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RESEARCH ARTICLE

IMPACT OF MACROECONOMIC UNCERTAINITIES AND POLITICAL RISKS ON THE PATTERN OF FDI IN THE DEVELOPING WORLD: AN EMPIRICAL EVIDENCE FROM AFRICAN, ASIAN AND LATIN AMERICAN ECONOMIES

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ABSTRACT

While recent times have witnessed a surge of foreign direct investment (FDI) inflows into the developing world, these inflows remain below optimal levels. By using data on African, Asian, and Latin American economies this study attempts to investigate the role of political risk and macroeconomic uncertainty stemming from the foreign exchange market as determinants of the patterns of FDI. Moreover, given the low share of FDI going into African economies, this study focuses special attention on the differential impact of these variables on FDI flows into Africa. The results of this study point to the fact that, in general, political risk and exchange rate uncertainty reduce FDI. However, it is shown that the impact of political risk is more severe for FDI flowing into African economies.

INTRODUCTION

Foreign direct investment (FDI) has become an increasingly important engine to foster growth and economic development in emerging and developing economies. FDI is less prone to crisis in comparison to short-term credits and portfolio investments. Also, because of its long-term nature, it has the potential to provide capital stocks, generate employment opportunities, increase productivity, and transfer skills and technology. These potential benefits of FDI over other types of capital inflows, has made attracting FDI one of the integral components of the economic agenda and the economic development strategies in many countries of the developing world. Given FDI's proven benefits, there is a keen competition among developing countries to attract foreign investment. As a result, many developing countries have adopted policies that are favorable to increase FDI inflows, such as the removal of trade restrictions. These policies have not been in vain, in fact, during the last decade FDI to developing countries has increased dramatically. In the year 2004 the share of FDI going to developing countries represented 36% of the total global flows, the highest level since 1997 (UNCTAD 2005). The United Nation's Conference on Trade and Development (UNCTAD) estimates suggest that the growth of FDI inflows to developing countries has been resilient in the face of the global financial crisis and have remained positive in 2008 and 2009 (UNCTAD 2009). However, FDI inflows to developing countries have not reached optimal levels. Therefore it is important for developing countries to be aware of the determinants of FDI in order to devise policies that may potentially increase these flows even more. Asia is the largest recipient of FDI inflows followed by Latin America. In contrast, Africa still remains the region that receives the lowest levels of FDI. Moreover, what is of concern is that Africa does not attract enough flows of FDI despite the fact that it has the highest rate of return on investment when compared to other developing regions. For example, it has been reported that the average rate of return on U.S. FDI to Africa in the 1990s was about 10% higher than the average in all other developing countries (see Asiedu 2002 and Harsch 2005). Nevertheless, in 2004 Africa received 8% of the total FDI inflows to developing countries while Latin America received 29% and Asia about 63% (UNCTAD 2005). Moreover, Africa receives FDI mostly in the primary sector, and so the benefits to the region have not been as significant as in East Asia or Latin America. In this regard, a key challenge facing Africa is how to attract more FDI in dynamic products and sectors with high income elasticities of demand. These differences across regions raise some important concerns and are the motivation of this study. In particular, we are concerned with the fact that although Africa has the highest

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rate of return, it receives the lowest share of FDI inflows. Why might that be the case? While stage of development may not be attractive to investors, another possibility is that African countries are more prone to macroeconomic uncertainty and political risk.[1] In fact, according to a recent popular business and investment guide 17 of African countries were catalogued as having either high political risk or high security risk. In such a context it is important to study the impact of political risk and other types of economic uncertainty on the patterns of FDI. Along these lines, in this article we use data on FDI inflows to Africa, Asia, and Latin America to assess how the patterns of FDI are determined by macroeconomic uncertainty stemming from the foreign exchange market—and by political risk and institutional inefficiencies. We also conduct a cross-region comparison and, in particular, we focus on the differential impact of risk and uncertainty on FDI inflows to Africa. Given the critical need of FDI for Africa, the results of this study are aimed at shedding some light on how to help African economies derive some policies for attracting FDI. The article is organized as follows. Section II offers a brief description of the main determinants of FDI, placing special attention on the potential impacts of macroeconomic uncertainty and political risk. Section III introduces the data. The methodology and estimation procedures are explained in Section IV. The estimation results are discussed in Section V and Section VI offers summary and concluding remarks.

