CAPITAL FLOWS, FOREIGN DIRECT INVESTMENT,
AND DEBT-EQUITY SWAPS IN DEVELOPING COUNTRIES

Sebastian Edwards

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ABSTRACT

One of the most serious consequences of the debt crisis of 1982 has been the reduction in the accessibility to the world capital market for most developing countries. This situation has proved to be particularly serious for Latin American nations. At this juncture, a key question is how to improve the LDCs attractiveness for foreign capital flows. In this paper I explore the role of two potential sources of additional private capital inflows: increased direct foreign investment, and the debt-conversion mechanisms. The paper presents the results from an econometric analysis of the determinants of the cross-country distribution of the OECD direct foreign investment (DFI) into the LDCs. Particular emphasis is given to assessing the relative importance of political variables of the recipient countries. The role of the debt-equity swaps as investments for reducing the extreme debt burden is also investigated, using the recent Chilean experience with these mechanisms as a case-study.

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I. Introduction

The debt crisis of 1982 drastically changed the circumstances of the developing world. After years of relatively rapid growth, partially fueled by generous flows of foreign funds, in 1982 the poorer nations suffered a major setback: growth plummeted, unemployment soared and acute balance of payments crises ensued. Since then the direction of international net resource transfers has been reversed and has run from the LDCs to the advanced nations. Nowhere have these changes been more dramatic than in Latin America. During the 1980s real per capita income in Latin America and the Caribbean as a whole (excluding Cuba) declined by 8.2%. Moreover, in some nations such as Argentina, Bolivia, Peru and Nicaragua, real income per capita dropped by more than 20% during the decade of the 1980s.[1]

There is little doubt that economic recovery and the return to growth and prosperity will take time and will require massive amounts of funds and deep policy reforms. What makes the recovery prospects rather grim is the fact that in a large number of the Latin American nations domestic savings ratios have declined significantly during the last few years (see the 1989 World Development Report). Even if the liberalization policy reforms advocated by the IMF and the World Bank, among others, are undertaken, and if as a consequence of them investment productivity increases, most countries will still need to supplement their domestic savings with foreign funds. However, one of the most serious consequences of the debt crisis has been that for most developing nations the accessibility to the world capital market has been greatly reduced, if not completely closed. What makes this situation particularly serious is the fact that, starting in the second half of the 1970s portfolio and bank lending became the single most important source of capital flows, greatly surpassing direct foreign investment (Lal 1989).

A key policy question -- and, in fact, one that haunts politicians as well as economists -- is how to improve the LDCs attractiveness for foreign capital flows. In their recent contribution to the _Handbook of Development Economics_, Cardoso and Dornbusch (1989) have succinctly captured the profession's concern regarding this issue:

> Commercial banks are unlikely to provide much development finance in the years to come. Bond markets, likewise, will be closed for countries with a poor debt experience. Efforts to develop private capital flows to debtor countries must, therefore, focus on other mechanisms.
> (p. 1434)

In the search for renewed sources of foreign capital flows a fairly long list of candidates, both old and new, has been identified. In this paper I explore the potential role of two of these sources of additional _private_ capital inflows into the less developed countries: (1) increased direct foreign investment (DFI), and (2) debt conversions (and especially debt-equity swaps) mechanisms.

The paper is organized as follows: Section II presents the results obtained from an econometric analysis of the determinants of the cross-country distribution of the OECDs direct foreign investment into the LDCs. More specifically, the question asked is why do the advanced nations tend to direct their DFI to some countries and not to others. A fundamental aspect of this problem refers to empirically determining the relative importance of government policies, structural variables and political considerations in explaining DFI. The political angle is particularly relevant in the current circumstances when so many developing nations -- and especially the Latin American countries -- have been experiencing massive political changes. In Section III, on the other hand, I analyze the role of debt-equity swaps as instruments for reducing the debt burden and potentially increasing private capital flows, especially in the form of DFI, into the developing countries.

This discussion is particularly important, since traditionally the magnitude of DFI has been relatively small, and poorer nations have tried to design mechanisms that would effectively increase the flow of external resources. I discuss both the simple analytics of debt reduction schemes, as well as the recent Chilean experience with these mechanisms. Finally, Section IV contains some concluding remarks.

II. The Determinants of Direct Foreign Investment: A Cross Country Empirical Investigation

Many authors have agreed that in the aftermath of the debt crisis direct foreign investment should play an increasingly important role as a source of foreign funds for the LDCs. At the same time, most experts are aware that the total volume of resources likely to be involved through this channel will probably not be very large. For instance, after pointing out that bank loans and bonds issues are unlikely to have a major role as sources of resources for the LDCs in the years to come, Cardoso and Dornbusch (1989) say that "the immediately obvious candidate [for providing foreign resources] is direct foreign investment. Unfortunately, the role of direct investment has never been very large" (p. 1434). This means, then, that for any individual developing country two important questions refer to both the future total volume of direct foreign investment by the advanced nations in the LDCs, as well as the cross-country distribution of this limited volume. More specifically, will these resources flow to the "traditional" beneficiaries, or will they tend to go to countries that are relative newcomers in the international scene? How will the political changes that have recently swept the third world affect the total volume and cross-country distribution of direct foreign investment? Will countries with a greater degree of openness attract more funds, or will the

distribution of DFI be independent of structural reforms? All these are, of course, crucial issues whose answers are to a large extent empirical.

A number of studies have empirically analyzed the sectoral distribution of U.S. direct foreign investment, trying to determine why U.S. firms (both financial and non-financial) have tended to favor particular sectors when investing abroad.[2] Relatively fewer efforts, however, have been undertaken in order to understand what determines the cross-country allocation of direct foreign investment by the advanced nations.[3] The purpose of this section is to empirically investigate the determinants of OECD direct foreign investment into the LDCs during the period 1971-81. This time frame was chosen for two reasons: first, some of the more important variables are available for this period only; and, second, by concentrating on this period, we are deliberately avoiding the abnormality and the complications that the eruption of the debt crisis would introduce into this type of empirical investigation.[4] An important feature of this analysis is that it explicitly incorporates the role of political variables -- such as political instability and political polarization -- into the cross country regressions. In undertaking this investigation, we tried to incorporate the largest possible number of countries, both on the receiving and originating ends. This quest for a substantial coverage has resulted on a need for compromising on the quality of the data. First, we have had to concentrate on aggregate DFI; there are no available data on the sectoral composition of DFI for a large number of countries. Second, a number of potentially important institutional variables, including detailed tax legislation, had to be excluded from the analysis. In the sections that follow, we address some of these important data problems in greater detail.

