



Economic and Political Determinants of Foreign Direct Investment*

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Summary. — Four models explaining the flow of foreign direct investment in 80 less developed countries are econometrically estimated and compared by *ex post* forecasts. A politico-economic model which simultaneously includes economic and political determinants performs best. The higher the real per capita GNP and the lower the balance of payments deficit are, the more foreign direct investment is attracted. Among the political determinants the amount of bilateral aid coming from Western countries and multilateral aid has a stimulating effect, while help from communist countries has a negative effect. Political instability significantly reduces the inflow of foreign direct investment.

1. INTRODUCTION

That the distribution of foreign direct investment depends on both *economic and political* determinants would appear to be obvious. A country in which there is political unrest or in which there is a threat of having the investment nationalized (without adequate compensation) is more of a risk and therefore *ceteris paribus* less attractive to invest in than a country offering political stability and a guarantee of property rights. It is perhaps surprising that the empirical literature investigating the determinants of foreign direct investment deals insufficiently with this joint influence of economic and political factors. Some studies stress political factors and neglect the economic ones, others stress economic factors and neglect the political ones, and again others present a catch-all factor from which it is difficult or even impossible to deduce what the economic and what the political influences are. The few studies which present an integrated and well-balanced picture of economic and political factors influencing foreign direct investment flows have serious shortcomings, since the theoretical basis is rather vague, and the statistical methods used rather awkward and difficult to interpret.

This study endeavours to present a model of the determinants of foreign direct investment based on an application of 'public choice' to

international economic (and political) issues. (For a general survey of this type of international political economy see Frey, 1984). The politico-economic model developed and econometrically tested with data for 54 LDCs for 1976, 1979 and 1980 is compared with three competing models which are prototypes of the models existing at present. It is moreover demonstrated that the politico-economic model is better able to forecast the distribution of foreign direct investment flows.

Part 2 sketches the major contributions to the empirical analysis of the determinants of foreign direct investment. Part 3 develops the politico-economic approach. In Part 4 the estimation equations for the four competing models are developed and econometrically tested. Part 5 presents the forecasting results and comparisons, and Part 6 offers some concluding remarks.

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2. EXISTING APPROACHES AND STUDIES

This section discusses the major contributions explaining foreign direct investment. No general survey is intended (for this, see Agarwal, 1980). Instead, some typical studies are selected in order to make the reader familiar with the main lines of (empirical) research. It is useful to distinguish three types of approaches which are dubbed (a) 'Much politics, little (no) economics', (b) 'Much economics, little (no) politics', (c) 'Unstructured amalgamation of economics and politics' in order to indicate what the various approaches take to be the most important determinants of foreign direct investment.

(a) *Much politics, little economics*

In one of the most prominent studies about the determinants of foreign direct investment, Green (1972) concentrates on the question of whether political instability¹ has a deterrent effect, as claimed, for example, by Basi (1963) and Aharoni (1966), who found in several survey studies that executives report political instability to be the most important variable influencing their foreign investment decisions, aside from market potential. Green surprisingly finds that the allocation of United States foreign direct marketing investment is not affected by political instability in the recipient countries, and there is even a positive relationship between the investment flow and instability in the recipient countries. The study and the strong conclusions are doubtful, however, as Green does not consider the simultaneous influence of a whole set of political and economic determinants, but rather works with simple correlations, controlling only for differences in per capita income of the recipient countries.

Another major study concentrating on the influence of political instability has been undertaken by Thunell (1977). He tests the hypothesis that investments in a country decrease when it is unstable and increase when it is stable. He finds that (1) political events and therewith instability are not directly associated with short-term fluctuations, but only with trend changes in foreign investment flows; (2) the relationship is asymmetric, that is, the investing companies do not react in the same way when a country becomes more stable as when it becomes more unstable. While a large number of statistical tests are made, Thunell is not able to develop a regression equation in which a variety of economic and political determinants are simultaneously included, and can be controlled for when the effect

of political instability is tested. The same criticism must be raised against other studies in this tradition (mostly researchers from business schools and political scientists) such as, for example, Juhl (1976, 1982).

(b) *Much economics, little politics*

The majority of studies dealing quantitatively with the determinants of foreign direct investment concentrate on economic factors. Political influences are either completely disregarded, or are treated as an unimportant side factor. These 'economic' studies do not provide a coherent picture; it appears that each author introduces those determinants into his regression equations which he or she finds personally appealing. Some studies of representative scholars, mostly from the late 1970s and early 1980s, are presented here in order to reveal the flavour of this approach, and to show some of the major results.

One of the leading proponents of the 'economic' approach is Dunning. On the basis of surveys among entrepreneurs engaged in international production he distinguishes three sets of influences on foreign direct investment (Dunning, 1973): (1) market factors such as the size and growth of the market measured by the GNP of the recipient country; (2) cost factors such as the availability of labour, low labour costs and inflation; (3) the investment climate as measured by the degree of foreign indebtedness and the state of the balance of payments. It is only here that a political factor enters. The investment climate is considered partly to depend on political stability.

In a more recent paper Dunning (1981) develops an eclectic theory of international direct investment based on the theories of industrial organization, of location and of the firm. The general proposition is that a country's enterprises are more likely to engage in international production:

- the more *ownership*-specific advantages (relative to enterprises of other nationalities) are possessed;
- the greater the incentive the firms have to *internalize* rather than externalize these specific advantages;
- the more the enterprises are interested in exploiting these advantages from a foreign *location*.