The determinants of FDI

To understand the impact of political risk and macroeconomic uncertainty on FDI, we need to account for other economic variables that multinational firms take into account when deciding to invest abroad. Location specific factors such as the size of the market of the host county conventionally measured by GDP the availability of labor, labor costs, inflation, and the availability of natural resources have been found to affect FDI flows. In general, the literature cites a large number of different location specific factors that impact investment decisions. Some of these factors are related to economic and political stability. In order for investors to feel secure about their investments in developing countries, it is important to have stable macroeconomic, political, and social institutions in place. The International Chamber of Commerce (ICC) suggests that political instability, bureaucratic bottle-necks, and the absence of a proper legal framework are major factors which investors see as impediments to FDI in developing countries. However, many previous studies have ignored the role of political risks and the importance of uncertainty that emanates from macroeconomic variables (such as exchange rates) as determinants of the patterns of FDI flows. Recently, however, a few studies have focused on these issues. In what follows we provide some insight into the role of macroeconomic uncertainty and political risk on investment decisions and discuss some of the previous studies.

Political Risk and FDI

The volatility in the political environment of the host market increases the uncertainty experienced by multinational enterprises (MNE), discouraging MNEs from entering a host market through FDI. Uncertainty is important to investors because investors necessarily look into the future before undertaking any investments. Theoretical work by Dixit (1989) and Dixit and Pindyck (1994), has stressed the role played by uncertainty in determining investment decisions. Given the irreversible nature of FDI, uncertainty about the future benefits and costs of the investment may cause a wait and see attitude in making investment decisions. Hence, investors care about uncertainty because they look at the long-term prospects of their investments. Along these lines, investment behavior will be responsive to the degree of investment uncertainty about future prices, rates of return, and political and economic conditions (see Dixit and Pindyck 1994).

However, empirical evidence on the effects of political risk on FDI is inconclusive. For example, Wheeler and Mody (1992), find political risk to be insignificant in explaining U.S. FDI. Another surprising finding is the one by Tuman and Emmert (2004). They find that a poor human rights record and military coups d'etat positively influenced U.S. FDI flows. Conversely, Biswas (2002), Jun and Singh (1996), and Sokchea (2006) find that political risk decreases FDI inflows. In particular, broad political risk indicators such as internal armed conflict, political strikes, riots, and external conflicts have been found to deter FDI inflows (see Nigh 1985 and Schneider and Frey 1985). In this article we take a step further in the literature and address this issue by assessing the role of political uncertainty on FDI inflows to developing countries using the political risk index provided by International Country Risk Guide (ICRG). The ICRG provides overall country political risk indices as well as particular measures of political instability and host country institutions. We employ the overall political risk index in order to measure the joint political and institutional risk factors that investors may consider when deciding to invest in these countries.

Exchange Rate Uncertainty and FDI

The uncertainty of exchange rates is also an important factor for investment decisions. Exchange rate uncertainty may decrease FDI since investors might want to avoid changing terms of trade. If the purpose of FDI is to serve other markets or bring production back to the home country, a negative relationship between FDI and exchange rate uncertainty should arise. On the other hand, if the purpose of FDI is to diversify location of production (increase market share) and to have the option of production flexibility, then a positive relationship between uncertainty and FDI is to be expected (see Blonigen 2005). Empirical work on the effects of exchange rate uncertainty and FDI inflows has concentrated on developed economies. However, the few studies that do focus on developing countries find a negative relationship between uncertainty of exchange rates and FDI inflows (see Sung and Lapan 2000; Bennassy-Quere *et al.,* 2001; Lemi and Asefa 2003 and Ruiz and Pozo 2008). The belief has consistently been that a high degree of uncertainty about exchange rates might deter companies from making the initial investment in developing countries (see also Blonigen and Wang 2004). Ignoring exchange rate uncertainty and just focusing on political risk may lead to biased results. Therefore in this study we want to account for both: the uncertainty that results from political risk and the uncertainty that results from macroeconomic instability related to the foreign exchange market.

