

An Empirical Analysis of FDI Competitiveness in Sub-Saharan Africa and Developing Countries

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Abstract

This paper empirically analyzes the determinants of foreign direct investment for Sub-Saharan African countries and other some developing countries. Our results suggest that both productivity-related policy and exchange rate policy can be effective in sharpening FDI competitiveness, i.e., in attracting foreign investments.

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1. INTRODUCTION

Over the last decades, inflows of Foreign Direct Investment to developing countries have soared. From 1990 to 2000 alone, the figure expanded from US\$24 billion to US\$178 billion, representing 24% and 61% of total foreign investment worldwide. As it turns out, however, the countries of Sub-Saharan Africa (SSA) have not received a proportional share of these unprecedented FDI inflows. According to UNCTAD (1995), “The African continent did not benefit from the increased investment flows to developing countries as a whole...” Several figures can illustrate the magnitude of the disparity: inflows of FDI into Sub-Saharan Africa increased by a mere 59% from the period 1980-1989 to 1990-1998, while growth rates in developing countries in other regions of the world soared over the same years (5,200% in the developing countries of Europe and Central Asia, 942% in East Asia and Pacific, 740% in South Asia, 455% in Latin America and the Caribbean, and 672% for the developing world as a whole). Astonishingly, the Sub-Saharan African share of total FDI inflow into developing countries plummeted from 36% to 3% from 1970-74 to 1995-99.

FDI serves as an important engine for growth in developing countries through two modes of action: (i) expanding capital stocks in host countries and (ii) bringing employment, managerial skills, and technology.

The first contribution is crucial for countries where incomes and hence domestic savings are particularly low, such as the SSA countries. These countries need external capital to prompt investment and growth. This can be difficult, however, as poor credibility and other factors limit their access to the international capital markets. As a consequence, they are forced to rely solely on FDI and official loans as sources of fresh foreign capital. The crisis facing them now is a rapid depletion of these sources: official loans (as share of GNP) to SSA countries dropped from 6% in 1990 to 3.8% in 1998; foreign assistance per capita shrunk from US\$35 to US\$28 from 1989-92 to 1993-97. Hence, the need for FDI in the SSA countries now appears to be more urgent than ever before.¹

Given the importance of FDI inflows for SSA, the countries of the region must find newer and more effective policies to attract foreign investment. Despite its many policy efforts, SSA Africa has received only a small proportion of the global surge of FDI inflows. Measures to strengthen the ability of SSA countries to attract FDI, *i.e.*, “FDI competitiveness,” need to be examined. One way to identify effective measures for this purpose is to investigate the factors that determine inflows of FDI into specific regions, countries, or localities.

2. LITERATURE REVIEW

Most analyses of the determinants of FDI inflows have included the size of the host markets, measured with GDP. The size of the market has been widely found to be a significant incentive for FDI, and in some cases it has proven to be the most important incentive. A larger market brings in higher returns on investment by allowing a more efficient utilization of resources and the exploitation of economies of scale (Moore 1993, Wang and Swain 1995, Raggazi 1973). Chakrabarti (2001) have compiled a relatively comprehensive list of studies which have identified the size of an economy as a considerable determinant of FDI inflow for developed and developing economies alike. The size of the market, however, might be less influential, or even insignificant, when FDI is invested to exploit the host country solely as a production base; that is, to reap profits from the cost advantage of the host economy by exporting the production, more competitively, to markets at home or in third countries

¹Asiedu (2002), and World Development Report, World Bank (various issues)

(Agarwal 1980).

A second potential determinant is the movement in the price level. A large and uncontrollable increase in the price level, or high inflation, might reflect instability of the macroeconomic policy of the host country. This type of instability creates uncertainty in the investment environment (Bajo-Rubia and Sosvilla-Rivero 1994, Yih Yun Yang et al. 2000). High inflation discourages FDI for re-exportation since the relative costs of production in the host country rise. In contrast, falling price levels and the resulting contraction in economic activities might trigger a deflationary spiral and eventually bankrupt the host country's firms. This can induce local investors to sell off their interests in the host country's companies to foreign investors at low prices, thereby expanding the inflow of FDI.

A third frequently noted factor is the strength of the host country's currency, measured by exchange rates. A depreciation of the host country currency might attract FDI for two reasons. First, a depreciation of the host country currency renders the shares of host country firms relatively cheap, motivating M&A from foreign firms. Second, in cases where the FDI is invested for re-export to markets at home or in third countries, a depreciation of the host country's currency will enhance the competitiveness of producing in the host country, thereby raising the investors' wealth. In cases where FDI is invested for the sale in the host market, on the other hand, a depreciation of the currency might hinder inflows. Again, there are two reasons for this. First, as FDI is projected over the long-run horizon, the stream of return on investments might fall in terms of the home currency. Second, a depreciation of the currency lowers the relative purchasing power of consumers in the host country. All in all, the effects of exchange rate levels on FDI inflows are rather ambiguous (Benassy-Quere et al. 2001).