A theory of a cycle of outward and inward investment flows composed of four stages is developed, with the purpose of explaining how these three factors depend on the level of economic development and on the structural

conditions (e.g. the extent of industrialization) of the countries. For the purpose of formal statistical testing, the 67 countries (period 1967-78) are divided into three groups by cluster analysis, the dominant influence being GNP per capita. The groups of countries are then subjected to a stepwise multiple regression analysis in order to determine the most important organization, internalization and location variables for outward, inward and *net* outward investment flows. The organization variables consist of human capital (measured by skill levels) and of expenditures on research and development; the internalization variables consist of the royalties and other fees received by local enterprises from unaffiliated firms as a percent of such fees received from foreign affiliated and unaffiliated firms; the locational variables consist of the average hourly earnings, the growth of output, an infrastructural index, tax burden and the Business Environmental Risk Index (BERI). This index is based on surveys among one hundred experts and is composed of various sub-indices, among them political stability (with a weight of 12%), attitude to foreign investors and profits (6%), threat of nationalization (6%) and quality of bureaucracy (4%). The result (see his Table 9) is difficult to summarize; no clear structure emerges because different variables have a statistically significant influence, depending on the country cluster and the direction of the investment flow. While the locational factors are statistically significant in many cases, the Environmental Risk Index which also captures political risk never is. Dunning's statistical analysis thus suggests that the international investment flows are influenced by economic but not by political factors.

Another influential author is Agarwal. In his classification of the determinants of foreign direct investments (Agarwal, 1980), he mentions two 'political' factors, political stability and the threat of nationalization, in conjunction with a variety of economic factors such as investment incentives, the size and growth of the recipient's market, its degree of economic development (e.g. infrastructure), market distance, and economic stability in terms of inflation, growth and balance of payments. In his already mentioned extensive survey of the literature on the determinants of foreign direct investment (Agarwal, 1980), he finds mixed evidence with respect to the impact of political instability.

An often quoted empirical analysis of the determinants of non-extractive direct investment inflows for 70 developing countries over the period 1966-70 is by Root and Ahmed (1979). With the help of discriminant analysis they test

whether 16 economic, five social (degree of education, size of middle class, degree of modernization of outlook, strength of labour movement, extent of urbanization) and seven political (frequency of government change, number of internal armed attacks, degree of administrative efficiency, degree of nationalism, per capita foreign aid, colonial affiliation and role of government in economy) variables have a significant influence. Compared with the other studies dealt with so far, the two authors take a broader variety of political influences into account, though the main emphasis still clearly lies with the economic factors. The statistical analysis suggests indeed that among the six variables which were selected as essential discriminators at the 5% level of significance, four are economic (per capita GDP, GDP growth rate, economic integration, importance of commerce, transport and communication), one social (degree of urbanization) and only one political (the number of constitutional changes in government leadership over the period 1956-67). The stimulating influence of constitutional transfers of power in the host country on foreign direct investment contradicts Green's (1972) finding, which did not discover a significant relationship between political instability in a country and US foreign investment.

Another contribution which gives political factors a fair chance to have an effect on foreign direct investment in developing countries is Levis (1979). He tests the two hypotheses that economic considerations are the prime determinants of foreign investment flows, and that political variables are of secondary importance. The political variables considered are political instability, a political competition index (the higher it is, the more legitimate is the political system, and the more foreign direct investment is expected to flow in), and the relations with Comecon countries (which may be an indirect indicator for political risk). The model is tested by a step-by-step regression for 25 developing countries from three continents — Africa, Asia and Latin America — and for the period 1965-67. The economic variables turn out to be more important than the political ones: quality of life (essentially GNP per capita), the balance of payments, government capabilities (measured by the share of taxes and by social services in GNP) and economic conditions are the prime determinants of foreign investment flows. The economic conditions factor, measured by the per capita energy consumption, investment and export shares, GNP growth and inflation, has, however, a 'wrong' sign, because the estimate suggests that an improvement of economic conditions in the

host country reduces foreign direct investment inflow. Only one political variable, the index of political competition, is statistically significant and only enters after the four economic variables mentioned above. The five factors are able to account statistically for 55% of the variance. The results reached depend rather strongly on the period chosen; for an earlier period (1962-64) the significance and ranking of the variables differs considerably.

The contributions discussed so far all relate to foreign direct investment in *developing* countries (except for Dunning, 1981, who does so primarily but who also includes some industrialized countries). There is also a large literature on direct investment in developed countries, in particular of the United States in the European Community. Recent examples are Scaperlanda and Balough (1983) or Lunn (1980). These studies are of limited interest for the purpose here pursued, as they do not include any political variables which are also relevant for developing countries, and our study attempts to explain foreign direct investment flows into less developed countries.²

(c) *Unstructured amalgamation of economics and politics*

The studies dealt with in Sections (a) and (b) try to capture the influence of economics and politics on foreign direct investment by specifying appropriate variables. Another possibility is to introduce the investment climate in a host country by using the *country risk indicators* which have been developed by various institutions. The Business Environment Risk Index (BERI) has already been mentioned above. Others are the World Political Risk Forecast (WPRF), the Political System Stability Index (PSSI), or the Institutional Investors Credit Rating Index (ICRI). There is no need to go further into the construction and specification of country risk indicators, since this has been done extensively in recent articles (in particular Kobrin, 1981) and books (Herring, 1983; Kobrin, 1982). It is tempting to relate these risk indicators directly to foreign direct investment flows. There is in principle no need to introduce additional economic or political factors because the risk indicators claim to fulfill this task adequately.³ To our surprise, we have been unable to find any such economic study, at least not in scientific journals.⁴ An exception is the study by Dunning (1981) discussed above, who uses the BERI Environmental Risk Index, but who does not find any significant influence. This may be due to the fact that he

simultaneously includes a great many other economic and political factors in the regression which (at least in part) pick up similar influences on foreign direct investment behaviour.