Data and sources: Our analysis covers 28 developing countries from different regions of the world for the period

1985 through 2014. The variables used in this study are annual in frequency; however, the exchange rates used to generate our measures of exchange rate uncertainty are monthly in order to gather and capture the most information available. Both the nominal exchange rate and the consumer price index used to construct our real exchange rate variable were obtained from the *International Financial Statistics* CD-ROM. The political risk indicators were taken from the International Country Risk Guide (ICRG) dataset. All other variables were retrieved from the World Bank's *World Development Indicators* (2005). Following standard procedure in the literature, we scale nominal FDI by the nominal GDP of each country. This variable is what we use as our benchmark dependent variable. Using GDP as a deflator controls for the size of each economy. As such, it helps us to control for the tendency of FDI to concentrate in larger economies. Our independent variables are grouped

Into different categories:

- Macroeconomic variables;
- Labor force availability and quality, natural resource availability, infrastructure
- quality, investment profile;
- Political risk indicators and our exchange rate uncertainty measure; and
- A dummy variable in order to perform a cross-region comparison on the relative importance of risk and uncertainty, placing special attention to the case of Africa.

Macroeconomic Variables

The macroeconomic variables included in this study are GDP growth, inflation rate, openness, and exchange rates. The growth rate of GDP measures market potential. The inflation rate is included in order to capture the macroeconomic stability of the economies in question. Moreover, as it is common in the literature, openness is captured by the share of trade in GDP (that is, (X+M)/GDP). In some studies, this variable has also been used as a measure of trade restrictions. A firm investing in a foreign country may import raw materials and semi-manufactured goods and export processed commodities; therefore the host country's trade policy might affect its investing decisions. The inclusion of the exchange rates is important in order to observe if the depreciation of the host country real exchange rate encourages FDI inflows into these economies.

Labor, Natural Resources, Infrastructure Quality, and Investment Profile

Labor force quality is captured by the literacy rate while labor force availability is proxied by ratio of economically active labor force (with ages between 15 and 64 to total population). We also include infrastructure quality, which is proxied by the number of telephone lines per capita. This variable has been found to affect FDI inflows, in particular in the case of African economies (Wheeler and Mody 1992). Additionally, a dummy variable that takes account of the presence of natural resources (such as minerals or oil) is included because some FDI inflows are driven by natural resource availability. Following Asiedu (2002) we take account of the rate of return on investment by using the log of the inverse of the real GDP per capita. Asiedu (2002) has offered an interesting approach to proxying the rate of return on investment by using the inverse of log real GDP. The idea behind this measure is that if we assume that the marginal product of capital is equal to the return on capital, this implies that investments in capital-scarce countries will yield a higher return. Therefore, ceteris paribus, countries with a higher per capita income will yield a lower return and thus real GDP per capita, should be inversely related to FDI.

Political Risk Indicators and Exchange Rate Uncertainty

In addition to the variables mentioned above, measures for macroeconomic uncertainty and political risk are included in our regressions. We use generalized autoregressive conditional heteroscedasticity (GARCH) measures of the real exchange rates to proxy macroeconomic uncertainty. This measure is believed to better capture the concept of foreign exchange uncertainty (procedures are described in the methodology, see Section IV). We are particularly interested in the concept of uncertainty rather than volatility. The idea is, while volatility can be taken into account in forecasting exercises, uncertainty or the unpredicted changes in exchange rates will not be taken into account. Therefore, an uncertain exchange rate can lead to decision of stopping investment in the near future. The overall political risk indices for each host country are used to proxy the political risk that MNEs face. The ICRG provides a composite political risk index (for each country) that is built by using particular components of political instability as well as host country institutional quality. The overall political index ranges from 0–100 where scores ranging from 0–49.9 imply very high risk, 50–59.9 high risk, 60–69.9 moderate risk, 70–79.9 low risk, and 80–100 imply very low risk. However, to make the interpretation of our results more intuitive, we rearrange the indices so that a high number implies high risk while a low number implies a low risk.

Cross-Regional Comparison with a Focus on Africa

Finally, and in order to address the differential impact for the countries located in Africa, a dummy variable is constructed to account for countries that are located in the African continent. This dummy is included to test whether countries in Africa on average receive less FDI relative to countries in other regions. In addition, we have created two interaction terms, one consisting of the dummy and the exchange rate uncertainty variable and the other consisting of the dummy and the political risk variable. This allows us to test if risk and uncertainty affect African countries differently.

Methodology and econometric specification

In this section we discuss the methodology and the econometric specification. First, we discuss the estimation techniques that are used in order to assess the importance that exchange rate uncertainty and political risk have for the patterns of FDI. Second, we discuss the construction of the exchange rate uncertainty variable that is obtained through GARCH models.