Table 1 contains data on two indicators of direct foreign investment for 58 less developed countries. The first variable $DFISH_j$ is defined as the 1971-81 average ratio of OECD total direct foreign investment into country j relative to total OECD direct foreign investment into the LDCs. That is

$$DFISH_j = \sum_{71}^{81} \frac{1}{N} \left(\frac{DFI_j}{\sum_k DFI_k}\right),$$

where $\sum DFI_k$ is total DFI by the OECD in the LDCs in a particular year. The second variable, (DFI/GDP), is the 1971-81 average of the ratio of direct foreign investment received by country j to its GDP. DFISH, then, tells us how total OECD direct foreign investment is distributed across countries; (DFE/GDP), on the other hand is more closely a measure of the amount of DFI, relative to GDP, that country j obtains. Thus, by explaining the behavior of these two indexes we will be able to better understand what determines both the distribution (DFISH) as well the as level -- relative to GDP -- of direct foreign investment (DFI/GDP). As can be seen, there is a considerable variability across countries of both of these variables. These cross-country differences are particularly acute for the case of DFISH, where one particular country (Brazil) takes as much as 30% of total OECD's direct foreign investment during 1971-81.

More specifically, the goal of the empirical analysis is to use two groups of regressors in explaining their cross country variability in DFISH and (DFI/GDP): the first group of regressors is constituted by traditional economic variables that summarize the structure of each country, while the second group of regressors captures political and institutional characteristics of each nation. We start our analysis in subsection II.1 by

TABLE 1

Indicators of Direct Foreign Investment

to Developing Countries

(Average 1971-1981)

Country	DFISH (%)	(DFI/GDP) (%)
Bolivia	0.071	0.080
Botswana	0.042	0.343
Brazil	36.907	0.904
Burma	0.025	0.024
Burundi	0.015	0.095
Cameroon	0.325	0.285
Central Afr. Rep.	0.019	0.146
Chad	0.012	
Chile	-0.520	-0.201
Colombia	1.598	0.286
Congo, Peop. Rep.	0.219	0.961
Cote D'Ivoire	0.253	0.144
Dominican Rep.	0.007	0.005
Ecuador	0.016	0.016
El Salvador	0.060	0.084
Ethiopia	0.030	0.027
Gabon	0.414	0.725
Ghana	0.096	0.079
Honduras	0.045	0.088
India	1.372	0.043
Indonesia	9.550	1.093
Iran	5.120	0.330
Jamaica	0.476	0.404
Jordan	0.021	0.047
Kenya	0.661	0.548
Kuwait	0.013	0.004
Lesotho	0.010	0.207
Malaysia	3.450	0.923
Malta	0.313	1.764
Mauritania	-0.057	
Mauritius	0.077	0.355
Mexico	13.571	0.493
Morocco	0.181	0.050
Nicaragua	0.018	0.033
Niger	0.241	0.570
Nigeria	3.650	0.256
Oman	-0.057	-0.090
Pakistan	0.129	0.032
Papua New Guinea	1.811	3.394
Paraguay	0.067	0.118
Peru	4.673	1.141
Philippines	3.217	0.569
Rwanda	0.014	0.075
Sierra Leone	0.086	0.441

TABLE 1 (Continued)

Country	DFISH (%)	(DFI/GDP) (%)
Singapore	5.179	2.549
Somalia	0.216	0.847
Sri Lanka	-0.080	-0.060
Sudan	0.116	0.064
Tanzania	0.167	0.166
Thailand	1.462	0.265
Togo	-0.002	-0.028
Trinidad & Tobago	0.166	0.188
Tunisia	0.264	0.231
Turkey—	0.225	0.027
Uganda	0.035	
Venezuela	-0.256	0.012
Yugoslavia	0.432	0.038
Zaire	2.174	0.852
Zambia	0.862	1.039
Zimbabwe	1.020	0.943

<u>Source</u>: Constructed from data obtained from the United Nations, the International Monetary Fund and Summers and Heston (1987).

following the more traditional approach of focusing on the economic determinants of direct foreign investment. In subsection II.2 the potential role of political variables is formally incorporated into the regression equations. Finally, in subsection II.3 we present a sensitivity analysis.

II.1 Economic Determinants of OECD's Direct Foreign Investment in the LDCs

In recent years the theory of direct foreign investment has rapidly evolved, borrowing both from traditional trade theory and the industrial organization literature. However, in spite of these developments, today there still is not a unified and generally accepted theory of DFI. For this reason, any empirical study on the subject has to take necessarily this fact into consideration and, thus, follow what can be primarily described as a pragmatic approach. That is indeed the avenue we have decided to follow in the current paper. In fact, in deciding which economic variables to include in our cross-country regressions we have drawn from a broad group of papers from the modern DFI literature. The explanatory variables used in this study can be grouped into three broad and (somewhat) interrelated categories: (1) variables that capture some of the most important structural characteristics of these economies; (2) variables that are related to economic policy and that, in principle, can be manipulated by these countries in order to make DFI more attractive; and (3) variables that capture the political environment in each country. While in this subsection we focus on the potential roles of structural and policy related variables in explaining cross country variability of DFI, in the next subsection we add political variables into the analysis. It is important to insist, once again, that any massive cross country study, such as this one, faces non trivial problems in relation to data availability. These problems are particularly severe with respect to some of the policy related

variables. As will be seen, we have handled these problems mainly in two ways: using proxies, when they were available, and excluding the variable if it was not possible to find appropriate proxies. According to the most basic traditional theories of DFI, advanced nations will tend to channel their overseas investments to those poorer countries that have a higher return on capital. However, from an empirical point of view trying to test this hypothesis presents some problems: in poor countries where there are no well-functioning capital markets it is difficult to measure the return to capital. As a consequence we have proxied (the inverse of) this variable by real per capita income; it is expected, then, that with other things given, countries with lower real per capita income will tend to receive a higher share of DFI. In those DFI theories based on comparative advantages, the structure of production of the recipient country (e.g., the sectoral distribution of output) is an important determinant of the sectoral allocation of DFI. Although it is not straightforward to apply this disaggregated analysis to a cross country setting, it is clear that the structure of production in the host country is an important variable to incorporate into the empirical analysis.

In more recent theories of DFI, multinational firms locate in foreign countries in order to "internalize" the potential profits to be derived from these markets.[5] To the extent that one of the aspects to be "internalized" by the foreign firm are economies of scale it is expected that DFI will tend to go to those countries with larger markets. Moreover, the transnational firms' capacity to actually take advantage of the potential profit opportunities in the poorer nation will depend crucially on the existing atmosphere in the host country towards private enterprise. One possible way (although admittedly an imperfect one) of proxying the host country's stance towards

private initiative is by the size of government. It would be expected, then, that in the regression analysis the coefficient of a variable capturing government size variable will be negative. (See, for example, the discussion in Helleiner 1989.) Directly related to this is the role of investment by other agents in determining the cross-country allocation of DFI. If, as is the most plausible case, domestic investment and direct foreign investment are complements, we would expect a positive coefficient for domestic investment in the regression analysis.[6] Also, to the extent that, as has been recently suggested by a number of authors, multinationals tend to be located on tradables sectors both the degree of openness of the host country and the behavior of its real exchange rate, or level of international competitiveness will affect both the level and geographical location of DFI.[7] In fact, in addition to government size, these are the more important policy variables considered in this investigation.