(d) *Evaluation of existing studies*

The short discussion of some representative recent contributions to the empirical analysis of foreign direct investment shows that there is no clear picture of what factors are the main determinants. In particular, it is unknown what role the economic factors, and what role the political factors play.

The unsatisfactory state of research relates both to matters of content and statistical methodology. With respect to content, the studies reveal a very large variance of economic and especially political factors which are introduced as prospective determinants. The studies rarely give any convincing reasons based on theoretical notions of why they include a particular variable, and why another one is excluded. Sometimes there are rather curious mixtures between various concepts. An example may be found in Levis (1979) who introduces a 'Quality of Life Index' (whose indicators are per capita GNP, number of doctors and hospitals per 1000 inhabitants, per capita calorie consumption), and 'Economic Conditions' (whose indicators are growth of GNP, energy consumption, investment and export share, inflation). The two variables obviously capture very similar economic aspects, and it is not clear which indicator should belong to which variable. It is therefore most surprising that the two variables have an *opposite* impact on foreign direct investment, a result which the author himself also finds 'puzzling' (p. 65). It is also quite obvious that some of the empirical results are 'explained' *ex post*, i.e. no serious effort is made to subject theoretical hypotheses to tests. Another example is given in Levis (1979) who finds that his explanatory variable 'Government Capability' (measured by the share of taxes and of social services in GNP) has a negative impact on foreign direct investment. This result is explained by pointing to the effective taxing of a 'capable' host government which also affects foreign firms. Nothing is said, however, about the fact that a 'capable' government also provides many services which are to the benefit of foreign investment, such as infrastructure. A general shortcoming of the studies surveyed is therefore that the empirical estimation and the variables used as causal factors are not guided by theoretical considerations but introduced *ad hoc*.

The statistical procedures used in the studies

on the determinants of foreign direct investment are also unsatisfactory. They are in many cases unnecessarily complicated and difficult to interpret. An example is Dunning's (1981) procedure of first forming clusters of countries with the help of dependent *and* independent variables, and then to use multiple regression analysis on each separate cluster. The same information is used twice. It is therefore not surprising that he is able to find (some) statistically significant determinants. The results are difficult to generalize because they relate to the particular country cluster only, and the cluster to which a country belongs is determined by the same dependent and independent variables that are used in the regression.

All the representative studies surveyed are close to 'measurement without theory': variables are searched for which have a significant influence. We therefore have to conclude that the existing state of research shows serious conceptual and statistical weaknesses. We try to overcome these deficiencies by (1) formulating testable hypotheses on the basis of existing theories of international production; (2) testing them by as simple a method as possible, i.e. by the multiple regression technique current in economics; (3) emphasizing the simultaneous influence of economic and political factors. In order to do this, competing models based on the approaches (a), (b), (c) discussed in this section are constructed and contrasted with a politico-economic approach devised in the next section. The performance of the competing models will be evaluated on the basis of the model's forecasting capacity.

3. A POLITICO-ECONOMIC MODEL OF FOREIGN DIRECT INVESTMENT

The decision of an enterprise in an industrialized country to invest directly in a developing country is motivated by a higher expected (future) profitability as compared to the alternative investment possibilities at home or in other industrialized countries. The relative advantage of such investment depends on *both* economic *and* political influences. Even if present economic conditions seem satisfactory and suggest good prospects for the future, it is entirely possible that they will not materialize due to unfavourable political conditions. It is therefore necessary simultaneously to consider economic and political determinants of foreign investment decisions.

There is no need to repeat here the theory underlying the *economic* determinants; they have

been well presented in, for example, Agarwal (1980) and partly repeated in Section 2(b) of this paper. From this theory, six *testable hypotheses* can be derived:

The first three hypotheses refer to internal economic conditions in the host country:

- (1) The higher GNP per capita, the better is the nation's economic health, and the better are the prospects that direct investment will be profitable. A positive influence on foreign direct investment is expected.
- (2) A high rate of growth of GNP is an indicator of a good development potential in the future. This suggests a positive influence on direct investment from abroad.
- (3) A high rate of inflation is a sign of internal economic tension and of the inability or unwillingness of the government and the central bank to balance the budget and to restrict money supply. As a rule, the higher the rate of inflation, the less are foreign direct investment decision-makers inclined to engage in the country. A negative relationship is hypothesized.

The next hypothesis relates to the external economic conditions of the host country:

- (4) A large deficit in the balance of payments indicates that the country lives beyond its means. The danger increases that free capital movement will be restricted and that it will be more difficult to transfer the profits from the direct investments into the investing country. With a deficit in the balance of payments being measured positively, and a surplus negatively, the testable hypothesis is that there is a negative effect on the inflow of foreign direct investment.

