of panel data even though not cylindered. The different models that are the subject of our estimations are in the form of equation (4).

The results obtained from our different estimations (correcting the slant of estimations due to the heteroskedasticity of errors by the White method) are given in the table below. To choose between fixed and random effects, the Hausman test applied to the different models is unable to reject the null assumption of correlation between individual effects and explicative variables. So our choice remains focused on the compound error estimator. However, the presence of a potentially endogenous variable (*IDOM*) – even if the applied Hausman test does not validate it – has prompted us to compare the results obtained with the Hausman-Taylor (HT) estimator of instrumental variables. The use of this estimator may also be justified by the fact that the compound error estimator supposes as null the correlation between specific effects and explicative variables. However, in our estimations, we have a rather high correlation, albeit negative (-0.75). To apply the HT estimator, we have added an invariant variable in time to allow validation of the tests. To this end, we have chosen the *land area* of each country. Economically speaking, geographic land area may be seen as a proxy justifying the prospecting of raw materials. The larger a country geographically, the greater the likelihood of finding other exploitable resources.

In our estimations, one of the tests concerns the role of anticipations without however specifying their nature. Under the null hypothesis, the test $\lambda'(1-\lambda') = \beta'$ verifies whether the future evolution of an economy affects ongoing foreign investment. What emerges is that the weight of anticipations is not globally and clearly confirmed. Compound errors show clearly that in the case of Africa, the projected behaviours of economies significantly and statistically affect present FDI. An anticipation made in time t of 1% of additional economic growth over the forthcoming period ($t+1$) creates credibility for the country by generating almost half a percentage point of incoming FDI over the present period. But tests with HT lead us to put this result into perspective because the hypothesis is not statistically significant. Given the possible correlation of specific effects with explicative variables under random effects, the estimations of Hausman-Taylor instrumental variables appear relevant. Following these results with HT, we may deduce that anticipations are insufficient to justify a share of the incoming flows of FDI in the 28 African countries under study. This non significance is explained by the behaviour of variables likely to influence the credibility of countries under study.

Table 3. FDI determinants in Africa

	(1)	(2)	(3)	(1)	(2)	(3)
β'	-0.703 (2.78)***	-0.724 (3.51)***	-0.735 (3.49)***	-0.568 (1.19)	-0.600 (1.25)	-0.717 (1.47)
<i>Domestic investment</i>	-0.810 (2.76)***	-0.912 (3.29)***	-0.947 (3.20)***	-0.646 (2.43)**	-0.667 (2.50)**	-0.717 (2.68)***
<i>International incentives</i>	0.817 (2.29)**	1.032 (2.89)***	0.874 (2.60)***	0.707 (1.87)*	0.779 (2.02)**	0.729 (1.89)*
<i>Levels of illiteracy</i>	-0.915 (2.83)***	-0.856 (2.94)***	-0.865 (3.18)***	-1.850 (1.40)	-1.914 (1.45)	-1.815 (1.41)
<i>Prevalence HIV/AIDS</i>	-0.290 (2.73)***	-0.306 (3.64)***	-0.389 (4.76)***	-0.440 (1.62)*	-0.375 (1.34)	-0.500 (1.75)*
<i>ROUTE</i>	-0.322 (2.53)**	-0.330 (2.65)***	-0.328 (2.78)***	-0.187 (0.52)	-0.216 (0.59)	-0.237 (0.66)
<i>ELEC</i>	-0.178 (1.14)	-0.019 (0.13)	-0.020 (0.14)	-0.303 (0.79)	-0.135 (0.33)	-0.104 (0.25)
<i>PHONE</i>	0.209 (4.91)***	0.198 (4.59)***	0.197 (4.51)***	0.215 (2.51)**	0.196 (2.22)**	0.194 (2.23)**
<i>Population</i>	0.363 (1.41)	0.411 (1.78)*	0.419 (1.79)*	-1.383 (0.81)	-1.285 (0.75)	-0.660 (0.42)
<i>Land Area</i>	-0.077 (0.22)	-0.157 (0.60)	0.040 (0.19)	0.161 (0.07)	0.253 (0.11)	0.308 (0.15)
<i>VER \$</i>	0.000 (2.86)***	0.000 (2.84)***	0.000 (2.59)***	0.000 (0.86)	0.000 (0.76)	0.000 (0.67)
<i>Regional Integration</i>	0.148 (0.36)	0.507 (1.12)	0.244 (0.46)	-0.123 (0.25)	0.101 (0.19)	0.011 (0.02)
<i>Democracy</i>		0.001 (0.07)	0.003 (0.17)		0.009 (0.26)	0.006 (0.18)
<i>Corruption</i>		0.065 (1.64)	0.071 (1.92)*		0.061 (1.02)	0.063 (1.07)
<i>Social Risk</i>	-0.214 (1.19)		-0.299 (1.75)*	-0.160 (1.38)		-0.163 (1.40)
<i>Constant</i>	7.691 (2.06)**	6.479 (2.35)**	4.681 (1.78)*	34.288 (0.90)	30.789 (0.86)	22.071 (0.71)
Observations	237	237	237	237	237	237
R ²	0.201	0.188	0.193			
Wald Test	109.74 [13]	173.09[14]	189.41[15]	57.05 [13]	56.08 [14]	58.06 [15]
H0 : $\lambda'(1 - \lambda') = \beta'$	0.475*** (1.88)	0.487** (2.36)	0.492** (2.34)	0.464 (0.97)	0.422 (0.88)	0.483 (0.99)
Sargan Test, <i>p-value</i>				0.888	0.977	0.867

