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The Effect of Macroeconomic Stability on Inward FDI in African Developing Countries

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Abstract

In this study an attempt is made to gauge the importance of prudent macro-economic management in the location choice decision of foreign direct investors. Moreover, infrastructure availability, market size, trade liberalisation and economic development are also considered, for a set of forty three African developing countries using annual data from 1990 to 2015. The results show that better infrastructure, liberalised investment and trade regimes have significant effects on FDI inflows to the African nations. Conjectured with the host market theory hypothesis, the size of the host market positively affects inward FDI. Moreover, prudent management of macro-economy and healthy business policies manifested through stable macroeconomic indicators increases the ability of the African developing countries included in the study to receive additional Foreign Direct Investment. These findings are insensitive to the use of different proxies used for the control variables.

Keywords: FDI, African Developing Countries, Macroeconomic Stability, Market Size, Domestic Market Liberalisation, Infrastructure availability

Introduction

Multinational production activities abroad and their affiliates product's in world trade has grown multi-fold post 1980's (Kim & Park, 2013). Therefore, understanding the dynamics that can potentially help or hinder their movement is of immense importance. Thus, it is imperative to continually explore and try to understand the existing factors and new possibilities which might affect FDI inflows.

The economic crisis faced by the developed countries in the last few years has restrained their ability to invest abroad (Milner, 2014). This drastically reduced the capital that was earlier available for possible investment in developing countries (Choi, Lee, & Shoham, 2016). This initiated an increased competition between them to get part of whatever is available (Williams, 2015). Simultaneously, the recent international financial chaos has added to the overseas investors' scepticism of the macroeconomic environment in the developing nations (Bekana, 2016). Therefore, macroeconomic steadiness and stability in the host market has attained new significance given the efforts that the advanced countries are making to redress their financial worries. Hence, exploring the subject seems suitably well timed as it has become a matter of concern for academics, state decision makers, potential researchers and local as well as foreign investors.

Apart from macroeconomic stability the investment decision of an overseas investor and a multinational enterprise is expected to be effected by conventional location pull factors (Shah & Qayyum, 2015). For example, the market munificence in the host economy for multinational products, the degree of macroeconomic development, required infrastructure provision and an enabling business friendly environment to allow the investing transnational corporation to optimally make use of its resources. Therefore, these variables are also taken into account prior to specifically controlling for the role of macroeconomic stability in the developing host country.

The rest of the paper is arranged as follows: the second part explores the traditional determinants of FDI. The third section discusses the likely effects of the macroeconomic stability on inward FDI. The fourth section presents the empirical model and estimation issues. Section five discusses the empirical results and the sensitivity controls. The paper ends with the conclusion, in section six.

Traditional FDI Determinants

In order to address the vital question of this study it is essential to discuss and check for the possible effects of the typical location characteristics of the host countries that usually influence the location choice of foreign investors (Shah & Afridi, 2015). This accomplished, then the specific effects of prudent macroeconomic management can be investigated and explored with relevant proxy variables.

The published FDI literature clearly establishes the importance of larger host market, on the premise of the possible economies of scale. In bigger markets multinationals expects the presence of related economic activities and more diversification opportunities (Choi, Lee, & Shoham, 2016). In addition to strategic expansion seekers, multinational conglomerates vying for research ventures also tend to prefer large markets (Rudy, Miller, & Wang, 2016). This is evident from Motorola, General Motors and Boeing investment in China (Tian, Harvey & Slocum, 2014). Equally important is the FDI in the services sector where it is directly related to the size of the local market (Shah & Samdani, 2015).

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The level of economic developments depicts the capability of domestic entrepreneurs which is very important for possible joint venture investment (Demir, 2016). Economic progress seems to go in tandem with human capital development (Shah & Ali, 2016). Multinationals with high technological components prefer economies that have abundant skilled labour force (Lengyel & Leydesdorff, 2015).

Mexico's success in attracting more FDI after liberalising its market (Osorio & Delgado, 2016), encouraged some Asian nations such as Singapore, Malaysia, South Korea, Taiwan and Indonesia to open up their markets (Milner, 2014). These countries also witnessed increased *FDI* inflows despite reducing trade and investment barriers (Paul, 2015). This prompted, developing economies to open their markets (Shah & Khan, 2016).

The availability and extent of quality infrastructure is very important for optimal functioning of the overseas affiliates of a multinational (Wood, Mazouz, Yin & Cheah, 2014). It is expected to significantly reduce overhead cost related to their trade and production activities (Shah, 2014). Therefore, positively effecting investors foreign investment location decision (Dunning, 2016).