The two final economic hypotheses deal with the relative advantage the labour market offers compared to alternative investment opportunities:

- (5) The lower the wage costs are, the more profitable it is directly to invest in the country concerned. A negative relationship to the foreign direct investment flow is hypothesized.
- (6) For direct investment to be worthwhile, a skilled work force is needed. It is hypothesized that the larger the share of an age group with secondary education, the more direct investment will *ceteris paribus* flow in (positive relationship).

The theory underlying the *political* determinants

of foreign direct investment is less well developed. There is less consensus among the researchers of what the relevant factors are. Most studies (see Section 2) consider one or two political variables only: they therefore give influences from politics little chance to affect direct investment from industrialized countries. Here, four testable hypotheses will be advanced:

- (7) Political instability may disrupt the economic process and affect in particular foreign investment. Internal political troubles may be projected outwards and create additional difficulties for foreign-owned firms, including the threat of partial or total nationalization. This danger exists quite irrespective of whether the government is of left-wing or right-wing persuasion, because both types may resort to nationalism to strengthen their position. It is hypothesized that increased political instability induces marginal decision-makers to undertake less direct investment; a negative relationship is expected.
- (8) The more left-wing the host government's ideology is, the more likely it will be that the foreign direct investor runs into trouble, *ceteris paribus*. The international direct investors are likely to perceive this danger to be lower in the case of a government with a more right-wing orientation, especially as its rhetoric is more friendly to foreign investors.⁵ Using the dummy variable 1 for right wing, and 0 for left-wing governments, a positive relationship to foreign direct investment is expected.

The following two political hypotheses take aid as an indicator of the closeness of relationships with the Communist and with the Western bloc of countries. Neither of the blocs grant aid for purely altruistic reasons, evidence rather suggests that they do it to influence the recipient country's political position.⁶ The amount of aid (per capita) may therefore also be taken as an indicator of the host country's dependence on either the Communist or the Western bloc.

- (9) The larger the percentage of aid received by a country from the communist bloc, the less will foreign direct investors be inclined to invest in the country. A negative relationship is hypothesized.
- (10) Conversely, a large amount of aid from Western countries is conducive to more foreign direct investment. A positive relationship is expected.

A last hypothesis belongs neither to the economic nor to the political realm, but contains elements of both:

- (11) The host country's economic and political position may be eased by multilateral aid. Such aid serves to release some of the balance of payments pressure. It is given on the basis of often quite stringent restrictions by the international institutions (especially the World Bank). The international direct investors may therefore expect from the host country a more friendly political posture, and have to fear less nationalization and curtailments of the movement of capital. A positive relationship between the amount of multilateral aid and foreign direct investment is expected.

4. COMPETING MODELS AND EMPIRICAL ESTIMATION

Four models will be compared to each other. The three models (a), (b) and (c) discussed in Section 2, and the politico-economic model (d) developed in Section 3. The 'political' model (a), and the 'economic' model (b) can be taken as special cases of the more general politico-economic model (d).

(a) 'Political' model

This model is essentially confined to testing the influence of political instability on foreign direct investment flows, controlling for per capita GNP. It thus consists of hypotheses (7) and (1).

(b) 'Economic' model

This model contains the economic determinants of model (d), i.e. the hypotheses (1)–(6).

(c) 'Amalgamated' model

This model uses the Institutional Investor's Credit Rating indicator composed of both economic and political factors. Therefore, no other determinants are introduced to avoid measuring the same influence twice. Only the per capita level of GNP is controlled for (hypothesis 1).

(d) 'Politico-economic' model

This model consists of the full set of hypotheses (1)–(11).

These four models are econometrically tested by multiple regression over 54 developing countries for which the full set of data is available.⁷ The exact specification and source of the variables used is given in the Appendix. In order to test for the stability of the estimated parameters, the estimates have been undertaken for three different years — 1976, 1979 and 1980. The estimated coefficients and their respective *t*-values are presented in Tables 1, 2 and 3.

Table 1 shows the results for the year 1976.

Table 1. Political and economic determinants of net foreign direct investment per capita, 1976. (Comparison of four competing models, 54 less developed countries)

Model (Hypothesis)	Const.	Economic Determinants					Political Determinants					Test statistics					
		Real GNP per cap.	Growth of real GNP	Rate of inflation	Bal. of pay- ments deficit	Wage cost	Skilled work force	Insti- t. invest. credit rating	Polit. instability	Government ideology (right=1 left=0)	Bilateral aid received from Commun. countries	Political and economic multi- lateral aid from Western countries	\bar{R}^2	SE	F	Degrees of freedom	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)						
'Political' (a)	1.30 (4.69) [0.55]	0.06**	—	—	—	—	—	-0.50** (-2.69) [-0.15]	—	—	—	—	0.40	36.41	9.47	51	
'Economic' (b)	12.67 (3.08) [0.60]	0.06** (2.70) [0.29]	5.47** (-2.08) [-0.08]	-1.27* (-3.86) [-0.44]	-0.54** (-2.46) [-0.13]	-0.74** (1.90) [0.06]	0.71*	—	—	—	—	—	0.51	30.40	11.96	47	
'Politico- economic' (d)	14.49 (2.98) [0.58]	0.06** (2.74) [0.30]	5.06** (-2.11) [-0.09]	-1.31* (-3.70) [-0.41]	-0.50** (-2.30) [-0.13]	-0.76* (1.81) [0.05]	0.64	—	-0.55* (-2.08) [-0.14]	1.99 (0.98) [0.02]	-0.55* (-2.60) [-0.13]	1.10** (4.76) [0.64]	0.54** (2.84) [0.19]	0.75	26.41	26.49	42

Due to the unavailability of the institutional investors credit rating, model (c) cannot be estimated for 1976.

