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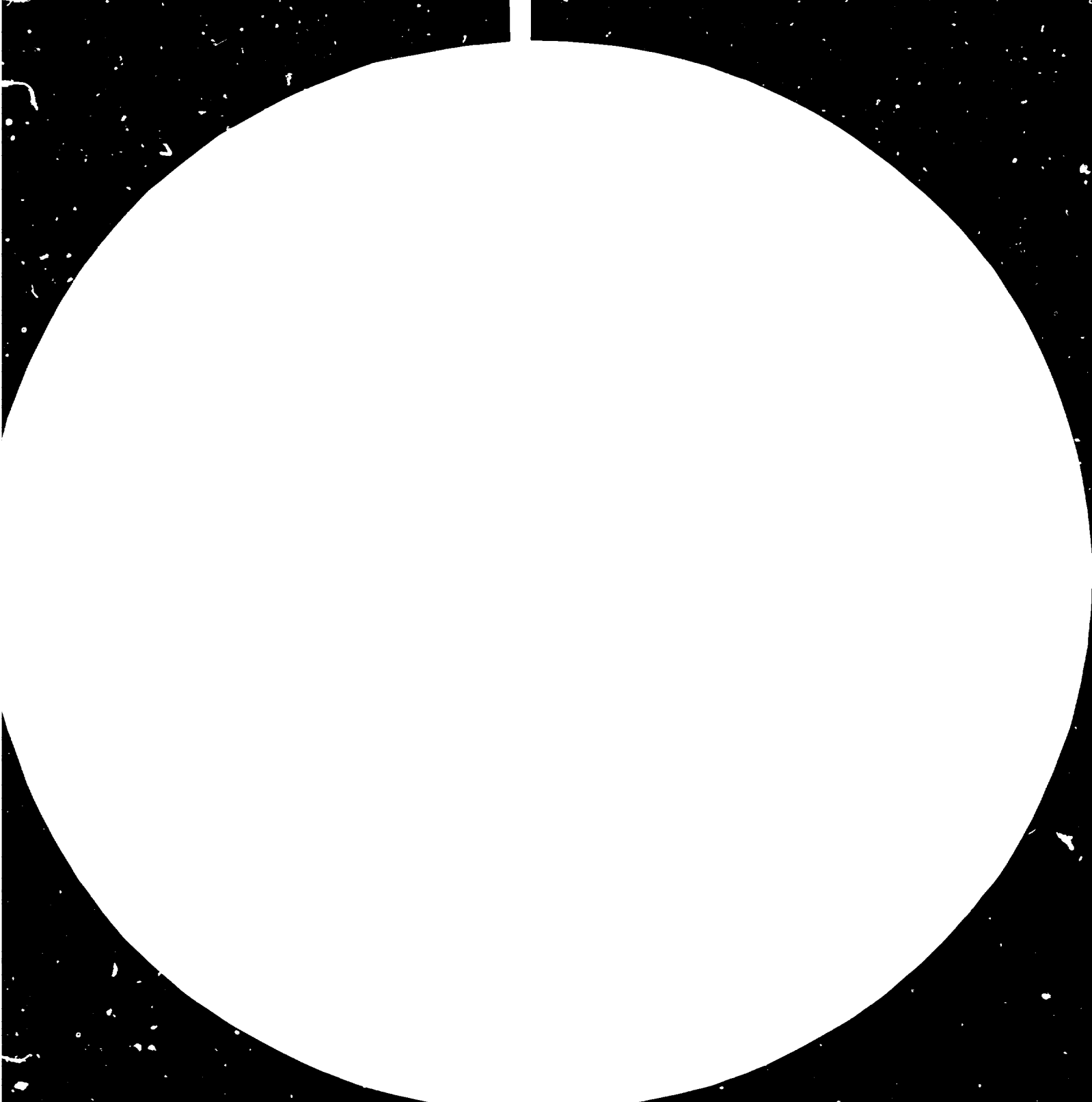

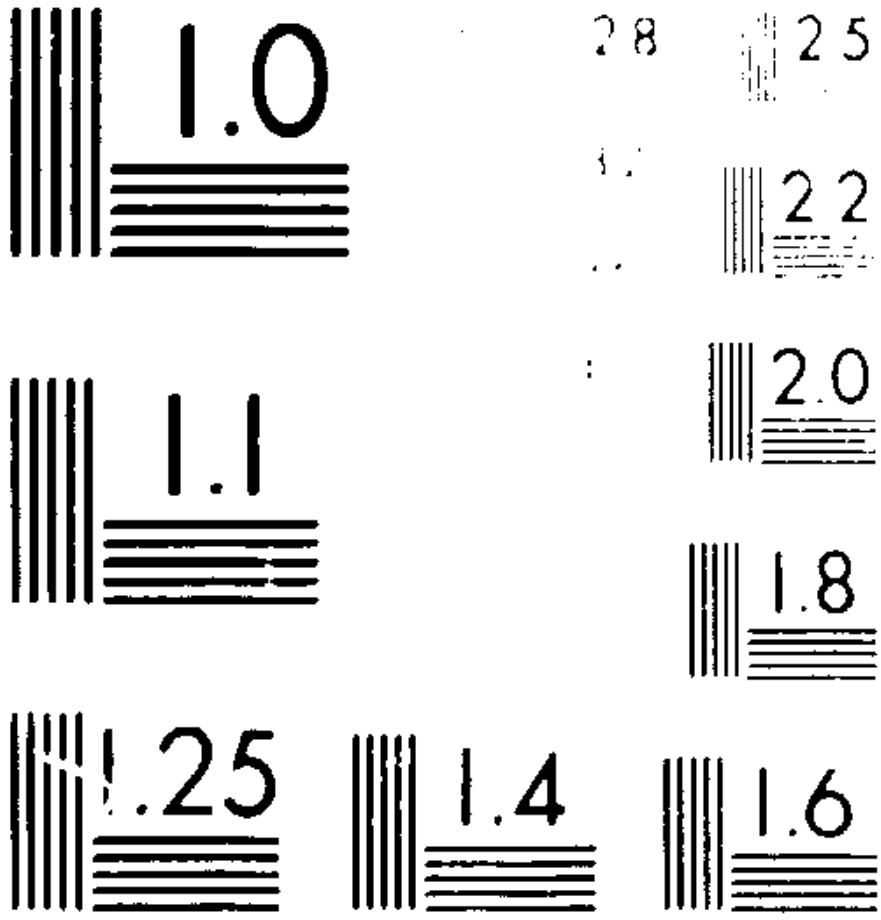
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Distr.
LIMITED

ID/WG.334/2
22 December 1980

ENGLISH
ORIGINAL: FRENCH

United Nations Industrial Development Organization

Global Preparatory Meeting for the First
Consultation on Industrial Financing

Vienna, 23-25 March 1981

THE INFLUENCE OF THE VARIABILITY OF EXCHANGE AND INTEREST RATES ON INDUSTRIAL DEVELOPMENT *

by

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TABLE OF CONTENTS

THE INFLUENCE OF THE VARIABILITY OF EXCHANGE AND INTEREST RATES ON INDUSTRIAL DEVELOPMENT

The abandoning of the Bretton-Woods system, the disequilibrium in the balance of payments caused particularly by the successive oil crises and the often discordant monetary policies of the major powers have created extremely unstable conditions on international capital markets. Their main manifestations are an extremely great variability of interest rates and foreign exchange rates.