* significant at 10%, ** at 5% and *** at 1%. The absolute values of robust z-statistics are in parentheses. The Sargan test tests the null hypothesis of the validity of instruments. Here, the test's probabilities do not allow us to reject this hypothesis. H0 : $\lambda'(1 - \lambda') = \beta'$ verifies the impact of anticipation y_{t+1} on FDI. Our results diverge depending on the estimator: significant with random effects and non-significant with Hausman -Taylor. [...] degree of freedom.

Although significance is greater with the compound error estimator than with that of Hausman –Taylor, the latter tends to seriously confirm certain results obtained with the first estimator, although it also corrects them. The solidity of these results evidences the presence of the crowding out effect between the two sources of investment, the importance of incentive policies, the suspicion of foreign investors as to the spread of HIV/AIDS and the major role of the development of telecommunication resources across the continent from the perspective of attractiveness for FDI.

Whichever estimator is applied, the econometric outcomes show overall that crowding-out is widespread across the whole continent – the coefficient of the *IDOM* variable is regularly negative and significant in the region of 1 to 5%. There is nothing ambiguous about this result because we find similar outcomes with the fixed effects method. In real terms, this result may be illustrated through the Chinese offensive now sweeping Africa, which is not only oriented towards heavy, capital-intensive and labour-intensive industry but also diversifying out to the purchase of local SMB and SMI and the opening up of local store and merchant businesses.

Our findings also confirm the economic theory prediction whereby better strategy in terms of incentive policies remains highly favourable to FDI. Incentives to invest have a very high impact when not taking any account of the social risks generated by conflicts (column 2: 1.032 with random effects and 0.779 with HT). Amongst other things this reflects the efforts being made by African countries to get back into the race to attract international investment in the same way as other developing countries in Asia and the Americas. While the development of telecommunication resources is one of the attraction arguments, its degree of significance declines when applying the HT estimator, shifting from 1% (with random effects) to 5% (HT). Suspicion regarding the HIV/AIDS pandemic is still penalizing for the economies included in our sample. The coefficient for the *HIV prevalence level* variable increases with the HT estimator, going as far as -0.5, but the degree of significance falls by 1% to 10%. With the HT estimator, we observe that the *HIV prevalence level* becomes significant when the social risk is introduced, thus implying that its impact on FDI would be conditioned by the country's environmental and social instability. We might also suppose that these two variables, both obstacles, are more active simultaneously than separately¹⁴.