The figures in () parentheses are the *t*-values. Coefficients statistically significant on the 95% level are indicated by an asterisk, on the 99% level by two asterisks. The figures in [] brackets are the standardized (β) regression coefficients.

The 'amalgamated' model (c) cannot be estimated for that year because the Institutional Investor's Credit Rating is available only since 1979. A comparison of the three models indicates that the 'politico-economic' model (d) statistically explains by far the largest part of the variance — 75%. The 'economic' model accounts for 51%, and the 'political' model for 40% of the variance. Most of the coefficients of all three models are statistically significant at the 95 and 99% level of security. All the coefficients have the theoretically expected sign; the hypotheses developed need not be rejected. Comparing across the models it may be noted that the size of the coefficients of the determinants are quite similar. This suggests that the addition of economic determinants to the 'political' model (a), and the addition of political determinants to the 'economic' model (b), adds an independent new dimension to the estimation. As models, (a) and (b) are special (extreme) cases of the 'politico-economic' model (d), it indicates that the *joint* and simultaneous consideration of *economic and political* determinants as in model (d) is appropriate. Considering the standardized regression coefficients (β -coefficients) it may be seen that real per capita GNP is the dominating influence on foreign direct investment flows in all three models. The only determinant with a higher (absolute) β -coefficient suggests that bilateral aid from Western countries — an influence which is taken into account in the politico-economic model (d) only — is of great importance. The only other factor with a high β -coefficient is the balance of payments deficit (models (b) and (d)).

Tables 2 and 3 present the empirical results for the years 1979 and 1980, respectively. They include an estimate for the 'amalgamated' model (c). The International Investors Credit Rating index has a statistically significant (at the 99% level) influence on foreign direct investment: the better a country's risk rating, the more is directly invested by foreign firms, keeping the per capita GNP level constant. This 'amalgamated' model (c) statistically accounts for a higher share of the variance (47% in 1979, 50% in 1980) than the 'political' model (a) (38 and 40%, respectively), but less than the 'economic' model (b) (56 and 58%, respectively). The 'politico-economic' model (d) performs again by far the best with respect to (adjusted) \bar{R}^2 : it statistically explains 69% of the variance in 1979, and 72% in 1980.

The empirically estimated coefficients for 1979 and 1980 have similar magnitudes, and they are also of similar size to those estimated for 1976. This stability of the coefficients over the years lends further support to the approach pursued, in particular to the politico-economic model (d).

The hypotheses theoretically proposed are not refuted by the empirical evidence. The only exception is hypothesis (8) that governments with a left-wing ideology *ceteris paribus* deter direct foreign investment. The respective parameter of the politico-economic model (d) is statistically insignificant for all three years, but has the theoretically expected sign.

5. COMPARISON OF FORECASTING PERFORMANCE

The previous section has shown that all four competing models for explaining the determinants of foreign direct investment are quite satisfactory judged from the point of view of the usual test statistics. The politico-economic model which combines economic and political determinants performs the best with respect to goodness of fit (\bar{R}^2), in all three years considered (1976, 1979, 1980).

A more demanding and therefore more relevant test is a model's forecasting capacity. The four competing models are analyzed to see which is best able to predict foreign direct investment on the basis of the estimation equation for 1979. For that purpose, the actual values of the independent variables for 1980 will be used (*ex post* prediction). The results are presented in Table 4. This table presents the deviation between actual and forecast values of foreign direct investments per capita (in US \$) in 51 developing countries⁸ for the year 1980. In the case of the political, the economic and the amalgamated models the prediction overestimates the actual value of foreign direct investment for 25 countries, and underestimates it for 26 countries. In the case of the politico-economic model there is an overprediction for 24 countries, an underprediction in 27 countries. The *average* absolute and percentage deviation from the actual value is smallest for the politico-economic model (d), followed by the economic model (b). The worst *ex post* predictions are by the political model:

	Model			
	(a)	(b)	(c)	(d)
Average absolute residual (\$)	28.8	17.9	34.4	11.6
Per cent deviation from the true value	56.9	35.4	48.2	23.0

Table 2. *Political and economic determinants of net foreign direct investment per capita, 1979. (Comparison of four competing models, 54 less developed countries)*