This situation has consequences which are particularly unfavorable for developing countries, since their insufficient local savings force them to rely heavily on external financing. Development projects are hardest hit, since it is in this sector that private financing plays a preponderant role.

In this paper, we shall analyze in two complementary stages the repercussions of this variability of exchange and interest rates on industrial development.

The first section treats the problem on the microeconomic level and from the viewpoint of investment selection. The mechanisms by which exchange and interest rates affect the evaluation of investment projects are analyzed systematically. This part makes it possible to conclude that the present monetary situation leads investors to reject projects that in other circumstances would have been considered profitable.

To the extent that financing of industrial projects is based largely on funds from international banks, our analysis would be incomplete if the viewpoint of lenders was not integrated into it. The goal of the second part is then to show how the variability of exchange and interest rates renders the financial situation of developing counries more fragile and thus tends to increase the country risks that the banks must take into account in their international credit policies.

The microeconomic and macroeconomic effects coincide, with the result that the current conditions on capital markets appear extremely bleak for industrial development. The conclusion of the report is, then, the need for rapid and concerted action.

I - THE INFLUENCE OF THE VARIABILITY OF INTEREST AND EXCHANGE RATES ON PROJECT SELECTION

Due to the specific nature of investment decisions regarding a developing country, the various organizations of economic cooperation and development aid have been led to develop a certain number of models enabling them to select among different projects. These models have in common that they emphasize the structural elements of the investment decision, which has the following consequences:

- it favors an approach in terms of macroeconomic variables (budgetary policy, investment policy, balance of payments policies, and management of the debt),

- it emphasizes the importance of industrial infrastructures,

- it leads investors to evaluate the cost of the project on the basis of financial aid adapted to this kind of investment (concessional loans from financial organizations such as the World Bank or bilateral aid).

The recent transformation which has taken place in the financing of investment projects in developing countries poses, nevertheless, a new problem regarding methods of selection. The growing proportion of financing coming from international bank loans and from the issuing of bonds on international markets casts doubt on the basic principles which were used to develop the preceeding models. This takes place on two levels:

- first, we are witnessing the establishing of direct relations between banking consortiums and firms operating in developing countries. Banks are thus forced to establish their own criteria, which are radically different from the criteria used in concessional banking.

- second, unlike the methods of cost benefits analysis which include the totality of external effects created by the investment and, consequently, take into account the overall impact of the operation, the strategic variables concern only the project considered in and of itself.

Among the criteria used, two types of factors are particularly important:

- interest rates and their variability, given that they ultimately determine the actual rate of return of the project.

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(1) As an example, we can mention: D.M. Little and J.A. Mirrless, "Project Appraisal and Planning for Developing Countries", O.E.C.D., 1974. Lyn. Squire and Herman G. Van der Tak, "Analyse économique des projects", World Bank, Economica, 1977. For a synthesis, see: M. Bridier and S. Michalof, "Guide pratique d'analyse des projects", Economica, 1980.

- exchange rates and their trends, since they determine the aggregate values of international monetary and financial flow generated by the implementation of the industrial project (exportation of finished products, importation of industrial products and energy products, repayment of the debt and interest payments).

In attempting to integrate these facts into the analysis, two approaches are possible:

- either, to transform the existing overall models of project evaluation so that these new requirements can be introduced into them,

- or to utilize the methods of capital budgeting already used by banks and financial organizations on a purely domestic level, while taking into account the international dimension of the project.

It should be pointed out at this point that little research along these lines has been undertaken.

Personally, we shall proceed in two successive stages:

- first, with a theoretical study of the conditions of integration of the variability of interest and exchange rates in an investment selection model of a microeconomic nature. This will lead us to ask the following questions: is it possible to develop operational criteria for the evaluation of investment projects in developing countries given the hypothesis of an increased variability of strategic variables? To what extent are such models reliable?

- next, with an analysis of a more pragmatic nature. Given that overall methods prove to be ineffective, it is necessary to find specific criteria making it possible to establish a classification of projects on the basis of their degree of sensitivity to exchange and interest rate variations.

I.1. A Theoretical Analysis of the Effects of the Variability of Rates on the Variables of the Investment Decision

The fluctuations of the foreign exchange rate affect the expected monetary flow related to an investment. (2)

Thus, a project appears all the more sensitive to such fluctuations:

- as it demands higher foreign currency spending either on the purchasing of equipment, the building up of stocks of raw materials or energy products, or any other type of imported goods or services.

- as it implies sales in foreign currencies.

These problems have been widely treated in the specialized literature.

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(2) The appendix at the end of this report gives a detailed presentation of the aggregate flows involved.

Inversely, the use of the procedure of discounting to evaluate the advisability of investing in developing countries poses a number of specific problems which should be analyzed.

The following section will study the problems of fixing the discount rate when the financing of the project is done partly or wholly with foreign funds.

I.1.1. The Choice of the Discount Rate in the Case of an Investment Financed with International Funds

Given the principles which govern the fixing of discount rates, it is immediately evident that this rate will be influenced both by the foreign exchange rate and by interest rates. We shall consider successively their respective roles. The analysis will be placed from the outset in the framework of a developing country.(3)

A. Discount Rates and Interest Rates

Given that, within an industrial firm, the discount rate depends on the structure of the financing of investments, two aspects must be taken into account:

- the relative proportion of the financing based on domestic funds in relation to the amount of indebtedness in foreign currencies,
- the variable or fixed character of interest rates on the debt.

The first of these elements makes it possible to identify the variables which can influence the evaluation of the discount rate conceived as a weighted average of the various financing costs. For an industrial project carried out in a developing country, several sources of financing can be considered concurrently:

- using domestic financing ressources. This includes the stocks and bonds which can be issued on the various local capital markets and the bank loans granted by the banks of the country being considered. Due to the relative scarcity of savings and the insufficient development of the banking and financial sector in this type of country, the domestic interest rates are generally high, which constitutes a priori a factor which increases the discount rates used for the evaluation of the rate of return.

Moreover, it should be pointed out that if the country belongs to a particular monetary area, the domestic interest rates will follow trends comparable to the rates prevailing in the different money or capital markets of the dominant country (interest rates on the American money market for the dollar area, for example).

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(3) A note on the principles of discounting can be found in the appendix.

- financing based on loans granted by organizations specialized in development aid (4). Although this method of financing tends to lower the discount rate, given the particularly advantageous conditions in which loans are provided, its impact, nonetheless, is limited concerning industrial development projects. For, in fact, few industrial investments are directly financed with this type of loan. (5)

- the use of international financing, either through the issuing of bonds in foreign currencies or through borrowing on the euro-credit market or using buyer credits, constitutes a third possibility. In this case, the leading rates which make it possible to evaluate the discount rates will principally be the interest rates of international capital markets and euro-bonds in the first case, the LIBOR (London interbank offered rate) in the second case. As the dollar compartment of these markets is by far the largest, once again the influence of movements of rates on the different American markets will be determinant.