The negative and significant impact at 1% of the level of illiteracy on flows of incoming FDI obtained with the compound errors estimators is not confirmed by the HT regressions as far as the threshold of significance is concerned. While these coefficients rise very considerably with the HT estimation (rising from -0.856 to -1.914 column 2), the critical threshold falls sharply by 1% to 15% (column 2). However, the information to ponder, despite this heavy correction, is that the absence of human capital is a handicap for the economies in our sample. This absence is decisive as is the significant negative sign which leaves us to suppose the type of investment coming into the country. With all the more reason, this would be horizontal FDI influenced by annuity together with the cost and intensity of poorly qualified labour, disconnected from a country's structural capacity to reproduce. The negativity of the effects of absence of human capital affects above all else vertical FDI and transfers of knowledge and technologies. The high values for its coefficient suggest, among other things, that foreign investors tend to integrate a country's cognitive potential into their decision-support model.

¹⁴ We re-ran the tests excluding the HIV/AIDS variable but retaining the social risk. Irrespective of estimator, the social risk is barely significant even though it retains its negative sign. By contrast, the variable moves closer to significance when we include the level of HIV prevalence. This cushions the assumption of interactive simultaneity between the two variables regarding DFI.

As expected, our different tests underscore a negative but faintly significant correlation between FDI and the social risk (column 3: 10% with random effects and 20% with HT). The low level of the threshold of significativity backs our previous analyses of the link between the two variables. Two interpretations may be tendered to justify this: *i*) either the social impact social of the military, civil or ethnic wars is low or short-lived; *ii*) or the major part of investment is localized in annuity sectors whose production is exclusively export-focused and is given greater protection in the event of major instabilities. The second option seems more plausible and is defended, for example, by P. Hugon (2006). Generally speaking, the economic and strategic issues in these sectors prompt local governments to become deeply involved and, through a ricochet effect, to protect international capital in the event of major instabilities in order to reassure international investors and ensure the continuity of incoming flows. This is how it works in Nigeria, the Congo and Angola with regards oil industry investments. Other econometric tests have been conducted to analyse the depth of links between socio-political instabilities with related social risks, and foreign direct investment.

The corruption factor is not clearly significant. The findings are hardly satisfactory. Despite the unexpected sign of the coefficient, the non significativity of this factor with the HT estimator is not that surprising when we go deeper into our analysis. According to *Transparency International*, the nature of corruption in Africa has a high political and bureaucratic slant, meaning that it affects incoming public capital, as it happens, public aid for development (or financial loans) more than it does private capital. Now, the FDI we are considering is of a private order, the capital invested is not only managed and steered by the holder companies but also pre-targeted in a specific economic field. Thus, the chances of local public authorities laying their hands on this private foreign capital are low, even though these same States have virtually full management control over the loans and public aid granted respectively by international institutions and developed countries.

Contrary to certain works, the impact of the volatility of real exchange rates (vs. the dollar), is virtually nil and not significant (with the HT estimator) for the 28 African countries involved in our study. This result is explained primarily by the scope and nature of FDI attracted by the continent. The low level of portfolio investment and the inadequacy and immaturity of financial structures go a long way to explain the absence of any significant correlation between FDI and real exchange rate volatility.

Table 4 below shows how socio-political instability, associated with the resulting social risk, influences the composite variables that determine foreign investment. To express these composite variables, we have calculated them based on the absolute value of the coefficients of components from regression 2 of Table 3 (with random effects)¹⁵. The estimation method lies with the Hausman-Taylor estimator of instrumental variables (estimations are corrected plus heteroskedasticity). Regression 1 firstly tests the composite indicators plus the population. In regression 2, we introduce the social risk then successively we integrate the presence of regional organizations - SADC, CEDEAO and CEMAC – with regressions 3, 4 and 5 respectively before estimating them simultaneously (column 6). Regression 7 concerns the estimation of composite variables and population cross-referenced with socio-political instability.