Econometric Methodology: Fixed Effects Panel Data and GMM-Arellano Bond

In order to assess the importance of exchange rate uncertainty and political risk on the patterns on FDI flows into developing

countries, we use panel data estimation methods. In particular, we employ a fixed effect model in order to take into account country-specific heterogeneities. In addition, the fixed effect estimation includes country-specific effects as regressors rather than assigning them to the error term, thereby reducing omitted variable bias. In addition to the fixed effects model, we employ the Arellano-Bond dynamic panel GMM estimator. Some studies have found lagged FDI to be highly significant in their regressions (see Gastanaga *et al.,* 1998; and Busse and Hefeker 2005). That is, FDI in the previous period might be relevant for FDI in the current period. MNEs might be more attracted by host countries that already have considerable amounts of FDI inflows because this might signal success of other MNEs in that specific location. Therefore, to address this issue, the Arellano-Bond GMM dynamic panel estimator is a good technique because it includes the lagged dependent variable as an additional regressor and therefore it also addresses the problem of auto-correlation of the residuals. Moreover, along with what we have described above, this estimator also deals with the fact that some of the control variables are endogenous. The fixed effect estimation assumes that all our regressors are exogenous. However, this might not be realistic with some of our regressors. One of the basic assumptions for applying the Arellano-Bond estimator is no second-order serial correlation in the residuals of the differenced specification. Therefore, before we employ the Arellano-Bond GMM dynamic panel estimator, we also test for second-order serial correlation of our residuals. Finally, we test for the overall appropriateness of the instruments by using a Sargan test of over-identifying restrictions.

Exchange Rate Uncertainty Estimations

The literature on exchange rates has identified several approaches for proxying and measuring exchange rate uncertainty. Initially most empirical work used the variability (variance and or standard deviation) in the exchange rate to approximate uncertainty. It was assumed that unconditional measures of volatility, such as the variance (or standard deviation) or rolling variance of the exchange rate, would account for the volatility on exchange rates and that this measure contained the notion of uncertainty. However, unconditional measures of volatility include both expected and unexpected volatility. The literature has expressed concerns that such measures of volatility are not adequate if one desires to capture uncertainty. Carruth *et al.,* (2000) documents that these types of measures tend to provide little additional explanation of aggregate investment. The main objection is that, even if the measure captures the total variability of the series, part of that total variability is predictable. Thus, a variable may be very volatile, but for an economic agent, it may be predictable and possible to forecast and hence not contribute toward exchange rate uncertainty. A second criticism of this measure is that the range of moving average (or rolling window) is specified in an ad hoc manner by the researcher. To overcome these criticisms, and as econometric techniques have advanced and data availability has increased, there have been attempts to better and more precisely extract the concept of uncertainty from time series data. In this article we use GARCH processes to obtain the measure of uncertainty. It is believed that the conditional variance should be a better measure of uncertainty, because it captures unexpected volatility (Diebold and Nerlove; 1989; Bera and Higgins 1993; Carruth *et al.,* 2000). Thus, our results involve estimating a standard GARCH model in order to obtain a conditional measure of volatility. GARCH models are widely known and discussed in the literature and therefore they are just briefly discussed here. In particular, we first specify a stochastic process for the first difference of the exchange rate series. The stochastic process that generates the predictable part can be any ARIMA (p, q) model. Once this process is modeled, we obtain the residuals and the uncertainty measure is computed as the variance of the estimated residuals. In particular, the GARCH model is specified as follows:

$$Y_t = \mathrm{f}(x_t;\delta) + e_t\,,\quad e_t/\varphi_{t-1} \sim D(0, h_t^2) \qquad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (1)$$

$$b_t^2 = \alpha_0 + \sum_{i=1}^{q} \alpha_i\, \varepsilon_{t-i}^2 + \sum_{i=1}^{p} \delta_i\, b_{t-i}^2 \qquad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (2)$$