To conclude this initial analysis of the impact of the financing structure of projects through the level of discount rates, it must be admitted that an increased proportion of international financing or the fact that a country belongs to a monetary area leads to a disconnecting of the variables used to establish the return of projects from the economic, monetary, and financial data of the countries in which the investment is made. In particular, the evolution of discount rates becomes dependant on the interest rates prevailing in the major industrial countries.

The second element makes it possible to estimate the degree of accuracy of the discount rates evaluated on the basis of interest rates. First, we must admit that, if the impact of exchange rates is excluded, as far as the evolution of discount rates is concerned, nothing differentiates issues on foreign financial markets from those made on the local market. On the other hand, we must keep in mind the fact that international loans granted by the banking sector have adjustable interest rates, since rates vary in accordance with the LIBOR. (6) When the investment is financed with this type of loan, the trends of the leading rate must be anticipated when evaluating the rate of return.

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(4) Loans of the World Bank and the I.D.A., multilateral and bilateral aid. Notice that a large segment of this capital is paid directly to central banks or constitutes extra funds for local banks or development organizations. The financing of projects is done, thus, in the form of loans against national ressources.

(5) For example, the proportion of credits granted by the World Bank and the I.D.A. to the industrial sector represented 7.9% of the total of the loans of these organizations as of June 30, 1980. (Appendix of the 1980 Report of the World Bank, Table on pp. 176-177)

(6) It should be pointed out that the granting of loans at adjustable rates is not common in the case of domestic loans, but is growing more frequent.

It should be observed that in the preceeding hypothesis the degree of variability flows essentially from the technical terms of the loan, although this by no means excludes other influences. Particularly, in the case of a country belonging to a monetary zone or of an issue on international capital markets, the stability of the discount rate will largely depend on the stability of the leading rates (the interest rates on euro-bond markets or on American money and financial markets in the case of the dollar area, for example).

To conclude, we must admit that the degree of variability to which the discount rate is subject is greater when:

- the financing of the industrial project is done on the basis of international bank loans,

- the leading rates of the monetary area or the interest rates on international capital markets are variable.

B - Discount Rates and Exchange Rates

As the evaluation of discounted values is made on the basis of actual capital costs, we must integrate into the choice of discount rates the possible fluctuations of the exchange market, in the case of foreign financing. These fluctuations can influence positively or negatively the effective interest rate of each category of international loans, whether their rates are fixed or variable.

On a technical level, it is necessary to forecast the exchange rate which will prevail at the moment of repayment of the principal and of payment of the interest. Furthermore, in the absence of a forward market, this forecast should be made on the basis of spot exchange rates.

Let i_E represent the real interest rate paid by the borrower, ip the interest rate asked by the foreign lender, Spot 1 the interest rate at the signing of the contract and Spot 2 the exchange rate forecasted for the date of repayment of the capital and the interest payments. (7) If we assume that the maturity of the loan is n periods, the actual rate will be:

$$i_E = \sqrt[n]{(1 + ip)\frac{\text{Spot 1}}{\text{Spot 2}}} - 1$$

(7)Source. Euro-money", May, 1979. John G. Dickerson, "How to Calculate the Real Cost of Borrowing Abroad", p. 104.

In other words, any devaluation of the currency of the lender's country will lead to an increase in the rate of interest paid and, consequently, in the relevant discount rate. Inversely, when the loan is in currencies for which a devaluation is expected, the discount rate must be lowered accordingly.

These formulae should equally be applied in the case of international bank loans or bond issues on international capital markets.

From a methodological viewpoint, the basic problem is the evaluation of the middle and long-term trends of the rate of exchange of the currency in which the loan was made. Moreover, when the degree of variability of exchange rates is high, the exposure to exchange risk necessarily leads to an increase in the discount rate.

Nevertheless, it is important to observe that when a specific industrial project is concerned the official exchange rate or the market exchange rate does not always reflect the real exchange rate as considered by the firm. Policies of taxation of imports or of subsidies to exports can introduce distortions if they apply to the inputs or the production of the firm. Such a distortion must be taken into consideration. Finally, if the country belongs to a monetary area, this should normally reduce the gap observed between Spot 1 and Spot 2 in the case of a loan made in the dominant currency, as the two currencies should, in theory, vary concomitantly.

C - The Problem of the Variability of Discount Rates: a Methodological Difficulty

The presence of a high degree of variability in time and (or) the existence of procedures of successive adjustments of reference interest rates which makes it possible to estimate discount rates poses a major methodological difficulty due to the static nature of the theoretical basis of discounting. For the problem is to reduce a dynamic process (the encashment or paying out of money or financial flows staggered in time) to a single measurement valid at the present moment. Consequently, from the point of view of the decision-maker, the discount rate is an item of data which influences the whole set of his possible choices at the date when the decision must be made. Thus, a procedure of adjusting the discount rate cannot be introduced without calling into question the whole technique of discounting.

The only possible solution is a systematic increase in the discount rate to compensate ex ante for the added risks introduced by the variations in interest and exchange rates. The conclusion is obvious: due to its particular methodology, the discounting procedure tends, to a certain

extent, to handicap industrial projects financed through international loans. This handicap can only be compensated for by an interest rate differential especially favorable to the borrow. (8)

I.1.2. Special Aspects of the Principles of Investment Selection in Developing Countries

In spite of the difficulties met with in estimating the discount rate of an internationally financed project and of the consequent risk of handicapping the project, we must return briefly to the methods of selection stemming from the discounting procedure. In particular, we must observe that, as with any industrial investment, projects carried out in countries are evaluated in terms of rate of return and are selected on the basis of the general principles treated in appendix 2. The application of these principles can have a positive or negative effect on the analysis of projects. Nevertheless, due to the specific nature of international financing and of developing countries, several aspects should be emphasized.

First, concerning the discounted cash flow, we must especially take into consideration the possibilities of a "grace period", the dates of investment renewal, and the eventuality of an extension of maturities. During a period when international loan markets are favorable to borrowers, such easy terms can be granted. (9) For a given discount rate, an extension of the maturities is a positive factor in the evaluation of the rate of return of the investment. The decision-maker must thus anticipate the future conditions of the market.

Similarly, knowing that the economic return and the financial return of the capital invested will be all the more uncertain in that the elements affecting the evaluation of monetary and financial flows related to investments are subject to major fluctuations, the temptation will be to underestimate systematically the economic value of a specific economic project.

In reality, all of these observations lead us to the conclusion that the time horizon upon which the evaluation of projects must be based is shorter in such a context. It seems that a realistic forecast cannot exceed 3 to 5 years, without significantly reducing the reliability of the decision-making method. It can even be said that, in the long term, these procedure of selection can be perfectly arbitrary.

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(8) High interest rates on local loans. Low interest rates on international loans.

(9) These are the characteristics of the international banking market in 1978 and the beginning of 1979. On this subject, see: the Bulletin of the I.M.F., Sept. 10, 1970.