Model (Hypothesis)	Const.	Economic Determinants					Political Determinants					Test statistics					
		Real GNP per cap.	Growth of real GNP	Rate of infla- tion	Bal. of pay- ments deficit	Wage cost	Skilled work force	Instit. invest. credit rating	Polit. insta- bility	Government ideology (right=1 left=0)	Bilateral aid received from Commun. countries	from Western countries	Political and economic multi- lateral aid	\bar{R}^2	SE	\bar{F}	Degrees of freedom
	(1)	(2)	(3)	(4)	(5)	(6)		(7)	(8)	(9)	(10)	(11)					
'Political' (a)	2.74 (4.10) [0.50]	0.07** —	—	—	—	—	—	—	-0.43* (-2.59) [-0.13]	—	—	—	0.38	39.94	8.81	51	
'Econo- mic' (b)	18.08 (3.11) [0.55]	0.07** (2.63) [0.27]	4.36* (-2.24) [-0.14]	-0.85* (-4.84) [-0.54]	-0.29** (-2.31) [-0.11]	-0.51* (2.02) [0.08]	0.64* (2.02) [0.08]	—	—	—	—	—	0.56	28.41	12.47	47	
'Amalg.' (c)	3.57 (4.00) [0.49]	0.06** —	—	—	—	—	—	0.15** (2.89) [0.34]	—	—	—	—	0.47	31.43	10.47	51	
'Politico- economic' (c)	22.47 (3.02) [0.53]	0.07** (2.34) [0.21]	3.84** (-2.29) [-0.14]	-0.86* (-4.21) [-0.51]	-0.26** (-2.11) [-0.09]	-0.48* (1.84) [0.06]	0.51 (1.84) [0.06]	—	-0.36* (-2.27) [-0.11]	2.43 (1.43) [0.06]	-0.49* (-2.57) [-0.11]	0.96** (4.39) [0.56]	0.35* (2.41) [0.11]	0.69	20.41	23.56	42

The figures in () parentheses are the *t*-values. Coefficients statistically significant on the 95% level are indicated by an asterisk, on the 99% level by two asterisks. The figures in [] brackets are the standardized (β) regression coefficients.

Table 3. Political and economic determinants of net foreign direct investment per capita, 1980. (Comparison of four competing models, 54 less developed countries)

Model (Hypothesis)	Economic Determinants											Political Determinants				Test statistics			
	Const.	Real GNP per cap.	Growth of real GNP	Rate of inflation	Bal. of payments deficit	Wage cost	Skilled work force	Instit. invest. credit rating	Polit. instability	Government ideology (right=1 left=0)	Bilateral aid received from Commun. countries	Bilateral aid received from Western countries	Political and economic multi-lateral aid	R ²	SE	F	Degrees of freedom		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)								
'Political' (a)	3.47	0.07** (4.03) [0.51]	—	—	—	—	—	—	-0.44* (-2.62) [-0.14]	—	—	—	0.40	46.54	8.76	51			
'Economic' (b)	22.47	0.08** (3.26) [0.56]	5.07* (2.66) [0.29]	-0.91* (-2.34) [-0.15]	-0.31** (-5.11) [-0.56]	-0.58* (-2.30) [-0.11]	0.66* (2.06) [0.09]	—	—	—	—	—	0.58	41.34	17.41	47			
'Amalg.' (c)	4.58	0.07** (4.14) [0.52]	—	—	—	—	—	0.18** (3.03) [0.36]	—	—	—	—	0.50	44.76	12.47	51			
'Politico-economic' (e)	26.43	0.07** (3.18) [0.55]	4.21* (2.30) [0.19]	-0.85* (-2.31) [-0.15]	-0.28** (-4.94) [-0.53]	-0.50* (-2.27) [-0.09]	0.59 (2.01) [0.07]	—	-0.39* (-2.60) [-0.13]	2.76 (1.54) [0.08]	-0.53* (-2.64) [-0.12]	1.21** (5.52) [0.58]	0.41* (2.59) [0.12]	0.72	36.43	24.24	42		

The figures in () parentheses are the *t*-values. Coefficients statistically significant on the 95% level are indicated by an asterisk, on the 99% level by two asterisks. The figures in [] brackets are the standardized (β) regression coefficients.