Where $\mathrm{f}(x_t;\delta)$ refers to the conditional mean, x_t consists of a vector of explanatory variables that may include lagged $Y_t's$, δ is a Mx1 vector of parameters, φ_{t-1} is the information set that contains all the information available through time t-1, and e_t is the error term which follows, conditional on φ_{t-1}, a D distribution. The conditional errors have zero mean and time varying variance, b_t^2. The conditional variance follows a GARCH process as in Eq. (2). The conditional variance, b_t^2 the proxy for uncertainty, is the one period ahead forecast variance based on the past information. It is a function of three terms: the mean level of volatilityα_0, the ARCH term ε_{t-i}^2, and the GARCH term b_{t-i}^2. We conduct a Lagrange Multiplier test in order to identify the number of lags for ε_{t-i}^2 and b_{t-i}^2 . In most cases a first-order model (GARCH (1,1)) is sufficient to adequately specify the conditional variance. For some countries they are estimated as ARCH (1) or some other type of ARCH specification. To generate measures of uncertainty captured by GARCH measures of conditional volatility, monthly real exchange rates for each of the countries were used. Before estimating the GARCH models, we conducted some preliminary data analysis such as checking for the presence of unit roots. The results from the Augmented Dickey Fuller (ADF) test for unit roots suggest that the log of the real exchange rates for all the countries under consideration are I(1) processes. That is, the real exchange rate for each country has a unit root in levels while they are difference stationary. As a result, to ensure the stationarity of our variables, we use the first differences of the exchange rate in order to fit the GARCH models and to generate the conditional variances.

Table 1 presents the coefficients of the GARCH (p, q) estimation. As can be seen from Table 1, the coefficients of the GARCH (p, q) model estimations have the theoretical expected signs and magnitude. For most countries, each exchange rate is characterized as a GARCH (1,1) process. There are six countriesfor which no GARCH (1,1) identification was found. However, based on results of the Lagrange Multiplier testing, the identification is as an ARCH model which we use, for these 6 countries, as our proxy measure of volatility (see footnote 8). Each of the monthly exchange rate uncertainty measures (*ht*) that we obtained were averaged in order to produce annual series. This is the measure of exchange rate uncertainty for each country that is included as an independent covariate in our regressions.

Table 1. GARCH Models of the Log Difference of Exchange Rates (Monthly)

Countries	AR Process	MA Process	C	$\alpha 1$	$\delta 1$
Botswana	AR(1)	–	0.0007	0.3030	0.6186
			(0.0002)***	(0.1266)***	(0.0588)***
Egypt	AR(6)	–	0.0002	0.4392	0.4070
			(0.0033)	(0.0515)***	(0.0154)***
Gabon	AR(2)	–	0.0941	0.8381	0.8914
			(0.0150)***	(0.0055)***	(0.0050)***
Ghana	AR(2)	MA(2)	0.0033	1.1023	–
			(0.0005)	(0.2680)***	–
Guinea-Bissau	AR(4)	–	0.0015	0.0055	0.7839
			(0.0022)	(0.0024)**	(0.0048)***
Kenya	AR(2)	MA(1)	0.0001	0.3698	0.6089
			(0.00002)	(0.0599)***	(0.0402)***
Malawi	AR(3)	–	0.0004	0.0232	0.8961
			(0.0002)*	(0.0107)**	(0.0544)***
Sierra Leone	AR(6)	–	0.0014	0.2562	0.8383
			(0.0025)	(0.0439)***	(0.0209)***
South Africa	AR(6)	–	0.0010	0.1615	0.7289
			(0.0003)***	(0.0483)***	(0.0650)***
Togo	AR(4)	–	0.0003	0.1684	0.8287
			(0.0001)**	(0.0354)***	(0.0256)***
Uganda	AR(4)	MA(2)	0.0004	0.1912	0.8446
			(0.0001)***	(0.0398)***	(0.0165)***
Zambia	AR(3)	–	0.0040	0.1675	0.8071
			(0.0004)***	(0.0254)***	(0.0107)***
Argentina	AR(8)	MA(2)	0.0207	1.8723	–
			(0.0003)***	(0.1806)***	–
Bolivia	AR(1)	MA(1)	0.0005	0.4171	0.3618
			(0.0010)	(0.1041)***	(0.0805)***
Brazil	AR(3)	–	0.0182	0.4123	–
			(0.0082)***	(0.1268)***	–
Colombia	AR(3)	–	0.0002	1.3555	–
			(0.0028)***	(0.1381)***	–
Chile	AR(3)	–	0.0008	0.1863	0.0957
			(0.0008)	(0.4855)***	(0.1449)***
Mexico	AR(3)	–	0.1900	0.2592	0.5799
			(0.0035)***	(0.0385)***	(0.0514)***
Nicaragua	AR(3)	–	0.0100	0.0939	0.9023
			(0.0016)***	(0.0191)***	(0.0083)***
Peru	AR(3)	–	0.0100	0.4452	0.7181
			(0.0005)***	(0.0584)***	(0.0119)***
Venezuela	AR(3)	–	0.0347	1.8067	–
			(0.0070)***	(0.4493)***	–
China	AR(3)	–	0.0952	0.6114	–
			(0.0065)***	(0.1532)***	–
India	AR(3)	–	0.0608	0.3564	0.7629
			(0.0004)***	(0.0611)***	(0.0245)***
Indonesia	AR(3)	–	0.0003	0.9719	0.1947
			(0.0026)***	(0.1834)***	(0.0618)***
Malaysia	AR(3)	–	0.00015	0.6473	0.4508
			(0.0004)***	(0.1259)***	(0.0654)***
Philippines	AR(3)	-	0.0038	0.1882	0.7020
			(0.0011)***	(0.0624)***	(0.0692)***
Singapore	AR(3)	-	0.0015	0.3579	0.4900
			(0.0027)***	(0.1154)***	(0.0934)***
Sri Lanka	AR(3)	-	0.0025	0.1846	0.7082
			(0.0015)**	(0.0630)***	(0.1136)***