I.1.3. The Limitations of Methods of Investment Selection Applied to Developing Countries

In summarizing the impact of the variability of exchange and interest rates on the rate of return of an industrial project, two types of effects must be considered:

- the effect of exchange rate variations on monetary and financial flows,

- the interacting effects of the variations of exchange rates and interest rates on the evaluation of discount rates.

These effects taken together have a cumulative impact on the evaluation of the overall return of the project. To this uncertainty must often be added forecasting errors regarding:

- the expected exchange and interest rates,

- the monetary and financial flows in themselves--in particular, the expected domestic or foreign demand or the expected prices of raw materials.

Consequently, from the viewpoint of the theory of decision-making, there has been a widening of the "area of uncertainty" which can call into question any rational selection procedure. Several solutions for reducing it can be envisaged:

- first, the establishing of a hierarchy among the different sorts of uncertainties, which would make it possible to establish a decision graph. It requires, however, an extremely detailed study of the interdependencies existing among the different variables. Only the presence of a certain number of correlations among certain variability rates would make it possible to obtain a simple decision-making model. (10)

- Second, more sophisticated decision-making models can be used. The use of multi-criteria models, for example, makes it possible to multiply the number of possible scenarios and the number of criteria considered. Similarly, by introducing an evaluation of key variables on the basis of subjective probabilities, it is possible to utilize the main conclusions of the theory of decision-making in uncertainty. The fact remains that these methods are primarily based on the decision-maker's subjective evaluation of the risks of the project. Except for the somewhat restricted role played by objective decision-making factors (concrete figures on different variables), the reduction of the "area of indetermination" is done on the basis of subjective factors.

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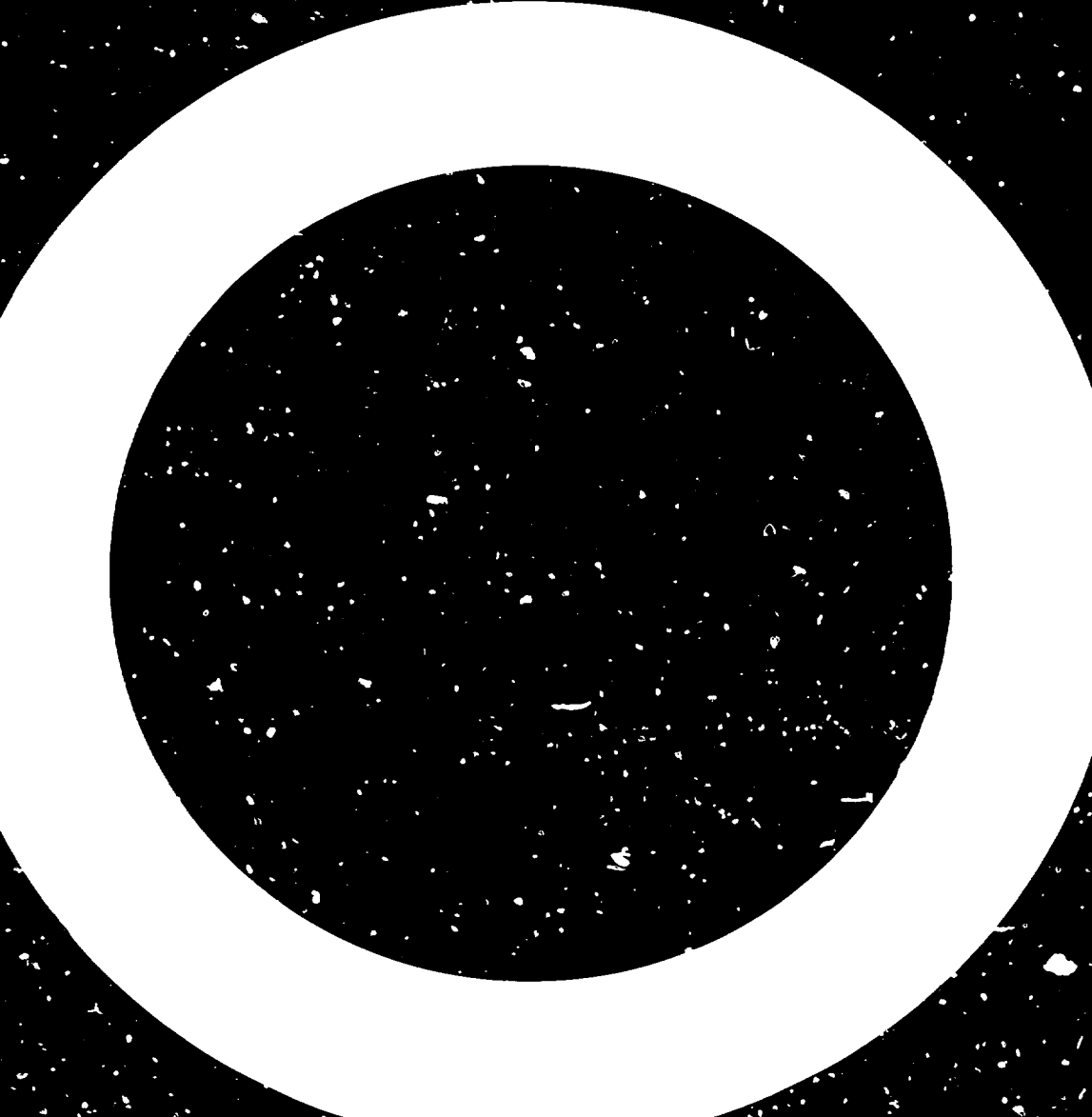
(10) For example, a correlation between the trends of prices and production costs on the one hand and the exchange rate on the other.