¹⁵ The coefficients of column 2 with random effects are chosen to avoid any interference with the social risk variable and to involve as many significant components as possible. For the record, only variables significantly correlated to incoming FDI are used.

Table 4. Behaviour of social risk on indicators likely to influence incoming FDI

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
y_{t-1}	-0.621 (2.69)***	-0.673 (2.92)***	-0.720 (3.37)***	-0.713 (3.32)***	-0.717 (3.36)***	-0.691 (3.18)***	0.073 (0.48)
<i>IPE</i>	-0.258 (1.67)*	-0.315 (2.01)**	-0.331 (2.10)**	-0.332 (2.11)**	-0.327 (2.08)**	-0.312 (1.96)*	
<i>DHUM</i>	-0.603 (1.27)	-0.738 (1.54)	-0.837 (1.86)*	-0.946 (2.12)**	-0.925 (2.07)**	-0.696 (1.36)	
<i>DINF</i>	0.921 (6.32)***	0.882 (6.07)***	0.912 (6.35)***	0.887 (6.26)***	0.880 (6.19)***	0.954 (6.20)***	
<i>POP</i>	-0.045 (0.13)	-0.020 (0.07)	-0.204 (0.74)	-0.158 (0.58)	-0.079 (0.28)	-0.197 (0.66)	
<i>Social risk</i>		-0.155 (1.57)	-0.167 (1.71)*	-0.171 (1.75)*	-0.171 (1.75)*	-0.155 (1.57)	
<i>DINF*social risk</i>							0.876 (7.07)***
<i>POP*social risk</i>							-0.092 (2.60)***
<i>IPE * social risk</i>							-0.350 (3.27)***
<i>DHUM * social risk</i>							-0.585 (2.64)***
<i>SADC</i>			-0.610 (1.13)			-0.563 (0.55)	
<i>CEDEAO</i>				0.361 (0.63)		-0.021 (0.02)	
<i>CEMAC</i>					0.368 (0.50)	0.020 (0.02)	
<i>Constant</i>	11.977 (2.37)**	12.728 (2.81)***	15.031 (3.32)***	14.051 (3.20)***	12.905 (2.84)***	13.782 (2.66)***	-0.818 (0.22)
<i>Observations</i>	331	331	331	331	331	331	331
<i>Wald Test, Chi2</i>	57.16[7]	61.91[8]	63.33 [7]	62.06[7]	65.50[7]	64.30[9]	70.75[7]
<i>Sargan Test, p-value</i>	0.628	0.968	0.987	0.988	0.974	0.994	0.710

* significant at 10%; ** significant at 5%; *** significant at 1%. In parenthesis, the absolute values of robust t-student. The p-value of the Sargan test applied to each regression is unable to reject the null hypothesis for instrument validity. The volatility of \$ exchange rates and land area have been excluded for reasons of non significativity.

The first regression shows that the condition of infrastructures has an attractive role in that there emerges a positive significant correlation between *DINF* and incoming foreign capital. This is not so for political and economic innovation and human development, whose coefficients are negative and diversely significant. Compared with reference column 1 results, the *IPE* coefficient gains value (-0.258 to -0.315) and significance (shifting from 10% to 5%), likewise for *DHUM* (-0.603 to -0.738 and 20% to 15%) when the social risk variable is introduced. Despite the low significance (15%) of the direct correlation with incoming FDI, the presence of the proxy of socio-political instability tends to weigh heavily on the negative impact of these two composite indicators and to lightly scratch the surface of that for infrastructures. Regression 7 cushions these results. Indeed, when cross-referencing *IPE*, *DHUM* and *DINF* with social risk to appreciate interactive patterns, we observe that only the cross-referenced term of *DINF* * *social risk* retains its level of significance and positivity, while the other cross-referenced terms have even more significant negative influences (1%). In other words, the consequences linked to war or civil or military unrest affect more a country's attraction potential and optimal diversification of invested resources. Put differently, social risk does not, as such, directly harm the decision to invest in a country; it affects above all else the broadening of investment and impairs a country's capacity to create opportunities and take advantage of effects of externality. This may certainly explain why countries such as Angola and Nigeria receive significant levels of foreign capital, despite unstable social conditions and without this capital being invested anywhere else but in oil.