In addition to the variables mentioned in the models of DFI discussed above, a multinational's decision of locating a subsidiary in a particular country will, in principle, be influenced by the specific DFI legislation, including tax inducements, of the host country.[8] Unfortunately, since there are no comparable cross-country data on legal treatment of DFI, these variables have been excluded from the regressions discussed in this paper.

Table 2 contains the results from estimating a variety of possible specifications of linear cross country regressions on DFISH and (DFI/GDP) using only structural economic variables as regressors. All variables are averages for 1971-81. Since White's test indicated the presence of heteroscedasticity, the different equations were estimated using weighted least squares, with each country's population used as weight. It should be noted, however, that when other weights were considered, or when OLS were

applied, the results obtained were very similar. Based on the previous discussion, the following structural independent regressors were included in the equations: (a) Income per capita. As pointed out, this variable is used as a proxy for the (inverse of the) return on capital and its expected coefficient is negative. (b) Ratio of foreign trade to GDP, whose coefficient is expected to be positive. (c) In the DFISH regressions the country's real GDP was included as a measure of the size of the economy and potential extent of scale economies. Its coefficient is expected to be positive. (d) Domestic investment ratio. To the extent that domestic and foreign investments are complements, its coefficient is expected to be positive. (e) The share of government consumption in GDP was included as an indicator of the size of government, and its coefficient is expected to be negative. (f) The Summers and Heston measure of the real exchange rate was incorporated as an indicator of the country's degree of international competitiveness and, given the way this RER index has been defined, its expected coefficient is positive. (g) Different measures of each country's structure of production (shares of manufacturing, mining and agriculture in total GDP) were also included. The sign of their coefficients is not determined _a priori_. (h) Finally, two regional dummy variables, for Latin America and Asia were included in the regressions.

As can be seen from Table 2 the results are quite satisfactory. The vast majority of the coefficients have the expected sign and most of them are significant at conventional levels. Moreover, the R^2s of the regressions indicate that these structural economic variables explain, as a group, approximately 60% of the cross-country variability in DFISH and (DFI/GDP). These R^2 values are indeed very high for any type of cross-country regression. The most important findings in Table 2 can be summarized as

TABLE 2

Economic Determinants of Direct Foreign Investment in LDCs:

Cross-Country Regressions

(Weighted Least Squares)

Dependent Variable	(Eq. 1) DFISH	(Eq. 2) DFISH	(Eq. 3) DFISH	(Eq. 4) (DFI/GDP)	(Eq. 5) (DFI/GDP)	(Eq. 6) (DFI/GDP)
Constant	0.019 (0.324)	0.097 (1.545)	0.026 (0.457)	-0.001 (-0.328)	0.036 (1.273)	-0.0003 (-0.127)
Per Capita Y	-0.19 E-5 (-0.195)	-0.70 E-5 (-0.627)	-0.29 E-5 (-0.300)	-0.44 E-6 (-1.300)	-0.70 E-6 (-1.370)	-0.48 E-6 (-1.056)
Foreign Trade	-0.057 (-0.872)	0.019 (0.279)	-0.017 (-0.222)	0.008 (3.478)	0.006 (2.391)	0.007 (3.048)
Real GDP	0.27 E-9 (2.938)	0.234 E-9 (2.600)	0.163 E-9 (1.475)	-	-	-
Investment Ratio	-	-	0.005 (1.943)	-	-	0.17 E-3 (1.670)
Government	-0.005 (-1.964)	-	-0.005 (-1.967)	-0.96 E-4 (-0.88)	-	-0.12 E-3 (-1.109)
RER	0.42 E-3 (2.457)	0.41 E-3 (2.648)	0.32 E-3 (1.924)	0.34 E-4 (4.242)	0.31 E-4 (4.323)	0.29 E-4 (3.773)
Manufacturing	0.005 (1.972)	-	-	0.19 E-3 (1.981)	-	-
Agriculture	-	-0.003 (-2.086)	-	-	-0.10 E-3 (-1.970)	-
Latin America	0.054 (1.152)	0.100 (2.484)	0.088 (2.188)	0.002 (0.981)	0.004 (2.068)	0.003 (1.754)
Asia	-0.073 (-2.472)	-0.040 (-1.444)	-0.045 (-1.641)	-0.001 (-0.460)	0.001 (0.046)	0.48 E-4 (0.044)
N	58	58	58	58	58	58
R^2	0.619	0.595	0.618	0.598	0.584	0.592

Notes: $DFISH_j$ is the 1971-81 average of the ratio of country j's foreign investment from OECD countries to total OECD direct foreign investment. $(DFI/GDP)_j$ is the 1971-81 average ratio of direct foreign investment from OECD countries to GDP in country j.
  These equations were estimated using weighted least squares to correct for heteroscedasticity. The average population of 1971-81 was used as a weight. The numbers in parentheses are t-statistics; N is the number of observations and R^2 is the coefficient of determination.

follows: First, as expected, real income per capita -- which proxies the inverse of the rate of return on capital -- has a negative, although insignificant, coefficient. Second, in the (DFI/GDP) regressions the foreign trade (or openness) variable is always significantly positive as expected, while in the DFISH equations this coefficient turns out to be insignificant. Third, in most equations were included the coefficients of: (a) real GDP; (b) domestic investment ratio; (c) the size of government; and (d) the international competitiveness index (RER) have the expected sign and are significant at conventional levels. On the other hand, the coefficient of the size of manufacturing sector is significantly positive, while that of agriculture share is negative.[9] Finally, the geographical dummies are positive for Latin America and negative for Asia.

From a policy perspective these results indicate that, with other things given, countries that (1) reform their foreign sector opening up international trade; (2) reduce the size of government; (3) maintain (or increase) their degree of international competitiveness; and (4) increase the rate of domestic investment, will tend to see an increase in their level of DFI. This result, of course, suggest that structural reforms are likely to have important side effects not usually measured in traditional analyses.

II.2 The Role of Political and Institutional Factors

The results reported in Table 2 were obtained by restricting the regressors to those economic variables usually considered as determinants of DFI. It is a common belief, however, that the characteristics of the political system in the LDCs play an important role in the process of determining the magnitude and location of DFI.[10] The purpose of this subsection is to formally assess how important this common belief really is. The question we address, then, is the following: after controlling for the

structural economic variables of Table 2, how important have political variables been in explaining the cross-country variability in our two direct foreign investment indicators?