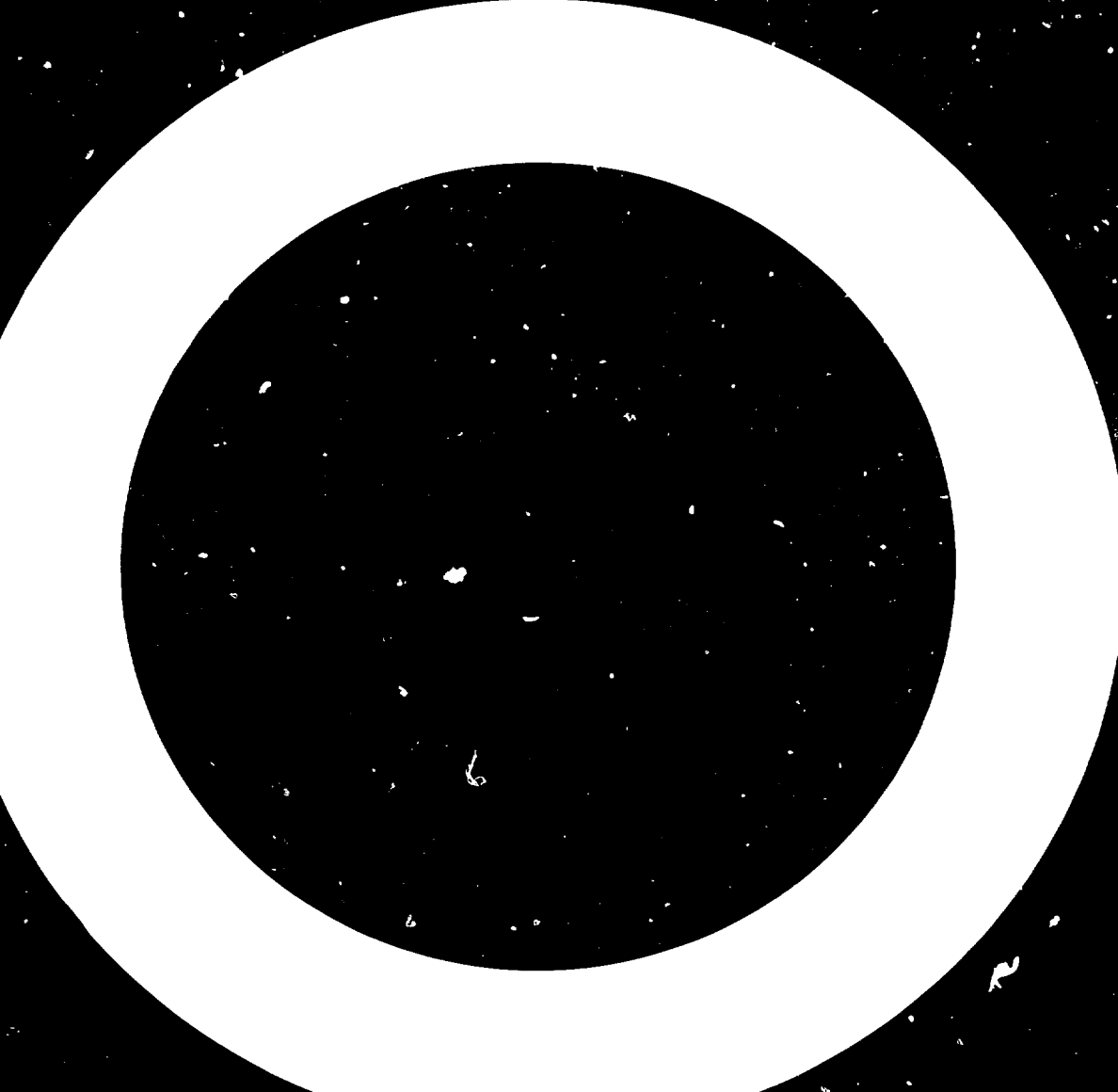


The effect of the exchange rate and interest rate on	Flow variables					
		Working capital		Expected operating flows		Discount rate and interest rates
Technical characteristics of the project	Purchase of equipment	Stocks	Financial flows	Sales	Operating costs	
. Distributed installation possible	+					
. Implementation period	+					
. Capital intensity	+					
. Complementarity of project						-
. Extension of existing industries (vertical or horizontal integration)						-
. Diversification of existing outputs						-
. Extension of existing outputs						-
Monetary area						
. Association with a monetary area	-	-		-	-	-
. Not associated with a monetary area						
. S.D.R.	+			+	+	
. Other basket of currencies	+			+	+	
. Indicators	+			+	+	
. Floating of currency	++			++	++	
Type of markets (production)						
Imports substitution				--		
. Exportation						
. Industrial Goods				+		
. Semi-products				+		
. Appliance goods				++		
Nature of inputs						
. Local market	—	-			-	
Imports or induced imports	++	+			+	
Raw Materials and energy products	++	+			+	
Stocks and good being processed	++	+			+	
Invoice of purchases and sales						
Invoice currency - local	-	-	-	-	-	
- foreign	+	+	+	+	+	
Settlement currency - local	-	-	-	-	-	
- foreign	+	+	+	+	+	
Structures of financing						
1°) Fixed capital - local financing						--
- foreign government subsidies						
- loans from specialized organizations						
- International loans						
· Bank						++
· Financial markets						+
- Mixed Financing						-
2°) Working capital						
· Supplier credit					+	
· Commercial credit					+	
Meso-economic factors						
Existing link of project to raw materials						
. Domestic demand				-		
. Costs and availability of production factors					+	
. Policy of taxation of imports/exports						- ou +

Note : + signs indicate a greater sensitivity to interest and exchange rates.
- signs indicate a lower sensitivity.

Financial flows		Expected operating flows		Discounted rates and present values of variables			
Loans	Financial flows	Sales	Operating costs	Discount rate and interest rates	Discount rate and rate of exchange	Discounted cash flow	Rate of return of project
						+	
						+	
						-	
				-		-	-
				-		-	+
				-		-	+
				-		-	+
-		-	-	-	-		
		+	+		+		
		+	+		+		
		+	+		+		
		++	++		++		
		--					
		+					
		+					
		++					
-			-				
			+				
+			+				
+			+				
-	-	-	-				
+	+	+	+				
-	-	-	-				
+	+	+	+				
				--	--		
				-	-		
				-	-		
				++	++		
				+	+		
				-	-		
			+				
			+				
						+	-
		-				-	-
			+				
				- ou +	- ou +		

(1) Risk in interest and exchange rates.



Without questioning the usefulness of these methods, we must emphasize that their validity is to a very great extent a function of the data available to the decision-maker. As we shall see in the second part, this data is not limited solely to the technical and financial aspects of the industrial project being considered.

We are thus led to the conclusion that in the case of an industrial investment made in a developing country and financed with private international funds, the accumulation of uncertainties removes much of the reliability of methods based on capital budgeting. Although they remain a practical guide for making a preliminary file which makes it possible to avoid the most serious mistakes, the techniques stemming from discounting procedures do not provide results as reliable as the evaluations made by a planning center having external concessional funds at its disposal.

I.2. The Unequal Sensitivity of Projects to these Variations Depending on the Concrete Conditions in which they are Carried Out

Following a detailed analysis of the various factors affecting the degree of sensitivity in concrete cases, we will establish the classification of investment projects according to their degree of sensitivity to rate fluctuations.

I.2.1. The Sensitivity of Variables Characteristic of Investments to Exchange and Interest Rate Fluctuations

Table I provides a synthesis of the impact of these flucuations on the different variables used in studying the return on industrial investments.

The analysis of different sensitivity factors of decision-making variables was established:

- based on the mechanical effects stemming from the process of evaluation of these variables (the technical characteristics of the project, the terms of financing, for example),
- based on empirical data making it possible to deduce direct relationships between decision-making variables and factors of variability. (11)

A table of this sort enables us to measure the multiplicity of possible cases when studying an industrial investment project on the microeconomic level. It constitutes an initial approach to the unequal vulnerability of countries in relation to exchange risks and fluctuation of interest rates.

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(11) We have based this on the conclusions of the Reports of the International Monetary Fund from 1979 to 1980 and on the analyses of the Report published by the World Bank (1980).

This table can best be understood by making the following comments.

A. The Influence of the Technical and Economic Characteristics of Projects

The Nature and the Economic Position of the Investor

The nature of the investor influences the sensitivity of the investment to the extent that it adds to the other characteristics of the project a specific factor of exposure to exchange risks. Concerning this point, the only meaningful distinction seems to be the differenciation between domestic investors and foreign investors, as the latter are subject to constraints of conversion.

.as regards their capital contribution (in the case of the starting of a firm, of expansion, or of partnership in a firm),

. on the basis of a transfer of expected income.