In column 6, the simultaneous introduction of regional economic unions with related silent variables significantly reduces the negative interference of social risk on composite indicators. This result raises questions we might ask about the role regional organizations actually play in Africa to solidify the economies of member states. Is the interconnection of regional organizations a solution to cancel out the instabilities and risks generated by conflicts? The credibility of regional integration to stimulate greater incoming foreign investment in the area lies not only with the specific characteristics of member states but also with the dynamism and determination to create regional space capital. While this is still a major role, its impact and scope are inadequate in the case of Africa owing to the traditional trajectory of FDI across the continent.

Conclusion

In this contribution, we have set out on an empirical search for factors likely to have an influence on the credibility of African countries with a view to attracting more direct foreign investment. One of the points addressed concerns the hypothesis whereby anticipations associated with general economic outlooks for these countries impact ongoing flows of incoming capital. The other point examines, on the one hand, the effects relative to socio-political instability approximated with the social consequences of conflicts, and on the other the role that might be played by the processes of regionalization to boost the attractiveness of countries. With a panel of 28 African countries, the results of estimations obtained using the Hausman-Taylor method of instrumental variables show that the impact of projections on an ongoing decision to invest in the continent is not statistically significant. Our results also show that even though negative, the direct correlation between social risk, the proxy of socio-political instability, and flows of foreign investment is not systematically significant. Indeed, flows of DFI do not behave in the same way in countries afflicted by social and political crises. What does emerge however is that these instabilities undermine national competencies. We observe an effect of simultaneity between HIV/AIDS and social risk in the sense that the

negative impact of the former on FDI tends to increase significantly when introducing the instability variable. However, the introduction simultaneously of regionalization processes into our estimations tends to reduce the adverse effects of instability on certain FDI explicative variables. This result works like an argument in favour of the emergence of economic blocks in Africa. Lastly, contrary to certain studies, our econometrical results show that corruption in Africa has not reached the critical threshold where it would heavily penalize foreign private capital.

Appendix 1. Socio-political instability and incoming flows of DFI to Africa (between 1980 and 2007)

