FOREIGN DIRECT INVESTMENT IN LDC:
SOME EMPIRICAL EVIDENCE

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ABSTRACT: External direct investment flows in Less Developed Countries (LDC) have registered an important growth in the last decades. They seem to be a sounder way of getting external financing for LDCs than commercial loans. The present study aims to carry out some research on the determinants of Foreign Direct Investment (FDI) in LDCs of Latin America. Firstly, some ideas are stated about the convenience of FDI for LDCs, together with the theoretical background to the different hypotheses that aim to explain the FDI flows to LDCs. The paper presents and describes a formalized model, designed to test the validity of these hypotheses. The study finishes with some empirical results, obtained from a cross-country analysis out of a sample of Latin American countries.

PALABRAS CLAVE: Key words: LDC Economies, Foreign Direct Investment

1. INTRODUCTION

External direct investment flows in Less Developed Countries (LDC) have registered an important growth in the last decades. They seem to be a sounder way of getting external financing for LDCs than commercial loans. The present study is an attempt to carry out some research on the determinants of Foreign Direct Investment (FDI) in LDCs of Latin America. The paper is organized in the following way: Section 2 analyzes the convenience of FDI for LDCs. Section 3 provides some theoretical background to the different hypotheses that aim to explain the FDI flows to LDCs. Section 4 describes the model used and shows some empirical results. Some concluding remarks are stated in Section 5.

2. IS FDI DESIRABLE FOR LDCs?

During the years that followed the Second World War, the contributions of the members of CEPAL held a considerable influence on the governments of LDCs. They emphasized the political and economical evils of FDI flows, that were thought to
3. DETERMINANTS OF FDI: MAIN HYPOTHESES.

What are the factors that attract FDI to LDCs? Many studies on the subject have been published in recent years, but there is not a clear answer yet; however, a brief summary of the more relevant hypotheses that constitute the theoretical basis of this topic can be presented.

1. Output and market size hypotheses: As a matter of fact, output and market size hypotheses are not exactly the same, as the first one refers to the microeconomic level whereas the second is based on a macroeconomic approach. However, the differences between them in practice are irrelevant, so we shall consider them to be the same hypothesis. Basically, a positive relationship is assumed to exist between the output of a country and the FDI that comes into it. A greater output in the host country - as measured by some proxy, such as GDP, for example - means a larger market and, therefore, a bigger volume of potential sales. Eventual economies of scale and decreasing costs are also linked to a greater output in the host country. It should be taken into account, nevertheless, that most analyses do not make any distinction concerning the scope of activities of the foreign firm: i.e., whether it operates for the domestic market or, instead, directs its production abroad; obviously, if the multinational plans to export most of its output, this hypothesis will lose part of its validity. Unfortunately, statistical constraints and scarce availability of data preclude the study and differentiation of these alternative cases.

2. Inertial effect: According to this, firms tend to remain in the host countries where they have previously invested. The availability of information and the better knowledge of the market that is acquired, as a result of following historical patterns of investment, encourage subsequent inflows of FDI into that country. Nevertheless, as has been rightly pointed out (Nunnenkamp, 1991, p. 5) part of the FDI staying in a country may be involuntary, due to the long gestation periods of the projects undertaken or to political restrictions to repatriation. There is some empirical evidence for specific countries that shows that this effect has been significant in the cases of UK investment in Commonwealth countries, German activities in Brasil and Argentina and, to a certain extent, US flows to Argentina and Mexico. In any case, the stability in capital formation is greater as far as the manufacturing sector is concerned, whereas in the non-manufacturing sector - basically service activities - foreign investment seems to be rather volatile.

3. Agglomeration effect: the development of domestic investment and its eventual expansionary effects on the economy - is thought by some authors to improve...
both the infrastructure and the macroeconomic conditions of the country, hence attracting FDI. Foreign and domestic capital formation do not substitute, therefore, but complement each other. (Pfaffermann, 1992, p. 46). There is even some evidence that shows that there is a greater technology transfer to a host country in which technology is already more developed.

4. Hypothesis of debt overhang: this source of explanation is more specific for some LDCs, i.e. those that are heavily indebted. According to it, the creditworthiness of a developing country can easily be damaged because of the high volume of outstanding debt; hence, a heavy burden of external debt disincentivates new FDI as well as further lending. The evidence is greater for the link between debt overhang and domestic investment: some IMF studies (IMF, 1989) find the role of debt overhang significant in domestic investment slowdowns in LDCs. Also, Savvides (1992) has reached the same conclusion. As regards external investment, the empirical analyses are more scarce. However, some studies can be found, such as Nunnenkamp (1991), that tests the impact of debt overhang in FDI and finds positive correlation. Nevertheless, evidence is not conclusive enough yet as far as the influence of debt overhang in FDI is concerned: further research should be carried out in this direction.

It should be noted that testing the debt overhang hypothesis needs an operational measure of indebtedness; the useful indicators have proven to be not so much the absolute figures of outstanding debt but, rather, some traditional debt indicators -debt/GDP, debt service/exports- that give a more accurate picture of the solvency of the country.