Further criteria of differentiation linked to the nature of the investor could be envisaged, such as the distinction between public and private investors. Nevertheless, this factor does not seem sufficient, ceteris paribus, to be responsable for an unequal sensitivity to exchange and interest rates. The fact that the investor belongs to the public sector will influence, for example, the conditions of financing and the perception of the risks of variability of the final outcome or the risk of insolvency due to the investment itself, but it will apparently not influence the sensitivity to eventual variations of the exchange rates.

The Technology Used

The technology used no doubt constitutes the factor which most clearly increases the sensitivity of an investment project to the instability of the international financial environment.

On the one hand, the greater the capital intensity of the projects, the greater will be the fixed equipment to be imported, which will place the investor in a situation of exposure to the risk of exchange. Due to the income and investment elasticity of imports of capital goods, most developing countries, but also many industrialized countries increase their sensitivity to the foreign financial constraint when they favor highly technical investments.

On the other hand, the purchase of "imported" technology generally will lead to further outlays of currency (technical assistance, major repairs, spare parts, etc.).

As a general rule, the greater the capital intensity of the investment, the more sensitive it will be to fluctuations of exchange and interest rates in developing countries lacking a modern sector of capital goods. Thus, projects involving a high capital - labor substitution can create a financial fragility which can counterbalance the benefits of increased

productivity they bring.

The Completion Time and the Repayment Period

These characteristics also constitute a factor which can significantly increase the sensitivity of investments. A lengthening of the periods of implementation and depreciation will certainly add to the uncertainty which hangs over the project in general, by reinforcing the risks of obsolescence of the technical solutions adopted, of poor adaptation of production to a constantly changing demand, etc. However, in addition to this increased level of risk on the technological, industrial, and commercial level, it also augments the uncertainty caused by the variability of exchange and interest rates through a lengthening of the forecast horizon involved.

Integrating the Project into the Overall Structure of the Economy

Lastly, an investment will be all the more sensitive to exchange rate fluctuations in that its realization will require the establishing of permanent relations with foreign markets, both upward and downward.

The effects of such fluctuations can thus be limited for a project developing local inputs rather than imported raw materials or goods being processed, as, in the first case, the inputs can be paid for mostly in the domestic currency. Similarly, a project for producing for the domestic market will not be subject to the uncertainies affecting receipts paid in currency, while in the case of production destined for the international market, the commercial risk induced by possible fluctuations of sale prices or a contraction of the exportation markets aimed at is compounded by an exchange risk linked to the instability of the rate of exchange of the local curency against the settlement currencies.

Furthermore, the market power of the investor plays a significant role here. In the case of a project related to an activity in which the producer has on the world market a monopoly or belongs to an oligopoly or enjoys innovation induced monopolistic profits or is able to differentiate his products (such is the case for the mining and/or the initial processing of certain raw materials, especially energy products) the investor can be in a strong position for negotiating certain clauses which will attenuate the rate sensitivity of its decision-making variables regarding investment. The same can be true regarding the choice of the invoice and settlement currency. Even in the case of imports and exports induced by the investment, the possibility of providing for outpayments and receipts in the domestic currency would make it possible to eliminate the exchange risk hanging over such transactions. However, this possibility is not really open to the majority of developing countries and only concerns

those countries endowed with relatively rare natural resources or those associated to a monetary area for the share of their transactions carried out within the area.

On the whole, the technical and economic characteristics of investment projects chiefly implicate flow variables and seem to determine the degree of sensitivity to fluctuations in exchange rates. The impact of variations in interest rates on international markets does not seem to be dependent on these technical and economic characteristics of investments, except for the completion and depreciation periods to be considered. On the other hand, regarding the diversity of financing conditions and its effects, the influence of interest rate fluctuations is predominant.

B. The Diversity of Financing Conditions

The terms and conditions of financing affect the sensitivity of projects to the fluctuations of exchange rates according to:

. the proportion financed with external borrowing,

. the length of the grace period,

. the length of the repayment period.

The Sensitivity to the fluctuations of interest rates is chiefly dependent upon the application of rate adjustment clauses. On the other hand, if the loan contract stipulates fixed rates, the service of the debt is apparently not affected by later fluctuations of interest rates.

C. The Meso- or Macro-economic Context

The instability of the international financial situation affects investments all the more severely due to the fact that they are situated in a domestic economic context which adds to their rate sensitivity.

Firstly, the complementary character of the planned investment to the existing economic activities or those to be developed plays a crucial role.

Thus, an investment will be less affected by the effects of exchange and interest rate fluctuations to the extent that it makes use of local materials and products, that it supplies the domestic market, and that it is more integrated into the networks of local inter-industrial trade.

Secondly, the theoretical and applied literature devoted to economic development has already strongly emphasized the influence of the local savings capacity and of the ability of the financial system to mobilize these savings and to orient them towards uses within the production system.

Thus, it is a well-established fact that these macro-economic aspects tend to render more or less autonomous the accumulation process with respect to external financing and initiative, and to limit the imported

effects which the instability of financial markets abroad can have on the national investment effort.

Finally, the influence of institutional factors and economic policies has already been amply demonstrated.

We shall limit ourselves here to providing the following elements which seem to affect particularly the rate sensitivity of investment projects in developing countries:

. the attitude of public authorities towards foreign capital (status of foreign investors, opportunities offered to domestic investors to borrow abroad, restrictions on the transfer of direct or portfolio investment income by non-resident units),

. the exchange regime (floating, pegging to a single currency or to a basket of currencies, or S.D.R.),

. the management of the foreign exchange rate,

. the targets and the ways of regulating the local financial system and, especially, the policy adopted regarding the transmission of international rate fluctuations on local interest rates.

I.2.2. The Differentiation of Investment Projects in Terms of their Vulnerability to Exchange and Interest Rate Fluctuations

The preceeding discussion makes it possible to show that the microeconomic aspects characteristic of investment projects greatly influence their sensitivity to exchange and interest rate fluctuations. However, our discussion has until now focused on each element considered in isolation (see Table I).

Nevertheless, the combination of these elements within a specific investment project cannot be reduced to a simple process of addition. On the contrary, it creates phenomena of compensation or of reinforcement according to the interactions taking place among these different elements.

For this reason, we shall now attempt to differentiate project profiles on the basis of their overall sensitivity to the instabiltiy of the international financial environment.

This can be done by turning to the following table which summarizes and develops a certain number of the previous conclusions.

In this presentation, we have given:

- in horizontal lines, the main elements which determine the sensitivity of an investment to exchange rate fluctuations, as they were defined earlier;

- in the vertical columns, a scale making it possible to determine the influence of each of the given elements, depending on the degree to which it reinforces the sensitivity of investments to exchange rate fluctuations.