Country	Periods of conflicts or instability	Type of conflict (N° of deaths)	Social magnitude (/10)	Evolution of DFI flows during periods of conflict or instability (at mean annual growth rate/MAGR)
Algeria	1991 - 2004	Civil & Islamic War (60 000)	4	MAGR = + 18.70 % ; for an aggregate of \$12.33 billion. The period of instability represented 67.4% of incoming investment capital between 1980 and 2007.
Angola	1975 – 2005	Civil war: armed struggle for the independence of Cabinda (1 000 000)	6	MAGR = +15.75% ; for an aggregate of \$16.73 billion between 1980 and 2004. Angola reported an historical peak in 2003 (\$3.5 billion) despite the conflicts.
Burundi	1993 – 2005	Ethnic war and civil violence: Hutus vs Tutsis (100 000)	4	MAGR = +1.57% . The period of instability represented over one-third (36.75%) of incoming capital between 1980 & 2007.
Congo Brazzaville	1997 – 1999	Civil war (10 000)	3	MAGR = + 87.35%
	2002 - 2003	Urban and civil violence (500)	1	Growth rate = +146.17%
R.D Congo	1977 – 1983	Armed repression and civil violence (10 000)	2	MAGR = - 178.39%
	1992 – 1996	Ethnic and civil violence (10 000)	2	MAGR = +4.04%
	1996 – >2009	Civil and international war involving Rwanda and Uganda (2 500 000)	5	MAGR = + 32.41%
Ivory Coast	2000 – 2005	Civil war: division North-South-West (3000)	2	MAGR= +4.85% ; the 5 years of instability represented almost one third of (31.18%) of incoming investment between 1980 & 2007.
Ethiopia	1974 – 1991	Ethnic and civil war (750 000)	6	MAGR = + 16.10% (1980-1991)
	1998 – 2000	At war against Eritrea (100 000)	5	MAGR = -19.77%
Kenya	1991 – 1993	Ethnic and civil violence (2 000)	1	MAGR= - 52.62%
	2008	Civil violence further to presidential elections (1500)	3	
Liberia	1990 – 1997	Civil war (40 000)	4	MAGR = - 0.29 %
	2000 – 2003	Civil war (1 000)	1	MAGR = +105.67 %
Morocco	1975 – 1989	Colonial war (Western Sahara) (15,000)	3	MAGR = +11.86 %
Mozambique	1981 – 1992	Civil war (500 000)	2	MAGR = + 42.20 %
Nigeria	1980 – 1985	Civil and ethnic violence (9 000)	2	MAGR = - 2.19%
	1986 – 1993	War of religions (Christians vs. Moslems) and ethnic violence: (10,000)	2	MAGR = + 32.88%
	2001 – 2008	Instability and violence in the North (Kano); armed rebellion and confrontations in the oil-producing area of the Delta (> 55 000)	3	MAGR= + 38.45% (2001/2007). Despite instability and the security risks, Nigeria continues to receive significant foreign investment.
Rwanda	1990 – 1994	Attack on the Hutu regime by Tutsi rebels (15 000)	3	MAGR= - 6.21%
	1994	Ethnic genocide (500 000)	7	MAGR = - 99.98% . In 1994, net flows of DFI were virtually nil (\$1,000)
	1994 – > 1998	Ethnic war: Hutus vs the Tutsi regime (1 500)	3	MAGR= + 489.01% . On average, between 1990 and 1998 (a period of high instability and war) incoming DFI recorded just a tiny fall of -0.72%

Senegal	1992 – 1999	Ethnic and civil violence (Casamance; 3 000)	1	MAGR = + 27.80 %. This period represented 40.53% of net incoming capital between 1980 and 2007.
Somalia	1988 – >2008	Civil war (100 000)	5	MAGR = + 98.01%. Before the war, Somalia was already reporting a negative variation in DFI (see graph)
Sudan	2003 – >2008	Civil war (Darfour, 300 000)	5	MAGR = + 12.45 %. The beginning of the intensification of foreign investment (cf. the massive arrival of Chinese capital) for Sudanese oil drilling coincided with the beginning of the “genocide” in Darfour (F. William Engdahl, 2007)
RSA	1983 – 1999	Civil and inter-ethnic violence (20 000)	3	MAGR = + 19.10%
Chad	1965 – 1994	Civil war (75 000)	4	MAGR = -31.80% (during this period, little was known about oil in Chad. Drilling began later, from the year 2000.
	2005 – >2008	Armed rebellion against the Deby regime (5 000)	1	MAGR = - 0.56%. The drop in foreign investment in 2007 was marked essentially by the decision by the Deby regime to expel certain oil companies (cf. Chevron & Petronas) for non-payment of tax.
Uganda	1981 – 1986	Armed repression (100 000)	4	MAGR = + 1.81%
	1986 – 2006	Civil ethnic war (16 000)	2	MAGR = + 26.08%
Zimbabwe	1981 – 1987	Civil, inter-ethnic and racial violence (3 000)	2	MAGR = + 52.36%

Note. Social magnitude refers to the social and systemic impact of episodes of war or violence and civil unrest. The scale ranges from 1 (very low impact) to 10 (very high impact). **Source s:** (1) **Centre for Systemic Peace, 2009** (for the periods, types of conflict and social magnitude), (2) **By the author** (for the calculation of MAGRs of incoming DFI during these critical periods).