Notes: Standard Errors are in parentheses and ***, **, and * denote significance at 0.01, 0.05, and 0.10 levels, respectively. We conducted a Lagrange Multiplier test in order to identify the number of lags for $\boldsymbol{\varepsilon_{t-i}^2}$ and $\boldsymbol{b_{t-i}^2}$ .For the autoregressive model, selection procedure was based on AIC results.

Estimation results

The fixed effects and Arellano-Bond dynamic panel GMM results are presented in Tables 2 and 3, respectively. In all the tables, column 1 presents the base results (i.e., without the interaction terms between the African dummy and the political risk variable and between the African dummy and the exchange rate uncertainty variable) and column 2 presents the results including the above mentioned interaction terms. The results in both tables are similar in that all the significant variables have their expected signs. For example, the inflation rate has a negative sign and is significant meaning that a high rate of inflation can signal economic instability or host government's inability to maintain an appropriate monetary policy. Moreover, FDI might not take place in high inflation countries because it creates additional uncertainty regarding the net present value of long-term investments. The negative sign for inflation is supportive of previous findings (see Trevino and Mixon 2004; Asiedu 2006). In addition, openness has the expected positive sign and is significant. If the MNE imports raw materials and semi-manufactured goods and exports processed commodities, then openness of the country might positively affect its investing decisions. Previous studies have also found measures of openness to have a positive

relationship with FDI inflows (For results regarding measures of openness, see Edwards 1990; Asiedu 2002; Tuman and Emmert 2003). Moreover, the rate of return to investment has the expected positive sign and is statistically significant. This result is in line with our expectations that a high rate of return to investment increases FDI inflows. On the other hand, although our results regarding literacy rates are positive, they are statistically insignificant. Suliman and Mollick (2009) find however that literacy rates along with economic freedom and war are important FDI determinants in the case of sub-Saharan Africa during the period 1980–2003.

The main variables of interest for this study are the measures of political risk and exchange rate uncertainty. These variables are statistically significant and have the expected negative signs. The negative and significant coefficient of the GARCH measure of exchange rate uncertainty is indicative of a negative impact of exchange rate uncertainty on FDI flows into developing economies (such results are in line with Lemi and Asefa 2003, Hamori and Razafimahefa 2005, and Ruiz and Pozo 2008). The MNE can ignore business opportunities in the host country if it expects a high variability of the exchange rate. Similarly the coefficient for the overall political risk index is negative as expected, and is significant. Political risk creates an additional cost to investors; therefore one would expect a negative relationship with FDI inflows. The other variable of interest, namely, the African dummy, is also negative and statistically significant, implying that African countries, on average, receive less FDI relative to other countries in other regions. This result is in line with that of Asiedu (2002), who finds that countries in Sub-Saharan Africa receive 1.3% less FDI than a comparable country outside the region. The results in column 2 are very similar to the results in column 1, implying that the addition of the interaction terms has not changed the results by much. From column 2, the variables of interest are mainly the interaction terms. Both the interaction terms have a negative sign, but the interaction term between African dummy and exchange rate uncertainty is not significant. The insignificance of this interaction term implies that exchange rate uncertainty does not have a differential impact on African countries. On the other hand, the interaction term between political risk and African dummy is negative and significant. The above result implies that political risk has a differential effect on African countries. That is, political risk affects FDI inflows into Africa more severely than FDI into other developing regions (even after controlling for risk). One explanation is the perception that Africa is overly risky. As a result, a country in Africa will receive less FDI due to simply being in Africa. Asiedu (2002) contends that this perception may be partly attributed to lack of knowledge about African countries. She argues that one way to dispel this myth is for governments to disseminate information about their countries and highlights the importance of international organizations such as the World Bank playing an important role in this regard. Another related explanation of this result is associated with the manner in which political risk is measured. Rodrik *et al.,* (2004) point out that the most commonly used institutional quality measures are based on surveys of domestic and foreign investors, thus capturing perceptions rather than any of the formal aspects of the institutional setting. Table 3 presents results from the Arellano-Bond dynamic panel GMM estimator which includes the lagged dependent variable as an additional regressor.