TABLE SENSITIVITY OF INVESTMENT PROJECTS OF DEVELOPING COUNTRIES TO INTEREST AND EXCHANGE RATE FLUCTUATIONS

SPECIFIC SIGNIFICANT FACTORS OF RISK EXPOSURE OF PROJECTS	INFLUENCE ON THE SENSITIVITY OF PROJECTS OF EACH MENTIONNED CHARACTERISTIC			
	Slight (o)	Moderate (+)	Strong (++)	Very strong (+++)
Identity of the Investor	Local public or private investors		Non-resident investors	
Technology used	Investments with low capital Intensity		Investments with average or high capital intensity	
Inputs	Major local contribution to labor and intermediate consumption		Average local contribution to labor and intermediate consumption	Slight use of local labor and intermediate consumption
			Imported Intermediate consumption	
			Possible substitution or diversification on the geographic and or technical level	Substitution and diversification impossible
Energy Sources Used	Heavy use of local production	Partial Use of local production	Use of mainly imported energy sources	
Installation period	Investments involving rapid installation or which can be distributed		Investments involving slow project implementation and that cannot be distributed	
Amortization period	Middle-terme projects (5 to 7 years)		Long-term projects (over 5 to 7 years)	
Market aimed at	Domestic Markets Markets in countries belonging to the same monetary area		Export markets	
Modes of settlement (of purchases and sales)	Payments made or received in the domestic currency or in the currency of the same monetary area		Payments made or received in foreign currencies	
			with possibility of forward cover	without possibility of forward cover

Thus, in relation to a given element, we will attempt to categorize projects for which this element tends:

. to reinforce strongly the rate sensitivity (+++)

. to reinforce fairly strongly the rate sensitivity (++)

. to reinforce slightly the rate sensitivity (+)

. to have a negligeable influence on the rate sensitivity (0).

B. The Main Results Obtained

The integration of the effects produced respectively by the different elements examined makes it possible to confront typical profiles of high or low-sensitivity projects, with regard to the increased instability of the international financial environment.

Low rate-sensitivity projects display, according to the preceeding table, the following characteristics:

. low capital intensive technology,

. heavy reliance on local production factors,

. relatively short implementation and depreciation periods.

Such projects seem capable of guaranteeing a locally based functioning of equipment which has been installed.

Thus, the projects which involve a minimal exposure to risks linked to the increasing fluctuation of exchange and interest rates are those which can most fully take advantage of an easy integration with the existing economic structure or that can be implemented within a relatively brief period of time.

Nevertheless, due to the deficiencies generally observed in the productive sector of developing countries, the projects with the lowest sensitivity to rates seem to involve:

. agricultural or food industries processing local agricultural production whose output can be sold primarily on the domestic markets of consumer goods,

. industrial activities processing local raw materials and energy products and supplying the domestic market with final consumer goods (textiles, small home equipment and appliances) or with intermediate goods (small-scale mechanical construction oriented towards agricultural equipment, for example, or fertilizer production).

The projects which, on the other hand, entail the greatest sensitivity to the instability of the international financial environment are those which require:

. the heaviest and most long-lasting fixed equipment, which is generally imported due to the chronic weakness of the capital goods sector in developing countries,

. a dependancy on the imports of intermediate goods or services induced by the operating of installed equipment,

. the sale of a large portion of the production on foreign markets, due to the low absorption capacity of the local market.

The sensitivity of industrial development projects to the fluctuations of exchange and interest rates tends to be quite dissimilar.

Given this fact, the choice of an industiral development strategy should integrate in the most explicit manner the degree of exposure to rate fluctuation risks implied by the growing instability of the international financial environment, although this is rarely done at the present time by investors in developing countries.

Thus, if we introduce the concept of managing the exposure to rate fluctuation risks, factors of convergence and contradictory elements between this kind of management and diverse industrial development strategies become clear.

1) On the one hand, there is a definite convergence between:

. industrial development strategies aimed at guaranteeing a coherent growth of the local productive system by favoring a strengthening of complementary intersector or inter-industy relations,

. and the need to limit the exchange risk which leads equally to a limiting of transactions abroad requiring foreign exchange.

2) However, on the other hand, an attempt to eliminate completely exchange risk exposure would impede transfers of technology and equipment, the development of capital goods industries, and the move towards rapid improvements in productivity.

Ultimately, the problem could best be posed in terms, not of a total elimination of such exposure, but in terms of a trade-off between:

. the degree of exposure judged acceptable either by investors or by public or private lenders,

. and the rate of accumulation of fixed imported capital.

Given that the majority of developing countries are thus confronted with the problem posed by an incompressible level of exposure to fluctuations of exchange and interest rates, there is reason to examine the means at the disposal of the international financial system for analyzing and controlling such risks.

II. The Variability of Exchange and Interest Rates, Country Risk, and the Financing of Industrial Development

The extremely important role played in the financing of industrial development projects by multilateral organizations and, increasingly, by foreign financial institutions makes it necessary to include the lender's viewpoint in the analysis. In this way, the impact of the current instability of exchange and interest rates on industrial development can be better appreciated.

The foreign financing of industrial development is realized either in the form of the financing of projects (whatever the technical terms) or in the form of aid to the balance of payments (either by the I.M.F. or by private multinational banks). It is only in the first case that the decision to grant credit is preceeded by an evaluation of the expected return from the project, although, in all cases, the decision is highly dependent on the evaluation of what is more or less accurately known as the "country risk". (1)

Thus, we must initially define the role played by the variability of exchange and interest rates in the determining of the external financial situation of developing countries, since this variable has considerable influence on the evaluation of the country risk. Next, we shall examine the methods of evaluating this risk currently used by the major financing organizations. Lastly, we shall attempt an interpretation of the attitudes of banks regarding the country risk, and we shall conclude with a look at the future trends of the private financing of industrial development in the present context of international relations.

II.1. The Variability of Exchange and Interest Rates and the Evolution of the Foreign Financial Situation of Developing Countries

It is obvious that there is a certain historical coincidence between the phenomenon of the growth of private financing of development--notably, industrial development--and the disturbances of exchange and capital markets due to the abandoning of the Bretton-Woods system and successive oil crises. Thus, it is not surprising that, as early as 1976, there were studies on the instability and unpredictability of the burden of debt-service payments of developing countries caused by the variations of rates on euromarkets. In fact, a large part of the credits granted in markets are done so at rates which can be periodically adjusted in function

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(1) This is the risk taken by a financial institution in its international credit operations, and which can be attributed to events totally beyond the control of a corporation or an individual, but which can be at least partly controlled by the government.

of the trends of the LIBOR (London interbank offered rate). (2)

Similarly, studies which attempt to evaluate the more or less favorable implications for developing countries of this modification of the structure of their sources of financing made certain to include in their evaluation of the real interest rates paid by these countries the impact of the variations in the exchange rate of the dollar (in reference to which the exportation price indexes used to deflate the nominal interest rates are evaluated) against the different currencies in which the debt was payable. (3)

Current studies tend to place these analyses in the more general context of an evaluation of the aggregate factors which determine the balance of payments of developing countries and to show groups of countries having varying degrees of vulnerability.

To our knowledge, there are at present no studies which integrate both the variability of exchange rates and that of interest rates, in spite of the fact that a theoretical analysis suggests that there should be some degree of relationship between the choice of an exchange rate regime and the structural characteristics of different countries. Table II.1 shows that, in practice, these two analytical classifications are highly independant.