Two dimensions of the political system appear, a priori to be particularly important in affecting DFI decisions: (1) the degree of political instability, and (2) the degree of political polarization and violence. It is expected that increases in both of these variables will tend to have negative effects on our measures of DFI. Naturally, finding measures for these political variables is a nontrivial problem in implementing an empirical analysis of the type proposed here. In this paper we have used indexes of political instability computed by Cukierman, Edwards and Tabellini (1989). These indexes are based on a political data set constructed by Taylor and Jodice (1983), which contains yearly observations on regular and irregular (i.e., coups) government transfers, unsuccessful coup attempts, executive adjustments, and other political events.

Cukierman-Edwards-Tabellini (CET) constructed their index on political instability by endogenously estimating from the data the probability of government change in any given year. This was done by fitting a probit equation on government change on pooled time series and cross country data for 79 countries, over the period 1948-82. The dependent variable in this probit estimate took a value of 0 for the years in which there was no government change (regular or irregular), and a value of 1 otherwise. In turn, the explanatory variables in the probit model included economic variables, designed to measure the recent economic performance of the government; political variables, which accounted for significant political events that signal the imminence of a crisis; and structural variables, that accounted for institutional differences and country specific factors that do not

change, or that change only slowly over time. Using the pooled time series-cross country probit estimates CET compute an estimated frequency of government change in each country during the period 1971-82. The index on political instability was then constructed by averaging the estimated probabilities of government change over that time period. In this paper we use this CET index of political instability as an additional explanatory variable in the DFI regressions.

In addition to the political instability index, the augmented DFI regressions also included an index that proxies the degree of economic polarization in each country. This variable measures the extent of political violence, and is constructed as the sum of the yearly frequency of political assassinations, violent riots, protests, political attacks and politically motivated strikes. The raw data for constructing this index were taken from Taylor and Jodice (1983).

Table 3 contains the results obtained from the cross-country regressions for DFISH and (DFI/GDP) that included political indicators. As can be seen, the results are very satisfactory. First, the relevance of structural economic variables appears to be even clearer than in the results reported in Table 2. Most of the coefficients of economic variables have the expected sign and are significant. Moreover, tests on the significance of all economic variables as a group indicate that they are different from zero at a very high level of significance (the values of the F-tests ranged from 10.1 to 17.2). Second, the index of political instability is negative in every regression and in three of the five equations where it is included it is highly significant. The index of political violence has the expected negative sign in two out of the three regressions where it was included, but is never significant. Tests for the joint exclusion of the <u>political</u>

instability and political violence indexes indicates that the null hypothesis is rejected at high levels of significance. In sum, then, the results reported in Table 3 for our full sample of 58 nations supports the hypothesis that both economic and political variables affect the distribution and magnitude of DFI. These results, then, indicate that reduced political instability and polarization will tend to increase DFI, as will structural reforms of the type supported by the World Bank and the IMF.

The fact that the political and structural economic variables are statistically significant, doesn't say anything regarding the relative importance of each of these variables. Table 4 addresses this issue by reporting the standardized estimates of each of the coefficients for two of the regressions reported in Table 3: equations 9 and 10. As can be seen from these estimates, in spite of the fact that the political instability is statistically significant in these two regressions, its relative importance is not very high when compared to that of other regressors. This means, then, that although the popular belief that the political setting matters for DFI turns out to be supported by the data, it is also true that these political variables are, relatively speaking, not the most important ones. From a practical and policy perspective this suggests that some structural reform measures, such as reducing the size of government and (for the case of DFI/GDP) increasing openness are likely to have a greater effect on capital inflows than an improved political atmosphere.

II.3 Sensitivity Analysis

An important question is how sensitive are our results to the presence of outliers, and to the measurement of exogenous variables. The question of the robustness of our estimates is formally addressed in this section.

TABLE 3

Direct Foreign Investment in LDCs: The Role of Economic

And Political Variables

(Cross-Country Regressions - Weighted Least Squares)

Dependent Variable	(Eq. 7) DFISH	(Eq. 8) DFISH	(Eq. 9) DFISH	(Eq. 10) (DFI/GDP)	(Eq. 11) (DFI/GDP)	(Eq. 12) (DFI/GDP)
Constant	0.066 (1.172)	0.029 (0.471)	0.054 (0.925)	0.003 (1.234)	0.003 (1.364)	0.004 (1.493)
Per Capita Y	-0.31 E-5 (-0.305)	-0.414 (-0.410)	-	-0.49 E-6 (-1.968)	-0.75 E-6 (-1.721)	-0.51 E-6 (-1.190)
Foreign Trade	-0.008 (-0.112)	0.053 (0.796)	-0.003 (-0.040)	0.009 (3.467)	0.006 (2.454)	0.009 (3.564)
Real GDP	0.14 E-9 (1.324)	0.26 E-9 (2.829)	0.16 E-9 (1.373)	-	-	-
Investment Ratio	0.005 (2.108)	-	0.006 (2.218)	0.20 E-3 (1.876)	-	0.15 E-3 (1.287)
Government	-0.006 (-2.524)	-0.005 (-1.932)	-0.006 (-2.420)	-0.24 E-3 (-2.251)	-	-0.27 E-3 (-2.398)
RER	-	0.36 E-3 (1.777)	-	-	0.29 E-4 (4.122)	-
Manufacturing	-	0.005 (2.051)	-	-	-	-
Agriculture	-	-	-	-	-0.11 E-3 (-1.721)	-
Political Instability	-0.098 (-1.202)	-0.063 (-0.619)	-0.107 (-1.927)	0.009 (-2.251)	-	-0.008 (-2.032)
Violence Index	-	-	0.12 E-5 (0.767)	-	-0.73 E-7 (-1.100)	-0.84 E-7 (-1.050)
Latin America	0.083 (2.024)	0.466 (0.958)	0.079 (1.882)	0.003 (1.295)	0.004 (2.053)	0.003 (1.406)
Asia	-0.032 (-1.163)	-0.071 (-2.380)	-0.040 (-1.333)	0.001 (0.840)	0.001 (0.814)	0.001 (1.031)
N	58	58	58	55	55	55
R^2	0.601	0.622	0.606	0.520	0.595	0.531

Notes: See Table 2.

TABLE 4

Relative Role of Specific Economic and Political Variables:

Standardized Estimates of Coefficients

Dependent Variable	DFISH	DFI/GDP
Per Capita Y	-0.035	-0.146
Foreign Trade	-0.006	0.418
Real GDP	0.270	-
Investment Ratio	0.294	0.223
Government	-0.289	-0.289
Latin America	0.315	0.237
Asia	-0.206	0.115
Political Instability	-0.136	-0.237
Violence Index	0.089	-

Notes: These standardized coefficients are computed by multiplying each estimated coefficient by the ratio of the sample standard deviation of the regressor to the sample standard deviation.