5. Institutional background: As many theoretical analyses show, it seems to play a crucial role in Latin American countries: the political institutions that exist can increase or diminish the risk and uncertainty related to a project, thus encouraging or disincentivating FDI.

Firstly, as far as the general political atmosphere is concerned, political instability and other features of the social environment -rent-seeking activities, bureaucracy, poor governing, corruption and the so called "endemic evil" of Latin American populism - have a distorting effect on the economy in general and, more specifically, a discouraging effect in FDI (see Lancaster, 1992); expropriations, wars and civil disturbances are not uncommon in a country in which such features exist. The unforeseen discretionary interventions of the governments, which are rather frequent in Latin America, also diminish political credibility, hence harming potential investors' expectations.

On the other hand, some specific features of the political system can be significant when taken into account by foreign investors; for instance, as has been recently demonstrated, investors from abroad prefer a clear regulatory system, whereas they dislike the necessity of negotiating individual agreements on tax breaks and subsidies. It is also preferable to have a uniform tax system for both domestic and multinational firms. Also the policies concerning the repatriation of dividends are likely to be considered by future investors; sometimes it can be difficult to transfer profits abroad if political regulations have constrained the access by the multinational to the currency market.

We consider as very significant the fact that a new agency of the World Bank, the Multilateral Investment Guarantee Agency (MIRA) has been promoted, in order to provide assessment and assurance for potential investors in LDCs.

Despite its importance, empirical evidence related to this topic is scarce so far, due to the difficulties of quantifying and measuring all these variables, which are of a qualitative nature.

4. DESCRIPTION OF THE MODEL AND SOME EMPIRICAL EVIDENCE

The influence of several factors in FDI, mainly related to the hypotheses stated above, has been tested by a cross-country study, in which data from a sample of 25 Latin American countries during the period 1970-88 were employed.

The final presentation of the equation used is:

\[ Y_t = a + b Y_{t-1} - c D_{t-1} + d I_{t-1} + e f_{t-1} - f C_{t-1} + g \]

where:

- \( Y \): dependent variable (FDI) in year \( t \) (in millions of dollars).
- \( I \): represents GDP and enters into the model as a proxy to output size of the host country, in order to test the validity of the market size hypothesis.
- \( D \): Deflator of GDP, that measures the inflation rate and is used as an indicator of macroeconomic stability. It has a negative sign, as high inflation rates introduce a considerable distortion into the economic environment, thus harming investors' expectations.
- \( C \): represents the rate of growth of GDP, also as an indicator of macroeconomic performance. A greater rate should suggest better economic conditions, therefore being correlated to higher levels of FDI.
- \( C \): Debt service/exports ratio, as an indicator of the country's creditworthiness. The minus sign is consistent with the debt overhang hypothesis: a big ratio shows a greater level of indebtedness and should be negatively associated with potential FDI.
- \( a \): constant
- \( g \): residual.

The data were taken from the World Tables (World Bank, 1990). The independent variables were lagged one period.

The econometric results of OLS estimation are shown in Table I. There is no multicollinearity between the independent variables, measured by the condition index.
and R² auxiliary. Heteroskedasticity levels are low, as tested by the Breusch-Pagan and Harvey tests. The statistical significance of the coefficients are analyzed by the t-test.

The independent variable Y, that accounts for the output and market size, is highly significant, in almost every year. Our analysis suggests, therefore, that FDI flows have mainly followed the pattern described by the market size hypothesis: i. e.: international investors prefer to direct their capital inflows to large countries, in which the feasibility of gaining more clients and increasing sales in a greater proportion is stronger.

Anyhow, it should be stated that some theoretical studies available -basically Agarwal, 1980- include the output hypothesis within the subgroup of those determinants of FDI that assume perfect competition in both product and factor markets of the host country. As that is not the case in most Latin American countries, this seems to suggest that the precondition of competitive markets is not essential for the validity of this explanation. Rather, we think that market size can be a strong determinant even in countries in which imperfect competition prevails as far as the market structure is concerned.

As regards the influence of inflation, measured by the GDP deflator, it is only significant in certain years of the first half of the period. This seems to indicate that macroeconomic stability criteria were often offset by the "inertia effect" and market size considerations: as was stated above, the inertia effect basically exists in the larger countries of the area -Argentina, Brazil and Mexico- which also have the biggest rate of inflation in many cases.

The "agglomeration effect", however, seems to have little importance because of the small t - ratio that corresponds to the "t" variable in most cases. Finally, the hypothesis of debt overhang does not appear to be very relevant, either. Our interpretation is that the size of the country is such a decisive determinant, that it can overcome other possible factors of influence such as creditworthiness or domestic investment trends.

No relevance, either, is associated to the links between FDI and the rate of growth of GDP. This result is similar to those reached by other studies, as was pointed out in section 3.