Appendix 2

Descriptive statistics of variables per period of stability (0) and instability (1)

-> Trouble = 0 (no unrest)

Variable	Obs	Mean	Standard discrepancy	Min	Max
log(DFI/gdp)	589	-4.615679	2.061376	-13.59419	2.827356
log(gdp)	631	22.09308	1.395492	15.22226	26.35026
log(IDOM/gdp)	608	-1.710256	.5871271	-6.775826	-.3437595
Log(INCIT)	630	3.898241	.318505	2.302585	4.421247
log(1-edu)	631	3.606262	.5460173	1.96229	4.490928
log(HIV)	388	-3.386702	1.806413	-6.906755	-.9002457
log(pop)	631	15.67767	1.239296	12.26737	18.53472
log(route)	631	10.00072	1.263696	7.481556	12.82444
log(elec)	421	5.537873	1.179194	2.906351	8.494161
log(PHONE)	301	.08546	2.833607	-8.240197	4.481872
demo	631	-1.768621	6.526651	-10	10
logcorr)	631	1.279825	.6694787	.2744368	3.401197
Social risk	631	0	0	0	0

-> Unrest = 1 (in the present of unrest)

Variable	Obs	mean	standard discrepancy	Min	Max
log(DFI/GDP)	133	-5.402179	2.362344	-15.444	-1.219085
Ln(gdp)	153	23.21785	1.486726	20.6069	25.95069
log(IDOM/GDP)	149	-2.106741	.7169133	-4.592226	-.738313
log(INCIT)	150	3.761626	.5151238	2.068154	4.352855
log(1-edu)	153	3.592346	.5336716	2.090974	4.396438
Log(HIV)	81	-4.524474	1.872011	-6.906755	-1.020141
log(pop)	153	16.72862	1.309484	13.80832	18.81335
log(route)	153	10.76431	1.061502	8.187021	12.78716
log(elec)	139	5.497287	1.408687	3.337035	8.416527
log(phone)	86	-.9449997	2.889286	-6.756783	3.496608
demo	153	-1.980392	5.413762	-9	9
log(corr)	153	1.424086	.7876219	.356675	3.110318
Social risk	153	2.196078	1.308167	0	5

Correlation between variables

	IDE	GDP	IDOM	INCIT	1-edu	HIV	demo
DFI	1.0000						
gdp	-0.2800	1.0000					
IDOM	-0.1076	-0.1071	1.0000				
INCIT	-0.0875	0.2698	0.2094	1.0000			
L1-edu	-0.1842	-0.0830	-0.1747	0.0408	1.0000		
HIV	0.1015	-0.3400	-0.0699	-0.1344	-0.4144	1.0000	
demo	0.1341	0.1180	0.1421	0.1422	-0.3756	0.1957	1.0000
CORR	0.0826	-0.3199	-0.1516	-0.3772	0.2713	0.1689	-0.2667
route	-0.2801	0.5962	-0.1508	0.0470	0.0220	0.0313	0.0042
Elec	-0.1608	0.3496	0.3328	0.3413	-0.5879	0.1145	0.3435
PHONE	0.2790	0.0610	0.0926	0.0460	-0.4107	0.1817	0.3484
POP	-0.2358	0.7440	-0.3119	0.0859	0.2361	-0.1965	-0.0511
RISK	-0.1714	0.3244	-0.2229	-0.1326	-0.0181	-0.2889	-0.0375

	CORR	route	elec	phone	pop	risk
CORR	1.0000					
route	-0.0656	1.0000				
elec	-0.4515	0.4335	1.0000			
Phone	-0.0331	-0.0752	0.2409	1.0000		
POP	-0.0197	0.7271	-0.1334	-0.2108	1.0000	
RISK	0.0771	0.2886	0.0368	-0.1293	0.3350	1.0000

The 28 countries making up our sample:

CEDEAO: Benin, Burkina-Faso, Ivory Coast, Ghana, Mali, Nigeria, Senegal, Togo

CEMAC: Cameroon, Republic of Congo, Equatorial Guinea, Chad

SADC: South Africa (RSA), Botswana, Democratic Republic of Congo, Lesotho, Malawi, Mauritius Island, Mozambique, Namibia, Swaziland, Tanzania, Zambia, Zimbabwe

EAC: Kenya

UMA: Algeria, Morocco, Tunisia

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