In order to analyze the role of outliers we carried out an influence analysis (Belseley, Kuh and Welsch, 1980) to assess the contribution of each particular country to our results. This analysis indicated that both in the DFISH and (DFI/GDP) regressions there were three clear outliers: Brazil, India and Indonesia. As a way to check for the robustness of our results a number of regressions were estimated excluding these outliers. Some of these results are reported in Table 5. As can be seen the results are indeed robust. In fact, if anything, the exclusion of the three outliers provide even greater support for the hypothesis that both economic and political variables significantly affect DFI decisions. Notice, for instance, how the foreign trade coefficient now also became significant in the DFISH regression.

A second sensitivity exercise consisted on experimenting with alternative variables that measure the political characteristics of the countries in the sample. Two of these were the actual frequency of government change (both scheduled and unscheduled) and the frequency of unscheduled government changes (coups and unscheduled regular government transfers). The following regressions provide an illustration of the type of results obtained when these variables were incorporated into the analysis with the complete data set (coefficients of continental dummies not reported; complete sample used):

$$(DFI/GDP)_j = 0.003 + 0.009 \text{ Foreign Trade}_j + 0.22 \text{ E-3 Investment}_j$$
$$(1.206) \quad (3.181) \qquad\qquad (2.017)$$

$$- 0.30 \text{ E-3 Government}_j - 0.34 \text{ E-8 Per Capita Y}_j$$
$$(-2.758) \qquad\qquad (-0.633)$$

$$- 0.37 \text{ E-2 Frequency Government Change}_j \qquad N = 58$$
$$(-2.005) \qquad\qquad\qquad\qquad R^2 = 0.641$$

TABLE 5

Sensitivity Analysis: Direct Foreign
Investment Regressions Excluding Outliers
(Weighted Least Squares)

Dependent Variable	Eq. 13 DFISH	Eq. 14 DFI/GDP	Eq. 15 DFI/GDP
Constant	-0.0314 (-1.256)	0.003 (1.234)	-0.90 E-3 (-0.330)
Per Capita Y	-0.47 E-5 (-2.216)	-0.49 E-6 (-0.968)	-0.30 E-6 (-0.614)
Foreign Trade	0.043 (2.928)	0.009 (3.467)	0.007 (3.971)
Real GDP	0.62 E-9 (10.738)	-	-
Investment Ratio	-0.40 E-3 (-0.802)	0.20 E-3 (1.870)	0.13 E-3 (1.917)
Government	-	-0.25 E-3 (-2.251)	-0.13 E-3 (-1.915)
RER	-	-	0.29 E-4 (3.430)
Manufacturing	0.84 E-3 (1.169)	-	0.18 E-3 (-1.345)
Mining	0.69 E-3 (1.648)	-	-
Agriculture	0.41 E-3 (1.077)	-	-
Latin America	0.013 (1.573)	0.003 (1.295)	0.001 (0.248)
Asia	-0.006 (-1.120)	0.001 (0.840)	-0.001 (-0.371)
Political Instability	-0.043 (-2.368)	-0.009 (-2.251)	-0.002 (-1.941)
Violence Index	-	-	-
N	55	55	55
R^2	0.871	0.520	0.617

Notes: These regressions were estimated after omitting from the sample the three most influential countries: Brazil, Indonesia and India. For details on the notation used see the notes at the bottom of Table 2.

$$DFISH_j = 0.078 - 0.054 \text{ Foreign Trade}_j + 0.007 \text{ Investment}_j$$
$$(1.410) \quad (-0.684) \qquad\qquad (2.593)$$

$$- 0.007 \text{ Government}_j - 0.96 \text{ E-10 Real GDP}_j$$
$$(-3.075) \qquad\qquad (-0.843)$$

$$- 0.16 \text{ E-5 Per Capita Y}_j - 0.059 \text{ Unexpected Transfers}_j$$
$$(-1.680) \qquad\qquad (-2.000)$$

$$N = 58$$
$$R^2 = 0.621$$

Summarizing, the sensitivity analysis presented here shows clearly that the result reported in the preceding subsections are quite robust and that the main conclusions presented above, regarding the role of political and economic variables in determining DFI, stand independently of the sample used and of the measures chosen to capture the political characteristics of each country.

Finally, it should be noticed that the regression analysis presented here may be subject to some endogeneity problems. Indeed, as pointed out above, some of the structural variables may indeed be affected by the extent of capital flows into these countries. In principle, this problem can be handled through the use of standard instrumental variables techniques. The problem with this, however, is that, as in most cross country studies, it is not easy to find adequate instruments. One possible way out is to use the structural variables for the previous decade as instrument. In fact, when this was done, the results obtained were not significantly different. The results, however, are still suspect from a simultaneity perspective. The reason, of course, is that in order for these variables to be valid instruments, it is required that the error terms are not correlated across decades, which is not necessarily the case.

III. Debt Conversions, Debt-Equity Swaps and Capital Flows

Direct foreign investment is only one of the potential sources for increasing capital inflows into the developing nations. A serious problem is that historically the magnitude of DFI has not been very large. It has been argued, however, that by using different debt-swap mechanisms, based on the secondary market for third world debt, the developing nations could significantly increase DFI, as well as other forms of capital inflows.[11] In fact, the proponents of this strategy have argued that in theory, these debt-swaps are equivalent to an increase in capital inflows, which are then partially used by the debtor country to reduce its foreign liabilities.[12]

The purpose of this section is to investigate whether debt-swaps in general, and debt-equity swaps in particular can, indeed, be a vehicle for increasing the volume of capital flows and DFI into the developing countries. First I provide a brief discussion of the analytics of debt-swap as mechanisms for potentially reducing a country's debt burden and helping finance growth and, second, I review in some detail the Chilean experience, where different modes of debt swaps have been used to reduce the stock of foreign debt by approximately one half.

III.1 Some Analytical Aspects of Debt Forgiveness Based on Secondary Market Mechanisms

A number of authors have investigated theoretical issues related to debt forgiveness and market based schemes. Dooley (1988a,b), and Rodriguez (1988) have analyzed the market valuation effects of buyback schemes, and have concluded that the quoted secondary market rate is not the relevant price for evaluating a major buyback program. The relevant price is the one that captures the expected flow of resource transfers _after_ the buyback. Depending on the volume of the operation this price may be significantly

higher than the ongoing secondary market quotation, as was indeed the case in the Bolivian buyback of 1986 (see Bulow and Rogoff, 1990).

Corden (1988), Helpman (1988), and Sachs (1988), among others, have discussed the effects of debt overhang on the debtor country's incentives to adjust and implement structural reforms geared at generating additional foreign exchange. These authors have pointed out that a situation of debt overhang -- which has been referred to as "being on the wrong side of the debt-Laffer curve" -- is equivalent to having a 100% marginal tax on foreign exchange earnings. The reason for this is, of course, that any additional foreign exchange will be used to increase payments to creditors. Under these circumstances there are little, if any, incentives for governments to implement costly, politically unpopular and harsh adjustment measures. This incentive effect has in fact become the most important argument in favor of debt forgiveness. By forgiving a portion of the debt the implicit marginal tax can be reduced inducing countries to undertake structural reforms that, in principle, may increase the actual resource transfer to creditors. Under these circumstances it will pay for the creditor to forgive.