Table 2. Fixed Effects Results (FDI/GDP Is the Dependent Variable)

Variable	(1)	(2)
African Dummy	−0.2245	−0.2468
	(0.1431)*	(0.1494)*
GDP Growth	0.0516	0.0562
	(0.0265)	(0.0269)***
Inflation	−0.0033	−0.0045
	(0.0010)***	(0.0014)***
Openness	0.0094	0.0044
	(0.0009)***	(0.0009)***
Exchange Rates	−0.3348	−0.4464
	(0.3694)	(0.3780)
Literacy Rate	0.0561	0.0377
	(0.0550)	(0.0553)
Economically Active Population	0.0599	0.0494
	(0.0720)	(0.0729)
The Number of Telephone Lines per Capita	0.0090	0.0115
	(0.0053)***	(0.0055)***
Rate of Return on Investment	0.2278	0.3322
	(0.1108)***	(0.1072)***
Natural Resource Availability	0.0407	0.2070
	(0.1427)	(0.1445)
GARCH	−0.08967	−0.0810
	(0.0402)***	(0.0408)**
Political Risk	−0.5903	−0.2774
	(0.1572)***	(0.0882)***
Interaction Term between GARCH and African Dummy	–	−0.1620
		(0.1339)
Interaction Term between Political Risk and African Dummy	–	−0.4784
		(0.2401)***
Observations	488	488
Countries	28	28
R Squared within	0.1507	0.1274

Notes. Standard Errors are in parentheses and ***, **, and * denote significance at 0.01, 0.05, and0.10 levels, respectively

Table 3. Arellano-Bond GMM Estimation Results (FDI/GDP Is the Dependent Variable)

Variable	(1)	(2)
Lagged FDI	0.2842	0.2723
	(0.0517)***	(0.0524)***
African Dummy	−0.1473	−0.1539
	(0.9955)***	(0.0993)*
GDP Growth	0.0024	0.0024
	(0.0032)	(0.0033)
Inflation	−0.0067	−0.0067
	(0.0018)***	(0.0017)***
Openness	0.0243	0.0128
	(0.0117)***	(0.0117)***
Exchange Rates	−0.0858	−0.0664
	(0.3632)	(0.3642)
Literacy Rate	0.0757	0.0859
	(0.0781)	(0.0778)
Economically Active Population	0.0349	0.0256
	(0.0950)***	(0.0964)***
The Number of Telephone Lines per Capita	0.0006	0.0021
	(0.0053)	(0.0055)***
Rate of Return on Investment	0.3155	0.3432
	(0.1144)***	(0.1139)***
Natural Resource Availability	0.7488	0.8758
	(0.8923)	(0.8900)
GARCH	−0.2683	−0.2134
	(0.1086)***	(0.1096)***
Political Risk	−0.1529	−0.0811
	(0.0921)***	(0.0971)***
Interaction Term between GARCH and African Dummy	–	−0.2996
		(0.5754)
Interaction Term between Political Risk and African Dummy	–	−0.5806
		(0.3203)***
Observations	488	488
Countries	28	28
Sargan Test	0.0955	0.0837
Second Order Serial Correlation Test	0.3851	0.3251

Notes: Standard Errors are in parentheses and ***, **, and * denote significance at 0.01, 0.05, and 0.10 levels, respectively. The null hypothesis for the Sargan Test is that the instruments are valid (the reported values are p-values). The null hypothesis for the Second Order Serial Correlation Test is that the errors do not exhibit second order serial correlation (the reported values are p-values).