Country	Actual value	Deviation between actual and:			
		Forecast by 'political' model (a)	Forecast by 'economic' model (b)	Forecast by 'amalgamated' model (c)	Forecast by 'politico-economic' model (d)
Algeria	52.70	10.72	5.71	7.79	-3.38
Argentina	59.39	-28.35	-19.83	-22.93	-15.61
Bolivia	57.50	-17.84	-13.13	-21.47	-11.14
Brazil	19.12	3.20	1.44	2.34	-0.71
Chile	-4.14	25.04	18.46	20.63	14.70
Colombia	27.75	5.47	2.66	6.37	-1.16
Congo P.R.	107.50	-18.73	-40.96	-67.37	-29.18
Costa Rica	146.80	-60.16	-32.48	-40.37	-26.39
Cyprus	20.00	87.26	46.43	66.61	30.26
Dominican R.	59.44	-34.72	-29.01	-32.03	-20.88
Ecuador	71.25	-46.16	-30.69	-38.82	-17.76
Egypt R.	43.62	-50.62	-23.13	-31.21	-17.08
El Salvador	23.78	1.03	4.26	2.65	1.71
Ethiopia	3.73	27.17	12.68	11.74	14.68
Gabun	8.00	100.90	52.32	82.47	46.69
Guatemala	19.39	14.21	14.21	17.21	10.25
Honduras	38.11	-3.96	-3.55	-5.95	-2.92
India	2.74	29.16	18.69	24.72	13.75
Indonesia	11.18	-4.64	-1.67	-2.77	-0.57
Ivory Coast	107.50	-57.15	-30.18	-47.09	-20.75
Jamaica	53.64	-7.49	-5.25	7.95	6.13
Jordan	72.19	-9.33	-5.60	-7.33	6.14
Kenya	21.07	25.32	14.42	23.16	11.42
Korea R.	54.87	-37.22	-32.55	-35.28	-25.28
Liberia	38.95	4.09	3.19	-2.93	1.34
Malawi	20.49	-3.47	-1.78	-4.08	-1.97
Malaysia	17.27	-10.55	-2.95	-7.76	0.24
Mauritius	4.44	12.37	6.12	12.97	6.88
Mexico	64.51	-11.21	-8.19	12.03	1.47
Morocco	49.21	-44.31	-26.89	-36.60	-18.81
Nicaragua	88.46	-58.15	-40.14	-47.14	-31.47
Nigeria	17.02	-2.87	-1.55	-3.96	-0.50
Pakistan	10.12	24.02	18.62	20.31	10.30
Panama	98.33	6.61	1.90	13.26	-4.12
Papua N. Gui.	33.00	129.90	79.77	107.32	37.54
Paraguay	35.63	-19.58	-15.27	-18.22	-9.93
Peru	15.92	46.25	31.40	44.59	20.92
Philippines	23.88	7.64	8.53	6.70	4.71
Senegal	28.07	13.16	8.14	11.39	5.14
Sierra Leone	15.43	-32.21	-7.02	-9.94	-8.03
Singapore	12.50	103.20	71.82	88.24	50.62
Sudan	32.99	-18.24	-15.56	-17.30	-11.93
Syrian R.	23.56	-31.14	-22.13	-26.97	-20.00
Tanzania	10.16	23.61	18.33	20.25	11.83
Thailand	24.72	3.90	2.92	5.02	1.06
Tinland To.	59.17	-24.96	-20.71	-24.03	-14.13
Tunisia	32.66	27.51	7.66	23.77	-3.89
Uruguay	46.21	-12.67	-6.70	-9.68	-6.37
Venezuela	75.37	-25.09	-14.64	-19.96	-6.37
Zaire	1.52	36.18	16.95	28.89	17.49
Zambia	48.28	18.37	11.48	-18.02	4.08

Table 4. Forecasting performance of the four competing models. (Ex post prediction for 1980 on the basis of the econometric estimates for 1979; actual value and deviation between actual and forecast values of foreign direct investment per capita in US \$)

On average, the politico-economic model (d) has an absolute prediction error of per capita foreign direct investment of \$12 or 23%, while the second best model—the purely economic model (b)—has an error of \$18 or 35%, a quite sizeable difference. This reflects the fact (see Table 4) that the politico-economic model yields a better *ex post* prediction than any other of the three models in 42 of the 51 countries. Only for nine countries is a prediction nearer to the actual value provided by one of the other models.

It may possibly be argued that the superior forecasting capacity of the politico-economic model is due to the fact that the prediction extends over one year only, from 1979 to 1980. In order to check whether this is true, the parameter estimates for 1976 are used to predict foreign direct investment for the year 1980. For reasons of space, the results are shown only for the politico-economic model, see Table 5. This time, the politico-economic model overpredicts foreign direct investment for 33 countries, and underpredicts for 18 countries. The average absolute deviation between the actual and the predicted values per country is \$12.6, the relative deviation from the actual value is 25%. As has to be expected, these residuals are larger than in the case of the one year prediction, but the difference is small. It may therefore be concluded that the superiority of the politico-economic model remains when a longer forecasting period is considered.

6. CONCLUDING REMARKS

The paper is the result of a certain dissatisfaction with the existing empirical literature analyzing the determinants of foreign direct investment in less developed countries. In particular, most studies concentrate exclusively on either political or economic determinants, instead of taking into account their joint and simultaneous effect.

Four models are developed on the basis of the existing literature with the purpose of comparing the quality of the estimates and (*ex post*) forecasts of a model (a) which concentrates exclusively on a political determinant (political instability), a model (b) which concentrates exclusively on economic determinants (growth of GNP, inflation, balance of payments, wage costs, skilled labour force), and in addition a model (c) which uses as the sole determinant an international risk indicator, an amalgamation of economic and political factors. These three models are compared with a politico-economic model (d) which simultaneously includes the economic determinants (as in model b) and political determinants (as in model a). Moreover, the political

Table 5. *The forecasting performance of the politico-economic model over four year period ex post prediction for 1980 on the basis of the econometric estimate of the model for 1976 (in US \$)*

Country	Actual value	Deviation between actual and forecast values
Algeria	52.70	-3.96
Argentina	59.39	-15.00
Bolivia	57.50	-9.51
Brazil	19.12	-2.10
Chile	-4.14	16.62
Colombia	27.75	0.72
Congo P.R.	107.50	-28.19
Costa Rica	146.80	32.48
Cyprus	20.00	25.36
Dominican R.	59.44	-21.93
Ecuador	71.25	-20.79
Egypt R.	43.62	-13.31
El Salvador	23.78	4.63
Ethiopia	3.73	15.86
Gabun	8.00	57.79
Guatemala	8.22	6.10
Honduras	38.11	-1.89
India	2.74	9.73
Indonesia	11.18	-2.16
Ivory Coast	107.50	17.09
Jamaica	53.64	7.72
Jordan	72.19	7.80
Kenya	21.07	8.99
Korea R.	54.87	21.40
Liberia	38.95	6.80
Malawi	20.49	6.10
Malaysia	17.27	-1.80
Mauritius	4.44	7.88
Mexico	64.51	-3.92
Morocco	49.21	12.46
Nicaragua	88.46	37.47
Nigeria	17.02	1.74
Pakistan	10.12	8.27
Panama	98.33	7.99
Papua N.Gui.	33.00	42.76
Paraguay	35.63	-6.69
Peru	15.92	17.83
Philippines	23.88	0.12
Senegal	28.07	7.59
Sierra Leone	15.43	4.04
Singapore	12.50	37.92
Sudan	32.99	-4.43
Syrian R.	23.56	-14.10
Tanzania	10.16	13.43
Thailand	24.72	3.69
Trinidad To.	59.17	-9.81
Tunisia	32.66	-8.38
Uruguay	46.21	4.25
Venezuela	75.37	-1.70
Zaire	1.52	20.82
Zambia	48.28	2.21