Krugman (1988b) has used an option-pricing approach to investigate the creditors decision on whether to forgive or finance the debt. He showed that as long as there are good states of the world where the debt will be fully paid, it is in the creditors interest to finance rather than forgive. The reason is that by forgiving the creditor reduces the maximum possible payment (the "ceiling") without affecting the minimum payment, or "floor", obtained under the bad states of the world.

Krugman (1988a), Froot (1988), Froot et al. (1988), Sachs (1988) and Corden (1988) have investigated whether debt relief granted via mechanisms based on the secondary market is in the interest of the debtor. They argue

that this will be the case only under very special circumstances. Moreover, if this is true it will also be the case that forgiveness will be in the interest of the creditor. Williamson (1988), however, has argued that if there are heterogeneous banks with different degrees of optimism there is additional room for market based debt relief.

The two most important swap mechanisms are debt-equity swaps and debt-buybacks. Debt-equity swaps convert a foreign loan into domestic equity of the debtor country. Although the country's external debt is reduced, this operation amounts to a replacement of one type of obligation for another and does not necessarily imply a reduction in the present value of foreign liabilities. These replacements involved benefits and costs for the debtor country, and the net balance between them will generally depend on the specific operation being considered. A critical issue is how much of the secondary market discount is captured by the debtor. A domestic distribu-tional issue is also present; if the government is the major debtor and a large fraction of the discount is captured by the private sector, there will still remain the difficult problem of transferring resources from private agents to the public sector.

The main benefits of debt-equity swaps for the debtor country are that, as long as the new foreign investment face restrictions on profits and capital repatriation during an initial period, there will be a liquidity relief. Moreover, profit repatriation normally bears a higher relationship to the country's economic activity than interest payments. Also, as discussed by the literature on DFI reviewed in the previous section new investments will, in principle, contribute to the country's growth in terms of technology transfer and managing technique. Finally, new investments may help to increase capital formation in the host country. This final point,

which relates to the so-called "additionality" problem, is indeed crucial in evaluating the overall benefits of a debt equity swaps program.

However, debt-equity swaps can also impose costs to the debtor: (1) there can be substitution between investment with fresh resources and debt-equity conversions; (2) these transactions can generate inflationary pressures when the local debtor is the Central Bank and it redeems the debt in local currency -- although this need not be the case if redemption is done using other financial instruments -- and (3) similar pressures can occur in domestic interest rates if the local debtor issues bonds, uses its available liquidity or increases its demand for credit in order to redeem the foreign debt.

Debt-buybacks, on the other hand, involve the repurchase of debt in secondary markets, either directly by the debtor or through an intermediary. The local debtor then uses existing assets or increases in domestic liabilities to redeem the foreign debt. A crucial issue is where do the funds used to finance the buyback come from. Generally speaking there are three alternative sources: (1) international donations, as in the Bolivian case; (2) the country's international reserves; or (3) reversed flight capital as in the Chilean case discussed below. A related key element is the provision of foreign exchange to carry out the operation. When no access to the official reserves is granted, the foreign exchange will normally be obtained through the parallel -- or black -- market. The potential benefits of debt-buybacks are: (1) that, unlike the case of debt-equity deals, an official foreign liability is extinguished for the country, and (2) that these operations may constitute a vehicle for the repatriation of offshore capital held by residents, who would ultimately provide the dollars required by the transaction. The costs in which the country can incur if this strat-

egy is followed are higher domestic interest rates or increased inflation, which are qualitatively analogous to the costs involved in debt-equity conversions. Additionally, in those cases where foreign exchange is not provided by the Central Bank, debt buyback operations may result in a hike in the parallel market spread.

As Kenen (1990) has pointed out, at the end the cost and benefits of debt-swap schemes will depend on debtors and creditors valuations of the debt; valuation that may, in fact, differ from that of the secondary market. In fact, there will be debt relief when the present value of the debtor's resource transfer, calculated using the discount factor of the debtor, is reduced in relation to the contractual value of the debt. Most studies on debt reduction have assumed that although the discount factor used by the debtor can exceed the cost of foreign funds, it is constant through time and independent of whether the relief schemes are successful or not. This, of course, need not be the case; moreover, under most circumstances it will not be the case. In an open economy the social rate of discount will be a weighted average of the three main sources of funds: increased savings, displaced investment opportunities and foreign borrowing. The cost of foreign funds, in turn, will be greatly affected by the degree of country risk, or perceived probability of default, as perceived by the debtor. To the extent that the debt reduction schemes affect the degree to which the country can access the international capital market and/or the perceived degree of country risk the social rate of discount will go down,[13] and the present value of a given stream of payments will increase. This, in turn, will reduce the extent of the debt relief achieved through the scheme in question.[14]

III.2 Chile's Debt-Conversion Schemes

A number of authors have dismissed the generalized use of debt-swaps to reduce the debt problem on a series of grounds. For instance, referring to debt-equity swaps, Kenen (1990) has said:

> Difficulties arise on three fronts. First, many debtor countries are ambivalent about direct foreign investment of any sort. Second, they wonder whether they are attracting additional investment .... Third, they worry about inflationary side effects ...
> (p. 12)

Chile, however, has made vigorous use of debt conversion mechanisms, substantially reducing her stock of foreign debt. When the debt crisis erupted in 1982, Chile's foreign debt was $17.2 billion, a figure representing one of the highest debt per capita in the world. Through the aggressive use of a variety of debt conversion schemes, between 1985 and February of 1990 Chile has reduced its debt by more than $9 billion U.S.! In this subsection I evaluate the two most important mechanisms -- the debt conversion or buyback program (Chapter 18) and the debt equity-swaps program (Chapter 19) -- used in Chile during the last five years (see Table 6 for the exact figures involved in the different debt reduction schemes).[15]

The Chapter 18 (Ch. 18) mechanism allows domestic debtors to (indirectly) buy their own foreign liabilities in the secondary market. The Central Bank does not provide foreign exchange at the official rate for these operations; the institutions that participate in this scheme have to obtain the required foreign exchange in the domestic parallel market. Due to a number of macroeconomic effects discussed below the Chilean authorities have tightly controlled the access to the Ch. 18 mechanism. Until September of 1985 the Central Bank of Chile allocated a monthly quota to private banks. This allowed them to acquire up to that amount of its debt in the

TABLE 6

Debt Conversions In Chile As Of January 1990

	Millions US$
Chapter 18	2,581.7
Chapter 19	3,205.6
Capitalization DL 600	291.5
Portfolio Adjustments	155.5
Other Operations	2,868.3
TOTAL	9,102.6

Source: Banco Central de Chile

secondary market. Starting in October 1985, instead of allocating the quotas the Central Bank has auctioned them.