Macroeconomic Stability

Government's fiscal management/balance, interest rates, and foreign exchange rates are utilised to gauge the economic health and stability at macro level of the country where the investors intend to invest (Strat, Davidescu & Paul, 2015). Nations with sustained financial stability, prudent fiscal policies, low inflation without abrupt exchange rate movements (Cambazoglu & Günes, 2016) or sudden interest rate fluctuations must earn the trust of investors and encourage investment (Blonigen, 2005), especially in the context of the current international slowdown in the developed economies (Baranidharan & Vanitha, 2016).

In the current study rate of inflation in the host countries and direct exchange rate are used as proxies for macroeconomic stability (Amoah, Nyarko & Asare, 2015). Nonetheless, how each of them will affect the multinational operations will depend on the extent of their local business exposure (Eshghi, Eshghi, & Li, 2016). Empirically their relationship with FDI inflows is ambiguous (Blanchard, Ostry, Ghosh & Chamon, 2016). If the multinational import a lot of raw material from abroad, appreciation of the local currency benefits them by decreasing their cost of production and increasing their local market share (Baek, 2013). On the contrary, if their raw material imports are negligible it will make its exports expensive and uncompetitive in the overseas markets (Xaypanya, Rangkakulnuwat & Paweenawat, 2015).

Similarly, multinational with large scales borrowings in the local currency will benefit from unanticipated inflation. Depreciation of the host currency will have the same effects (Bernaciak, 2015). Still for overseas investors unbridled inflation shows the central bank's failure or inability to properly manage the economy and check the money supply (Schneider & Frey, 1985).

Keeping in mind that hyperinflation and free fall depreciation of the local currency not only depress the local population's incentives to save but also signals to the overseas investors the start of monetary and fiscal disorder (Forte & Santos, 2015). Thus, discouraging them to invest, glaring examples are that of falling foreign direct investment in a number of Pacific, African, Latin American and some Caribbean countries (Morrissey, 2008). In developing economies, macroeconomic instability indicates failure of national policies, adding to overseas investors' scepticism of the host economy (Boateng, Hua, Nisar & Wu, 2015). This erodes the likely positive effects

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of global commitments, integration, regional and worldwide harmonisation. It also makes the progressive influence of trade and investment liberalisation immaterial/ineffective (Dutta & Osei-Yeboah, 2013). In view of the empirical evidence that investors' location choice is positively associated with the provision of better business environment in the host economy, reflecting stable economic conditions, it seems rational to postulate that they prefer economies devoid of macroeconomic uncertainty (Iamsiraroj, 2016).

Summary

Based on the discussion in the two previous sections, this study intends to look into the importance of conventional FDI location factors in general and the macro level economic stability in particular in motivating transnational corporations to choose an African developing country as possible foreign direct investment host.

Although, the size of the host market, its domestic development level, existence and extent of the contemporary communication infrastructure, and degree of liberalisation in terms of trade and investment regime are still quite relevant for potential investors (Okafor, Piesse & Webster, 2015). Yet variables that guarantee long term macroeconomic stability in the host country must certainly influence the location choice of the investor among likely sites for investment, especially due to the recent global financial slowdown (Dreher, Mikosch & Voigt, 2015).

Despite the importance of FDI and MNCs global production activities in global economy, empirical research that endeavour to delve deep into factors that determines the structure and type of FDI inflows seems to be in infancy (Shah & Faiz, 2015). Principally for factors like inflation and exchange rate which can equally exert a positive or negative effect we cannot just conclude that their influence is inconclusive. Rather we need to re-investigate them in order to develop meaningful insights that will enable us to answer questions such as, when a particular location factor counts more for prospective overseas investors or even for a particular type of FDI. This could partly be achieved through the innovative use of existing or nouvelle statistical data sets (Subramanian & Wei, 2007).