variables of government ideology and the type of bilateral, as well as multi-lateral, aid are included among the explanatory variables. It turns out that both with respect to the goodness of fit as well as with respect to the quality of (*ex post*) forecasts, the politico-economic model performs significantly better than the three competing models.

It may be concluded that foreign direct investment in developing countries is simultaneously determined by economic and political factors. It may further be concluded that an amalgamation of economic and political influences into a credit risk indicator is not advisable because it is not able to do justice to the complexity of politico-economic interdependence.

The most important economic determinants seem to be a country's level of development (as measured by real per capita GNP) and the balance of payments. The higher per capita

income, and the lower the balance of payments deficit, the more foreign direct investment is attracted. Among the less important economic influences are the growth of GNP and the workers' skill level attracting foreign direct investment, and inflation and wage costs reducing the inflow of foreign direct investment. Among the political determinants the amount of bilateral aid coming from Western countries has the strongest stimulating effect. When a host country receives aid from communist countries this has a significantly negative, but not such an important effect. Multilateral aid also significantly furthers foreign direct investment. Another relevant factor is political instability which significantly reduces the inflow of foreign direct investment, while the government's ideological position (right or left wing orientation) does not have a statistically significant influence.

NOTES

1. Political instability covers events ranging from institutionally sanctioned dissolution of legislature over demonstrations, riots, strikes, assassinations of political figures to coups d'état and civil war. See Feierabend and Feierabend (1965).

2. Tariff discrimination and fluctuations of exchange rates which prove to be important for US direct investment in the E.E.C. may be of potential interest in the future.

3. In order to control for the different levels of economic development of the host countries, it seems sensible to simultaneously introduce GNP per capita as an explanatory variable.

4. It cannot be excluded, and it is even likely, that such studies have been undertaken within research departments of commercial banks.

5. It has been documented that the managers of enterprises undertaking foreign direct investment are quite strongly influenced by direct impressions, including the government's rhetoric, in the (prospective) host

country. See, for example, Rummel and Heenan (1978).

6. See Dudley and Montmarquette (1976), McKinley and Little (1979), Frey and Schneider (1983).

7. The authors are aware of the possibility that there may be a reverse causal relationship: foreign direct investment may have an influence on the economic and political variables used as determinants. This aspect is neglected here as it would require a full-scale econometric and politometric model of each of the host countries. This must be left to future research. Our study may be seen as a contribution to a more comprehensive international model of politico-economic interdependence. While the parameter estimates may be biased due to the one-sided view, practical experience with econometric testing has shown that there is only a small difference between simultaneous and OLS-estimates, if it exists at all.

8. The *ex post* predictions refer to 51 countries because some countries which were in the sample for the year 1979 were not any longer in the sample for the year 1980.

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FOREIGN DIRECT INVESTMENTS — DATA APPENDIX

(1) *Dependent variable*

Net foreign direct investment; per capita 1976, 1979 and 1980, in US \$;

(2) *Independent variables*

Income: GNP per capita in US \$, one year lag, 1975, 1978 and 1979;

Rate of income: yearly rate of GNP per capita in percent, one year lag, 1975, 1978 and 1979;

Rate of inflation: percentage rate of GNP-deflator, one year lag, 1975, 1978 and 1979;

Balance of payments: balance of current account (+ = surplus, - = deficit) in US \$ per capita, one year lag, 1975, 1978 and 1979;

Wage cost per worker employed: monthly wages (average over all workers) in US \$ (in industry employed), one year lag, 1975, 1978 and 1979;

Skilled labour: number enrolled in secondary school as a percentage group of age group, 1975, 1978 and 1979;

Political instability: number of political strikes and of riots, average over 1972-75, and 1975-77;

Type of government: dummy variable = 1, if a government is classified as a 'pure' capitalist state, otherwise zero;

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(2) *Independent variables* (cont)

Relation to *communist* states: bilateral commitments by centrally planned economies to the LDC, cumulative 1973-75, and cumulative 1976-78, per capita in US \$;

See wage cost

Sources

Relation to *capitalist* states: disbursements to individual developing countries of bilateral official development assistance from developed market economies (17 OECD countries as donors), 1973-75 cumulative and 1976-78 cumulative in US \$ per capita;

See wage cost

Institutional investors country ratings: country credit ratings between 0-100, with 0 last credit-worthy country and greatest chance with default with their debt; 100 most creditworthy—evaluation done by 75 world leading bankers, years 1978-80.

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