The actual mechanics of debt conversions is rather complicated. A typical Ch. 18 debt operation can be described as follows: A Chilean institution, a private bank say, decides to rescue some of its outstanding foreign liabilities. The first step is to buy a quota in the Central Bank auction. Next it locates, through an international broker, a holder of its debt that is willing to sell it. At that point the Chilean bank will have to obtain foreign exchange in the local parallel market. This will imply two steps: (1) Pesos have to be obtained to buy the foreign exchange. For this purpose the bank issues domestic debt which it sells in Chile. (2) It contacts an intermediary who buys the foreign exchange in the parallel market. Once the foreign exchange is on hand the debt is actually bought and the liability is extinguished.

The public sector, and most notably the Central Bank and the state-owned Banco del Estado, have also used Ch. 18 to reduce some of their debt. In this case, however, the payment is not made with foreign exchange. Instead the public sector foreign liabilities are exchanged for long term bonds denominated in domestic currency. The value of these peso bonds have fluctuated in the Chilean secondary market at around 88 percent of par value. A variant of the Ch. 18 program is the so-called Annex 4 of Chapter 18. This scheme amounts to exchanging liabilities in foreign currency for newly issued stock shares in a Chilean corporation. These operations are directly monitored by the Central Bank and are not subject to the quota allocation. A key aspect of this scheme is that it has not been financed with reserves or other official funds but rather with reversed capital

flight. This turns out to be very important in determining the benefits of the scheme.

An important aspect of Ch. 18 operations is that Chilean residents capture most of the secondary market discount. Three agents have shared the discount: (1) the Central Bank, (2) the suppliers of foreign exchange in the parallel market, and (3) the various intermediaries. Larrain (1988) has calculated that in 1987-88 the average discount on Ch. 18 operations amounted to 35.7%. Of these, the Central Bank got the lion's share capturing 20.5 points, the suppliers to the parallel market for foreign exchange got 3.3 percentage points, with the rest corresponding to different fees.[16]

Chapter 18 conversion schemes have several macroeconomic effects. First, there is pressure on the black market for foreign exchange. It is for this reason that in 1986 the government established the quota system. It was expected that in this way the spread in this market would not become "excessively" high. This was basically accomplished. In the first half of 1988, however, the parallel market premium started to increase, mainly for political reasons, and as a way to avoid additional pressures on this market Ch. 18 operations were temporarily suspended. An important question is whether the funds currently used to finance this scheme in the parallel market -- funds corresponding to past capital flight -- could have been lured to the country in a more efficient way. If the answer to this question is positive, the desirability of this program becomes more dubious. The second macroeconomic effect is related to the scheme's effect on interest rates. The domestic counterpart of the rescue of foreign liabilities is the creation of internal debt. This, of course, puts pressure on the domestic capital market and as a result domestic interest rates will tend to rise. It is important to notice, however, that contrary to some popular accounts

the <u>Ch. 18</u> program has no short run consequences on the creation of money by the Central Bank.

It is difficult to quantify exactly, and to summarize in a single number, the costs associated with these macroeconomic effects. There seems to be consensus, however, that these are relatively minor.[17] The desirability of the scheme, then, will basically depend on whether it is beneficial for the country to capture a discount that fluctuates around 32%. The answer to this depends partially on whether Chile expects to pay its debt in full or if it expects to have a large proportion of its debt forgiven (or alternatively, if it expects to repudiate it).[18] If, as the Chilean authorities have pointed out, the government expects to pay all its debt in full, buying some of it at a discount is beneficial. If, however, it is expected that at the end of the road the country will not pay all of its debt and that a large fraction of it will be forgiven, it is not clearly beneficial to buy it in the secondary market, even if it carries a sizeable discount.

The <u>Chapter 19</u> program corresponds to debt-equity swaps or a debt capitalization scheme. A typical operation can be described in the following way: A foreign investor buys Chilean private debt at a discount in the secondary market and converts it into internal debt. This debt is then sold in the domestic secondary market and the proceeds are used to acquire domestic (productive) assets, or to finance domestic investment projects. Participants in this scheme cannot repatriate profits for the first 4 years and the principal can only be repatriated after 10 years. <u>Chapter 19</u> operations are not subject to quota allocation and are approved on a case-by-case basis by the Central Bank; it is expected that this case-by-case approach will allow screening <u>bona fide</u> investors and to avoid "round trip-

ping" operations. There is no Central Bank commission on these operations. Most participants in Ch. 19 schemes have invested in the mining and other natural resources sectors (forestry). Contrary to Ch. 18, Chapter 19 operations do not result in the extinction of a foreign liability. They constitute a replacement of one type of liability for another. As noted in subsection III.1 above, to the extent that profits repatriation is delayed for 4 years there is a beneficial liquidity effect. While in the operations approved through Chapter 18 Chilean residents have captured most of the secondary market discount, in the case of Ch. 19 most of the discount has been captured by the foreign investor. This, of course, is equivalent to providing a major subsidy to foreign investment. Larrain (1988) estimated that this subsidy amounted to approximately 35% in 1987. It is unlikely that providing such a sizeable subsidy is the most efficient way to attract additional foreign investment. Moreover, the econometric results reported in Section II indicate that the recent political and economic developments in Chile would have provided an appropriate environment for increased DFI. This, in turn suggests that Chapter 19 operations probably have not provided an appropriate environment for orthant additionality component.[19]

To sum up, Chile has been tremendously successful in using the secondary market to reduce its debt. Approximately 50% of Chile's initial (that is 1982) long term debt to banks has been converted in the last few years. The two main mechanisms used for these purposes are fundamentally different. Chapter 18 consists of debt conversions or debt rescue schemes where Chilean residents have captured most of the secondary market discount. Moreover, after the access quota allocation system was implemented it has been the Central Bank who has captured most of this discount. By and large, given the fact that it has been financed with reversed capital flight, Ch.

18 has been an innovative program that seems to have resulted in positive net benefits to the country. Chapter 19, on the other hand is a debt capitalization program. It has provided an implicit subsidy to foreign investors of approximately 30%, and has resulted in very little, if any, additionality (see also the discussion in Ffrench-Davis, 1990).

IV. Concluding Remarks

An important component in the developing countries' strategy for recovery and growth is the design of mechanisms for attracting private foreign capital inflows to finance investment projects and adjustment programs. However, since for most nations bank loans and bonds issues are closed avenues in the post-debt crisis, the search for increased foreign resources has turned towards alternative sources of funds. A natural candidate for this is direct foreign investment. In this paper I have analyzed the potential role of DFI in providing additional foreign funds from two perspectives. First, I have estimated empirical equations in an effort to assess the roles played by structural economic variables, policy variables and political variables in determining DFI. This type of analysis allows us to understand how, if at all, governments can implement policies that would induce additional DFI into their countries. Second, I have analyzed the role of debt-swaps operations as new mechanisms to encourage a higher volume of DFI and other forms of capital inflows.