Empirical Model and Estimation Issues

Deriving an empirical specification based purely on the theory of FDI is a tedious job (Shah, 2011b). Nonetheless, following the arguments in the preceding two sections about the potential determinants of foreign direct investment the following reduced form empirical equation can be utilised to gauge the effects of macroeconomic stability and other traditional location determinants of FDI inflows into the developing countries:

$FDI_{jt} = f\begin{pmatrix} MarketSize_{jt}, EconomicDevelopment_{jt}, Openness_{jt'} \\ Infrastructure_{jt'}, MacroeconomicStability_{jt} \end{pmatrix} \dots \dots 1$

Where, the subscript *j* represents a developing country, whereas *t* indicates the time period. *J* varies from 1 to 43 and *t*, covering the years 1990 to 2015, ranges from 1 to 26. The product of the two i.e. t * j = 26 * 43 = 1118 gives the number of observations available for each variable under consideration in the current study. The countries included in the sample are: Algeria, Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Central African Republic, Chad, Congo Dem. Republic, Congo Republic, Cote d'Ivoire, Egypt Arab Republic, Ethiopia, Gabon, Gambia, Ghana, Guinea, Kenya, Lesotho, Libya, Madagascar, Malawi, Mali, Mauritania, Mauritius, Morocco, Mozambique, Nigeria, Niger, Rwanda, Senegal, Seychelles, Sierra Leone, South Africa, Sudan, Swaziland,

Tanzania, Togo, Tunisia, Uganda, Zambia and Zimbabwe. The dependent variable FDI_{jr} is the total stock of overseas investment from the rest of the world in the particular economy *j*. Due to the fact that the member countries are all developing economies where net FDI is quite volatile and is affected by a single large inflow or outflow it was preferred to use the stock of FDI instead.

Replacing the independent variables with available relevant proxies gives:

$\alpha_{0} + \beta_{1} lnGDP_{jt} + \beta_{2} lnGDPPC_{jt} + \beta_{3} lnTrade_{jt} + LnFDI_{jt} = \beta_{4} lnTeleDensity_{jt} + \beta_{5} lnExchangeRate_{jt} + \dots \dots 2 \\ \beta_{6} lnInflation_{jt} + \varepsilon_{jt}$

It can be seen from equation 2 that all the variables are log linearized to manage the expected heteroscedasticity (Shah, 2011a). The summary of the descriptive statistics for all the variables used in the study is given in Table 1. This includes standard deviations, the minimum value, mean, the maximum value and the total number of observations for each variable.

Variable Name	Number of	Mean	Standard	Minimum	Maximum	
	Observations	Value	Deviation	Value	Value	
Ln FDI Stock	1118	19.97	1.86	13.32	25.42	
Ln GDP	1118	22.22	1.39	18.80	26.37	
Ln GDPPC	1118	6.35	1.05	4.45	9.36	
Ln Trade % GDP	1118	4.11	0.52	1.99	5.54	
Ln Tele-Density	1118	11.15	2.69	6.31	17.66	
Ln Exchange Rate	1118	3.70	2.46	0.00	12.99	
Ln Inflation	1118	2.19	1.38	-0.96	10.10	
All the values are rounded off to two decimal places						

Table 1 Summary Statistics

Working with a large and diverse panel data set such as this, Hausman (1978) specification test was carried out to choose between the consistent fixed effects and efficient random effects model. It favours the use of fixed effects with the following statistics Chi^2 (5) = 57.54, *Probability* > Chi^2 (5) = 0.0000. This shows the presence of possible correlation between the α_j and X_{jt} .

Controlling for the existence of possible heteroscedasticity, Breusch - Pagan / Cook - Weisberg test was conducted which shows the presence of heteroskedastic errors in the dependent variable with the following statistics $Chi^2(1) = 34.38$, $Probability > Chi^2(1) = 0.0000$. Heteroscedasticity was also found in the explanatory variables as evident from the following statistics $Chi^2(5) = 152.01$, $Probability > Chi^2(5) = 0.0000$. Checking for the presence of problematic multicollinearity in the independent variables the Variance Inflation Factor (VIF) test was carried out which clearly indicates its absence with a mean value of 1.67. The same is evident from the correlation matrix provided as table 2.

S. No	Variable Name	1.	2.	3.	4.	5.	6.	7.	8.
1.	Ln FDI Stock	100%							
2.	Ln GDP	68%	100%						
3.	Ln GDPPC	39%	38%	100 %					
4.	Ln Trade % GDP	23%	-24%	41%	100%				
5.	Ln Tele Density	55%	57%	37%	07%	100%			
6.	Ln Exchange Rate	-17%	-25%	-29%	-06%	-03%	100%		
7.	Ln Inflation	01%	05%	-22%	-05%	-19%	-31%	100%	
8.	Ln Time Trend	35%	17%	05%	13%	41%	30%	-14%	100%
All Correlations are given in percentages									

Table 2 Correlation Matrix

Results Discussion and Sensitivity Controls

The results from the empirical analysis using fixed effects, robust to standard errors, are given in table three. Looking at the first model it can be clearly seen that the increase in GDP i.e. the market size of the country positively influence the location choice of investors from abroad. The same is true for degree of liberalisation of the country. Using population as an alternate proxy for market size gave the same results. Level of economic development in the host economy gives a negative coefficient but it is statistically significant only at ten percent and sensitive to the addition of other variables to the equation as evident from the remaining results.