Notwithstanding these ideas, it should be added that the results are heavily influenced by the case of Brazil: if Brazil is omitted from the sample the coefficients become more significant. Because of its rather volatile behaviour, Brazil's data have not been considered in the following years: 72-74, 76-78, 80-81, 88. This fact indicates that this Latin American country deserves further attention, as its policy has differed from that implemented in the rest of the continent. The figures show (see Table II) that FDI to Brazil experienced a big increase between 1972 (570 mil. dollars) and 1973 (1341 mil. dollars). Its pattern was quite stable during the 70s. This is easily explained by the relatively outward - looking strategy that Brazil adopted during the 1970s. One of the consequences of this policy was the positive attitude of policymakers as far as entry of direct capital from abroad was concerned. Moreover, in those years Brazil was considered to be one of the most promising and dynamic economies of the continent. However, in 1982 the debt crisis burst when Mexico, Argentina and Brazil declared themselves incapable of coping with their financial compromises. FDI to Brazil fell from 2534 mil. dollars in 1982 to 1373 mil. dollars in 1983. On the other hand, inflation rose heavily, basically from 1983 onwards; one of the peaks took place in 1985-1986, so it is not surprising that FDI was again strongly reduced from 1267 mil. dollars in 1985 to 331 mil. dollars in 1986.

Mexico's pattern should also be considered a little more carefully. It has been excluded from the sample in 1977, 1980, 1981, and 1988. FDI experienced a noticeable growth from 1977, where the figure is 556 mil. dollars, to 1978 (829 mil. dollars) and 1979 (1332 mil. dollars) Figures remained high until 1982, whereas in 1983 direct investment dropped to 481 mil. dollars. This behaviour can be explained by the favourable conditions that the Mexican economy experienced due to the second rise in oil prices, that lasted till the 1982 debt crisis, which also affected FDI flows into the country; FDI figures do not recover till 1986, partly as a result of the more liberal and outward oriented policies that were carried out in the second half of the 80s.

It should also be noted that Chile's data reflect very accurately the drastic change in economic policy due to the fall of Allende's regime. More specifically, the entry into the government of some ministers connected with the Chicago school greatly liberalised the economy and removed the obstacles to direct investment from abroad. Thus FDI jumped from 556.8 mil. dollars in 1974 to 50 in 1975. Although the trend is not very steady, capital inflows increase substantially in the late 70s and early 80s.

The analysis of the residuals is also very interesting. There is not white noise, and that means, in our opinion, that the political background has certainly some influence on FDI; one possible explanation is that the residuals include still the information concerning the political environment and the attitude of policymakers towards FDI, that is not reflected within the model because of the qualitative character of these variables This aspect should be analysed in a "case by case" approach, as it is specific to each country within the area.

5. CONCLUSION

This study does not aim to provide definite results about the determinants of FDI flows, partly because of the difficulty in obtaining the accurate data and identifying the theoretically correct specifications. Rather, this paper is more of an exploratory kind. Nevertheless, in our opinion, the results are worth considering in order to understand FDI behaviour in LDCs.

Two main conclusions can be presented. Firstly, FDI flows oriented to Latin American LDCs are apparently influenced basically by the size of the host country. The host country's GDP was used as a proxy of its output and market size, and was highly significant in almost all the years considered. This result confirms other findings in this direction that explain foreign investment by the output and market size hypothesis.
According to this, potential investors prefer to develop their activities in larger countries, where expected sales are greater and economies of scale can reduce average costs in the long run.

Secondly, the analysis of the residuals and the experience of some specific countries seem to indicate that political constraints can also have a relevant influence on the attraction or discouragement of direct capital inflows. This result confirms other theoretical studies and suggests that policy makers in the potential host countries can pursue some measures oriented to attracting FDI; their role is not only passive, but rather, they can foster external investment by removing the restrictions to dividends repatriation and other political barriers that disincentivate this sort of capital inflows. Such policies are advised in order to expand economic growth in LDCs. Furthermore, these sort of measures also contribute to the liberalization and structural adjustment of the economy, which will bring about greater levels of productivity and efficiency.

Inertial effect is relevant only in some specific countries, such as Argentina and Brasil. However, when it exists, it is quite strong and can even offset adverse macroeconomic conditions.

In our analysis, other hypotheses, such as debt overhang or agglomeration effect, were not very significant. Still, the statistical limitations related to the gathering of data in Latin America prevent the consideration of these results as definitive. Rather, further research on this topic should be carried out in the future.
NOTES
2. See World Bank, 1991, p. 94 for case studies that show the links between FDI, technological transfers and efficiency.
3. Agarwal, 1980, provides a clear and complete survey.
4. Empirical analyses of this sort can be found in Langhammer, 1991.
5. See Mansfield and Romeo, 1980.
7. For a description of this institution, Wallace, 1992, can be consulted.
8. We have focused our study in the Latin American area because it has some specific features: i.e. almost all the nations belonging to it are middle income countries; the most heavily indebted nations, moreover, also pertain to it. Consequently we follow the nomenclature of the World Bank and IMF as regards Latin American countries -or Western Hemisphere-. It is true that there are several differences among the members of the group, in terms of level of income, policies implemented in the past, and so forth, but the existence of common factors enables the region to be studied as a whole.

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