A number of conclusions emerge from this paper. First, it is possible to identify a well-defined empirical function for the determination of DFI to developing countries. In fact, our empirical results have shown that for the 1971-81 period DFI can be explained both by economic and political variables. Second, and more specifically, our results indicate that, with

other things given, countries with lower income per capita, larger internal markets, and domestic investment ratios, will tend to be more attractive to DFI. More importantly, however, the empirical results show that policies tending to move the economy towards greater openness and international competitiveness, as well as to reducing the size of government, will have an important positive effect on DFI. Third, although our results suggest quite clearly that political variables (political instability and political polar- ization) have played a significant role in determining DFI, they also show that these political variables have not been the most important ones for explaining these flows. In fact, the analysis of standardized estimates clearly shows that political considerations have been the least important of all the considered factors in determining DFI.

From a policy perspective these results are important. They clearly indicate that countries that undertake structural liberalization reforms, that will open up their foreign trade and that will provide an enhanced role to the private sector, will tend to attract greater flows of DFI. Moreover, this suggests that the Eastern European countries are likely to continue getting considerably attention from foreign investors, attracting large amounts of funds. However, it is important to bear in mind that, even if a country is overly successful, and is able to drastically increase the flow of DFI, the absolute volume of these funds will still be relatively small. Table 1, in fact, shows clearly that for most countries during 1971-81 DFI was, on average, below one percent of GDP. This means, then, that a critically important question at this juncture is whether there are new mechanisms, not available during the period under study in the regression analysis, that can be used to induce a larger volume of DFI and other forms of capital flows. This is indeed the subject of Section III of the paper

where I analyze the role of debt-swap operations, and discuss the Chilean experience with these policies.

Between 1985 and February of 1990, Chile has reduced its debt by more than one half through the aggressive use of three debt-swaps programs. The two most important of these have been a debt-rescue mechanisms and a debt equity swap program. While in the former one the funds used to retire debt in the secondary market have come from reversed flight capital, in the debt-equity swaps programs the funds have been provided by foreign investors. Our analysis suggests that the Chilean debt-equity swaps has not resulted in significant "additionality", and that to a large extent the program has amounted to providing a large subsidy to previously existing foreign investors. On the other hand, we also argue that the Chilean debt rescue operations have been highly successful, permitting Chilean nationals to use reversed capital flight to retire debt at the same time as effectively capturing a discount of approximately 30% in the secondary market. The Chilean experience, although limited, provides some evidence that suggests LDCs that embark on secondary market operations should concentrate their efforts on debt-rescue schemes rather than on debt-equity mechanisms.

All of this, then, indicates that although individual LDCs could increase the flow of DFI, the absolute magnitude of these funds will not be dramatic. Other avenues should continue to be explored, including (closed-end) investment funds, increased official assistance and, especially, the repatriation of flight capital. What is clear, however, is that the implementation of structural reform policies will open up and modernize these economies will not only have a positive impact on DFI but will also have a positive impact on reversing capital flight.

ENDNOTES

[1]For data on this and related aspects of the adjustment see he Annual Report of the U.N. Economic Commission for Latin America (ECLA), 1990.

[2]See, for example, Lipsey (1988) and Ray (1989).

[3]Root and Ahmed (1979) is one of the few works that address the same question using an analytical framework somewhat similar to the one presented here.

[4]An important question is whether an analysis based on data from the 1980s would provide insights on what is likely to happen in terms of DFI in the 1990s. Anyone familiar with the ramifications of the debt crisis is aware of the "abnormality" of the 1980s. Indeed, in my view, the 1980s represent an extraordinary period with important but limited lessons for the future of DFI behavior.

[5]See, for example, Williamson (1975), Maggee (1977), and especially Dunning (1981).

[6]Blejer and Khan (1984) have studied the issue of complementarity between private and public sector investment, and have found a significant amount of crowding-out.

[7]See, for example, Lipsey (1988).

[8]Helleiner (1989), however, reports that in practice tax inducements, such as tax holidays, have not been very important.

[9]Notice, however, that there may be a simultaneity problem here, since there has been a tendency for advanced countries to invest in manufacturing.

[10]Eaton and Gersovitz (1984), for example, have recently derived a model on capital mobility, political risk, and expropriation.

[11]We use the debt-swaps term generically to refer to any mechanism whereby old debt is exchange or reduced at a price below face price. They include debt-debt swaps, debt-rescue swaps, securitization, exit bonds, debt-equity swaps and others. Chile has used debt-swaps aggressively. Also, Bolivia is often referred to as a successful case of a debt-buyback scheme. However, this is not completely clear. See the controversy in the Brookings Papers on Economic Activity, 1988, 2.

[12]Recently a growing controversy on whether there are circumstances under which the use of this type of debt-swap mechanism is beneficial for both debtors and creditors has erupted. A number of authors have, in fact, recently argued that under most realistic circumstances debt-swap schemes will not benefit the poorer nations (Bulow and Rogoff, 1989). On this controversy see, for example, the papers by Kenen (1990), Eaton (1990), Sachs (1990), and Bulow and Rogoff (1990) in the Winter 1990 issue of Journal of Economic Perspectives. See also the collection of papers edited by Frenkel, Dooley and Wickham (1989).

[13]In Edwards (1986)

[14]A number of empirical studies have investigated the determinants of the market's perceived probability of default. For example, in Edwards (1984) I found that this probability depends on a small number of variables,

the most important of which are the level of the debt itself and the invest-
ment ratio. A higher stock of debt reduces the probability of repayment,
while a higher investment ratio increases that probability. Naturally, this
perceived probability will determine the price of the debt in the secondary
market; setting risk aversion aside the market value will be one minus this
probability.

[15]These names stem from the fact that the regulations that govern these
operations are contained in Chapters 18 and 19 of the Compendium of Rules on
International Exchange of the Central Bank of Chile.

[16]These computations refer to all operations that have used Ch. 18, and
not only to those of the private sector.

[17]Larrain (1988).

[18]Of course, as pointed out above, what really matters is whether the
debtor's expectations differ from those of the buyer.

[19]From an empirical perspective, it is not easy to quantify whether
there is or is not additionality, and the opinions appear to be divided.
Ffrench-Davis (1987), for example questions the existence of additionality,
while Fontaine (1989) argues that there is a significant proportion of new
funds. Larrain (1988) takes a somewhat intermediate position, arguing that
the fact that foreign banks have opted to participate, in spite of the fact
that equity investment is not their main line of business, is a sign that
there is at least some additionality.

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