The volatility of the host country's exchange rates can also be a notable determinant of the extent of incoming FDI. Instability of a currency has often been identified as a significant impediment for the inflow of FDI. Income stream from a highly volatile currency area is associated, in the long run, with high exchange risk (Chakrabarti 2001). FDI investors lack the security of portfolio investors, as the latter can reduce the risk of exchange rate variability by hedging through the derivative market in the short run. As hedging is impossible in the long run, FDI investors must pay much closer attention to exchange rate volatility. This factor is a particularly robust determinant for risk-averse investors (Benassy-Quere et al. 2001).

On the other hand, a policy of maintaining stable nominal exchange rates very often leads to a loss of price competitiveness, leading to another condition which discourages FDI inflow. In the presence of comparatively high inflation, a stable nominal currency hides a cumulated appreciation of the real currency and therefore pushes up real prices. In contrast, a less restrictive policy towards volatility of nominal exchange rates makes it possible to eliminate trends in real exchange rates and maintain price competitiveness. Hence, using the stability of exchange rates as an incentive to attract FDI involves a trade-off between volatility and price competitiveness.

Finally, the instability of the host country currency tends to reduce FDI inflow by discouraging the repatriation of investment returns. On the contrary, a positive relationship between FDI inflows and exchange rate volatility might be found if investment in the local market is used as a substitute to exporting. When variance is judged as too high, one way to escape the vagaries of the currency market is to direct FDI into the local market. In the short run, larger volatility will lead to greater FDI inflows. In the long run, however, the negative effects of volatility in attracting FDI will outweigh the positive effects due to the mechanisms described above (Harvey 1990).

A straightforward incentive for foreign investors is the level of capital return in the host country. FDI will flow into a country offering a higher rate of return. Measuring the rate of capital return can be a daunting task in developing countries, however; especially in Africa, a region lacking effective capital markets. One way to overcome the challenge is to employ the

inverse of GDP as a proxy. Asiedu (2002) explains the reasoning behind this approach. When the capital return is assumed to be equal to the marginal product of capital, a country with scarcer capital will turn out to have proportionally higher return. Given that a lower income level induces smaller capital stock, investment in low-income countries can be expected to yield high return. This, in turn, justifies the use of the inverse of GDP as a proxy for capital return.

3. EMPIRICAL ANALYSIS

In this section we present an empirical analysis of the FDI determinants in Sub Saharan African (SSA) economies and selected economies of Asia and Latin America. Referring to the list of variables raised in the literature review and the explicit relationship shown in the theoretical model of Lucas (1993), we introduce the following variables as potential determinants of FDI in our analysis: Total Factor Productivity (TFP) measured with the Solow residuals, Exchange Rate (EXC) measured with the host country's currency per US Dollar, Inflation measured with the Consumer Price Index (CPI), Volatility of CPI (VolCPI) measured with the variance, Trade Share (TRS) measured with the ratio of the sum of exports and imports over GDP, Capital Return or Rental measured with the inverse of GDP, and the Market Size measured with GDP. The selection of variables was dictated in part by the availability of data. We use annual data covering 1980 to 2001.

We employ the Panel Cointegration Test suggested by Pedroni (2001). The technique starts by estimating the following equation using Ordinary Least Squares:

$$FDI = \beta_0 + \beta_1 TFP + \beta_2 EXC + \beta_3 CPI + \beta_4 VolCPI + \beta_5 TRS + \beta_6 (1/GDP) + \beta_7 [(1/GDP) \times D_1] + \beta_8 [(1/GDP) \times D_2]$$

where D_1 and D_2 are dummy variables, respectively, for Asia and Africa.

Next, we collect the residuals from the regression equation to construct a new series of panel data and examine the data by the panel unit root test proposed by Levin *et al.* (2002). A rejection of the null hypothesis of the unit root would indicate that the variables in equation (4-1) are cointegrated and that the estimated relationship represents an equilibrium long-term relationship. The technique depicts and focuses on a unique cointegration equation although there might exist multiple cointegrating equations.

The results of the empirical investigation are displayed in Table 1. Three specifications are examined: the first is a specification without distinction between the countries in the analysis; the second, a specification with a dummy variable for the Asian countries; and the third, a specification with dummy variables for both Asian and African countries. The dummy variables are applied to the coefficient on the inverse of GDP, to make the latter reflect either capital return or market size. We also attempted to apply the dummy variables on the intercept as well as on the other slope coefficients, but no distinguished features appeared.

The results of the panel cointegration test are given under the Levin and Lin statistic displayed at the bottom of each specification. The null hypothesis of the existence of a unit root in the residuals is rejected for all three specifications. Hence, we can conclude that the variables are cointegrated. The estimated equations, particularly the third specification, represent the long-run equilibrium relationship between FDI inflows and the related potential determinants. This specification allows us to make the following assessments.