Estimation Method	Proxy Utilised	Fixed Effects					
/ Variables Used	riables Used		2	3	4	5	
Market Size	In GDP	2.0973 *	1.5048 *	1.4752 *	0.4559 *	0.7427	
		(0.5288)	(0.4025)	(0.3952)	(0.2945)	(1.0328)	
Economic	In CDPPC	-1.4633 ^α	-0.7809	-0.7845	-0.1807	0.1975	
Development		(0.8110)	(0.6003)	(0.5979)	(0.4134)	(0.3674)	
Openness	Trade % GDP	1.2251 *	1.0291 *	1.0501 *	0.8499 *	0.9406 *	
		(0.3043)	(0.2651)	(0.2684)	(0.2783)	(0.3061)	
	Ln Exchange		0.2455 ^φ	0.2408 φ	0.1808 φ		
Macroeconomic Stability	Rate		(0.0967)	(0.0936)	(0.0773)		
	In Inflation			-0.0466	-0.0485	-0.0551	
				(0.0554)	(0.0559)	(0.0591)	
Infrastructure	Ln Tele				0.2654 *	0.1937 ^o	
Availability	Density				(0.0705)	(0.0843)	
Ln Time Trend						0.2920	

Table 3 Estimation Results

					(0.2144)		
Coefficient of Determination R - Squared	38.67 %	41.17 %	41.22 %	42.99 %	56.39 %		
No of Observations	1118	1118	1118	1118	1118		
Standard errors are reported in parenthesis under the coefficient estimates. * represents significance at 1 %, ϕ							
at 5 % and α at 10 %.							

In model two, three and four factors representing macroeconomic stability such as exchange rate and inflation are introduced one by one. The first proxy measure used for macroeconomic stability is the direct exchange rates of the host economies. The positive significant coefficient shows that gradual depreciation of the local currency makes the products produced in these countries cheaper in the global markets, causing increased sales and induces the overseas investors to invest more. The second proxy for macroeconomic stability i.e. inflation is insignificant. Its negative coefficient however indicates that foreign investors abhor the increase in the prices in the local economy that directly affects their cost of raw material, increasing the sale prices of their finished goods and making them uncompetitive internationally.

The negative coefficient is consistent with the earlier empirical findings that increase in consumer prices leads to lower FDI inflows. These results also shows that foreign investors consider unbridled inflation and noose diving exchange rates as a sign of macroeconomic mismanagement of the host government and deem these economies to be riskier than the ones where the central bank maintains exchange rates within known ranges like China and is able to monitor and retain price hike within acceptable limits.

The addition of tele density in model four shows the sensitivity of investors for availability of quality infrastructure. Summing up model one to four it is apparent that the incidence of FDI is higher in countries with bigger markets, comparatively stable macro-economically, liberalised trade and investment regimes and the ones providing the investors with supportive infrastructure. In model five the possible effect of time trend is also checked but it is statistically insignificant.

Discussion

Using aggregate annual data for a sample of 43 African developing countries, over the time period 1990 to 2015, the possible effect of macroeconomic stability was studied after adjusting for the conventional FDI location factors. The result supports the notion that a gradual decrease in value of the host currency is associated with increased inward FDI. Similarly slow, predictable and steady depreciation coupled with low inflation enhances the country chances of hosting more inward FDI as evident from the empirical estimates.

Presence of a large internal market and liberalisation has a positive influence. Availability of infrastructure facilitates multinational in the smooth functioning of their operations and therefore increases the opportunities for FDI.

The present study reports interesting patterns about the investment behaviour of multinationals. The understanding of these phenomenon and factors will positively help national governments in their quest of attracting foreign investors, especially in the back drop of the recent global financial constrictions.

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Although, the study shows that traditional location FDI determinants are relevant to a greater extent and play their role in influencing FDI inflows. Nevertheless, the results confirm that macroeconomic stability tends to play a more decisive role than in the past.

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