One of the basic assumptions for applying the Arellano-Bond estimator is no second-order serial correlation. For our data sample, the nullhypothesis of no second order serial correlation was not rejected. In addition, in order to account for the potentially endogenous variables, we employ an instrumental variable type approach. The Arellano-Bond generalized method of moments (GMM) deals with the fact that some of the control variables are endogenous. Consequently, we verified the overall appropriateness of the instruments by a Sargan test of over-identifying restrictions. The Sargan test results show that our instruments are valid (see Table 3). As expected, Table 3 shows that the lagged dependent variable (FDIt−1) is significant and positive in all the specified models. This result implies that host countries that already have considerable FDI inflows attract more FDI.11 Moreover, the Arellano-Bond GMM estimation results are similar to the fixed effects results. Control variables such as openness, investment profile (that measures contract viability and ability of multinationals to repatriate profits), and inflation still continue to be consistently significant and continue to have their expected signs. Exchange rate uncertainty (GARCH) and political risk also continue to be significant and negative. These results imply that implementing sound and stable macroeconomic policies and improving political environment (thereby reducing the political risk associated with investing) may significantly increase FDI inflows into these economies. In addition to the above, the interaction term of the African dummy and political risk also remains to be negative and significant, meaning that there is a differential impact of political risk on FDI inflows into African countries.

Conclusion

This study investigates the role of economic uncertainty represented by exchange rate uncertainty, and political risk as determinants of FDI inflows to developing economies. We place special attention on the differential impact of risk and uncertainty on African countries. The results point to the fact that exchange rate uncertainty and political risk reduce the flows of FDI to developing economies. Exchange rate uncertainty consistently exhibited negative and significant coefficients implying that exchange rate uncertainty is a deterrent of FDI inflows to these economies. The overall political risk was similarly negative and significant implying that political risk discourages FDI inflows. In addition, we included a dummy variable to account for the possible differential effects of risk and uncertainty in FDI flows to Africa. The results show that African countries receive less FDI compared to other developing countries even after controlling for important determinants of FDI. Moreover, it is shown that political risk affects FDI into Africa more severely than in other developing regions. Therefore, policy makers in African countries can increase FDI inflows by improving their institutional and political environments, thereby reducing the political risk associated with investing in their countries. For instance, African countries could attempt to change the perception of being too risky by emphasizing the positive aspects of their economies.

Foot Notes

- The concept of political risk has not received a clear cut definition. However, for the purpose of this article we will use the definition provided by Haendel (1979), who defines political risk as the risk or probability of occurrence of some political event(s) that will change the prospects for the profitability of a given investment. Political risk refers to political instability and host country institutional inefficiencies. See http://www.times-publications.com/ for more information.
- The countries in this study are Botswana, Egypt, Gabon, Ghana, Guinea-Bissau, Kenya, Malawi, Sierra Leone, South Africa, Togo, Uganda, Zambia, Argentina, Bolivia, Brazil, Chile, Colombia, Mexico, Nicaragua, Peru, Venezuela, China, India, Indonesia, Malaysia, Philippines, Singapore, and Sri Lanka. The selection of countries was based on data availability.
- We aggregate the monthly conditional variances into annual frequency to obtain our annual
- uncertainty measures
- We use the real rather than the nominal exchange rate, since uncertain price levels as well as
- Exchange rates are relevant for long-term investments. All real exchange rates are bilateral exchange rates vis-à-vis the U.S. dollar. The real exchange rates are calculated by multiplying the ratio of prices in the United States relative to national prices by the nominal exchange rates. Thus an increase in the realm exchange rate index would indicate an appreciation of the U.S. dollar
- For the sake of robustness, we included the standard deviation (and variance) of exchange rates as a measure of volatility in our estimations. As often reported in the literature, the estimates turned out to be statistically insignificant (see Bailey and Tavlas 1991; Campa 1993; Benassy-Quere *et al.,* 2001; Ruiz and Pozo 2008). Therefore, to maintain the focus on the concept of uncertainty, the results are not presented here (available upon request).
- See Enders (2004) for more Details on the Lagrange Multiplier Test (LM Test).
- Most empirical work finds that GARCH (1,1) adequately represents the conditional variance (see Bollerslev, Chou and Kroner 1992). In cases where the GARCH (1, 1) does not fit the series well, ARCH(1) is often adequate.
- For sake of space and focus, the results of the ADF test are not presented here but available from the authors upon request
- While our results regarding literacy rates indicate that this variable is statistically insignificant, this is an issue that deserves to be explored further. For more details refer to Suliman and Mollick (2009)

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