Both the Total Factor Productivity (TFP) and Exchange Rate, the main focuses of our analysis, appear as strong determinants of inflows of foreign investment. An increase in TFP

pulls down the productivity-adjusted wage, as well as several other variables. As shown in the above theoretical model, this decrease in wage opens up incentives for the inflow of foreign investment. Enhanced productivity diminishes the per unit cost of production and allows larger profit margins for investments. Results with respect to the exchange rate imply that a depreciation of the local currency invites an inflow of FDI. Currency depreciation permits foreign investments to acquire locally existing firms and to establish new Greenfield plants at lower prices in foreign currency. Depreciation also reduces the cost of production in the host country relative to the cost in other locations. The incentives from exchange rate depreciation are particularly important for firms which use the host country as a production base and export the products to markets at home (origin) or in third countries.

Our results suggest that both productivity-related policy and exchange rate policy can be effective in sharpening FDI competitiveness, *i.e.*, in attracting foreign investments.

The level and volatility of CPI can both discourage inflows of FDI. From the viewpoint of foreign investors, high inflation and high CPI volatility are likely to be perceived as signs of unstable domestic macroeconomic conditions. Trade share weakly determines FDI inflows.

An important finding emerges from the inverse of GDP and the dummy variables. The coefficient on the variable is positive and highly significant for the Sub-Saharan African economies. This is a strong indication that the capital return plays a far more important role than the market size in attracting foreign investment into Africa. Indeed, by the reasoning explicated above, the countries with the lowest GDPs in the present sample, that is, the countries of Sub-Saharan Africa, can be expected to have the thinnest stock of capital and the smallest capital-labor ratio, hence the highest rate of return on capital. This stands to reason, as a high return on capital is one of the consequential incentives for FDI. In this scenario, foreign investments use the SSA countries as a production base and export their products rather than targeting the SSA market itself (the level of GDP). In contrast, the sign of the variable (inverse of GDP) is negative for the Asian countries, suggesting that GDP itself (as opposed to its inverse) appears as a determinant of FDI inflows. The market size seems to be the main incentive for FDI inflows in the presently studied Asia economies; indeed, these countries exhibit the highest GDP in our sample.

The results of our analysis of trade competitiveness have shown that productivity-related policy is more effective than exchange rate policy, chiefly because the latter may generate inflation which can potentially offset its beneficial effects. In our analysis of FDI competitiveness, on the other hand, both policies have been found to be significant determinants of FDI inflow, *i.e.*, both policies can be employed to enhance the ability of the country to attract foreign investment.² We turn now to the final criteria for judging the contribution of competitiveness policies: welfare effects. Indeed, policymakers have the ultimate aim of applying competitiveness policy not merely to expand trade and FDI, but to improve welfare *through* trade and FDI.

4. CONCLUSION

Given the low level of domestic savings and the decreasing per-capita foreign aid in Sub-Saharan Africa, Foreign Direct Investment in the region is expected not only to bring about numerous benefits for the recipient economies, but to play a crucial role in bringing in fresh foreign capital. Discouragingly, however, only a tiny fraction of the recent surge in worldwide foreign investment over the past decades has flown into the SSA countries. The facts at hand point to the weak competitiveness of SSA countries in attracting FDI. This paper has pointed out a number of measures which may help to strengthen this competitiveness in

²More detailed research will have to be conducted to investigate the differences among the magnitudes of contributions of the respective policies .

the region. Most notably, our findings underline the importance of policy measures geared to the enhancement of Total Factor Productivity. Another approach is to employ exchange rate policy. Macroeconomic stability and open trade policy can be expected to positively affect FDI inflows. Lastly, we demonstrate that the relatively high rate of return on investment in SSA countries can provide incentive for FDI. This incentive needs to be realized and complemented through the implementation of policy measures of the type described above.

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Table 1 Determinant FDI, Panel Cointegration Test

	Spec 1	Spec 2	Spec 3
Constant	19.761*** (10.087)	22.273*** (10.791)	21.31*** (10.276)
TFP	0.792*** (2.394)	0.799*** (2.434)	0.777** (2.381)
Exchange Rate	0.0001*** (3.288)	0.00006*** (3.584)	0.00006*** (3.82)
CPI	-0.00002* (-1.607)	-0.00002* (-1.776)	-0.00002* (-1.813)
Volatility CPI	-0.022*** (-8.085)	-0.022*** (-8.116)	-0.024*** (-8.707)
Trade Share	0.003* (0.061)	0.001 (0.713)	0.001 (0.357)
1/GDP	0.539*** (6.232)	0.735*** (7.244)	0.154 (0.745)
D1*(1/GDP) - Asia		-0.617*** (-3.621)	-0.057 -0.235
D2*(1/GDP) - Africa			0.759*** (3.221)
Adjusted R2	0.935	0.936	0.936
F-stat	249.153	248.102	246.256
Levin and Lin Stat	-8.876 [0.001]	-8.268 [0.001]	-8.326 [0.001]

Notes:

- Numbers in () and [] are *t*-statistic and *p*-values, respectively.
- ***(**)[*] indicate significance level at 1% (5%) [10%].