II.1.1. In the study of the impact of the variability of interest rates on the foreign situation of developing countries, one can adopt several different methodological orientations. The first consists in making an overall estimate, as did Klein, of the extent of modifications in the service of the debt caused by variations of the LIBOR. A study of this kind can be based on past data or on subjective estimates, using either the average or the extremes of interest rates. The main difficulty of this mehod is the evaluation of the variable rate debt, as it is largely constituted by the developing countries' private debt, about which our information is still inadequate.

This approach is incomplete for two reasons, for it does not take into account the effects of the evolution of the interest rates applicable to different types of debts and it neglects the fact that part of the reserves of developing countries are held in the form of income-earning assets (a recent study by J.L. Brainard (4) attempts to estimate the impact of increases in interest rates on the debt by multiplying the net position

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(2) For example: Klein, "L'endettement extérieur des PVD", Finances et et Développement, Dec., 1976.

(3) P. Guillaumont, "Substitution des contraintes dans le financement international du développement", Revue Economique, Nov., 1978.

(4) J.L. Brainard, "Recession Will Hit the Weak Harder", Euromoney, April, 1979.

of each country vis-à-vis commercial banks by the estimated increase in interest rates on eurocredits between 1978 and 1979).

However, the essential problem is that the increase in the burden of the debt, in and of itself, is meaningless. It does not suffice to make the trivial observation that this increase will weigh all the heavier the greater the country's level of debt. Rather, it is vital to show the influence of interest rates in relation to other factors which determine the foreign financial position of countries.

From this point of view, it would seem best to undertake a systematic analysis of this problem based on the analytic categories for the developing countries provided by the I.M.F. (5) This classification would make it possible to take into account simultaneously problems such as oil costs, trends in the international trade of primary products and manufactured goods, and the evolution of terms of trade and the level of debt of countries.

In the absence of such a systematic survey, Brainard's study shows, based on quite probable hypotheses, that, in the 1978-79 period, the overall impact of the rise in interest rates for developing countries as a whole represented only 15% of the impact due to an increase in oil prices of 25%. However, the consequences of this increase are very unevenly distributed from one country to another. Thus, this study shows the influence on the most heavily indebted developing countries of the evolution of imports from the United States as well as of the terms of trade of the main primary products. This, in turn, makes it possible to establish a list of 10 countries whose financial situation might become critical in the coming months.

These analyses lead to underestimate the negative implications of the variations of interest rates for the developing countries, especially regarding the management of their debt. It is obvious that the trend towards increasing rates, their great variability, and the considerable differences in rate depending on the currency in which the debt is to be paid require on the part of the developing countries an increasingly sophisticated management of their foreign debt.

In the wake of the first oil crisis, for example, the rate on six-month deposits in euro-dollars varied from 6.8% (the 1973 minimum) to 14.1% (1974 maximum). From mid-1977 to mid-1980 the rate on three-month euro-dollars went from 6% to 11%, but with crests of nearly 15% and an absolute record of 19.5% in March, 1980. On the other hand, during

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(5) Countries "classified as exporters of petroleum","net oil exporting countries", "major manufactured goods exporting countries", "middle-income countries", "primary-product exporting countries", "low-income countries". cf. The Annual Report of the I.M.F.

the same period the rate on three-month Swiss francs stayed within a range of 4 to 7%, although there were minimum rates near zero.

Thus, countries having a heavy volume of debt to refinance are highly vulnerable to the uncertainties of international markets.

The dominant role of the dollar and of American interest rates on international capital markets makes the present monetary policy of the United States appear particularly dangerous and irresponsible. The target of this policy is a strict control of the main monetary aggregates with a result that the interest rates on the money market undergo enormous fluctuations which the Federal Reserve System no longer attempts to limit.

II.1.2. The analysis of the effects of the variability of exchange rates on the foreign position of developing countries is at the heart of recent literature on the cost of floating of currencies and on the choice of an optimum exchange policy for the developing countries since the industrial countries have given up the system of fixed exchange rates.

The effect of the floating of currencies has been, in the absence of a stabilizing speculation, the great volatility of most currencies. This situation entails particularly high economic costs for the developing countries.

As a matter of fact, their firms are discouraged from exporting due to the exchange risk, and all the more so given that most developing countries have only a tenuous relationship with the forward exchange markets of the major currencies, and the cost of forward cover on these markets has risen because of floating, although this cover is not available for longer maturities (the fact that there is no complete system of forward exchange markets no doubt contributes to the current development of barter-like trade procedures such as buy-back agreements).

These elements introduce an unfavorable bias into trade and tend to orient the trade of developing countries towards the countries of the monetary area to which they are associated. This runs counter-current to the desired diversification of trade.

Moreover, both direct investments and portfolio investments from abroad can be slowed down by an increased exchange risk. For both types of investment forward cover over several years would be desirable.

Lastly, developing countries witness the real value of their financial assets as well as that of their debts fluctuate permanently in conjunction with the exchange rates of the major currencies. Certain of these countries have, furthermore, sustained severe losses to their reserve assets, while the increased vulnerability of their balance of payments situation compels them to keep a larger volume of reserves. This increased

variability of the balance of payments is itself an indirect consequence of the instability of exchange rates.

Naturally, the amount of these different costs depends on the exchange policy which the country decides to adopt. The goal of an exchange policy should, then, be to minimize the overall costs of floating exchange rates.

From a theoretical point of view, this goal amounts to stabilizing the effective exchange rate of the currency in question. This exchange rate is defined as a suitable average of the rates at which the currency is exchanged for the currencies of trading and financial partners. The problem can be reduced to a defining of the hypothetical uniform variation in the exchange rate of the currency against all the others whose impact on the balance of payments would be considered equivalent to the impact of the exchange variations which actually occurred.

The theoretical solution to the problem involves the construction of a model for the complete set of channels of transmission of the variations of the exchange rate to the various items of the balance of payments. The evaluation of the effective exchange rate of a country should especially take into account the structure of trade and payments, the price effects linked to exchange variations, the price elasticity of different products, the degree of competitiveness of exports on foreign markets, the influence of exchange variations on capital flow and on the burden of debt. (6) In addition to its complexity, such a model could hardly be operative, as this type of data is lacking for the majority of developing countries.

In the absence of such an ambitious model, a recent study (7) makes it possible to determine an optimal exchange policy based on the hypothesis that the goal is not to minimize the impact of the exchange rate variations on the balance of payments but to minimize the variability of the terms of trade. There is, actually, a strong positive correlation between the level of aggregate income and fluctuations of the terms of trade, and developing countries are exposed to far greater variations of their terms of trade than developed countries.

The terms of trade depend on the conditions of world markets and of the domestic markets of the country being considered, as well as on the rates of exchange. The optimum policy consists in pegging the local currency to a basket of currencies whose weighting coefficients depend

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(6) Crockett-Nsouli, "Exchange Rate Policies for Developing Countries", Journal of Development Studies, 13, No. 2.

(7) Branson-Katseli, "Income, Instability, Terms of Trade and the Choice of Exchange Rate Regime", J. of Dev. Eco., 1980.

Tableau II - 1 Exchange rate Arrangements-as of June 30, 1980 ⋆ Number of countries-

classification by income	Monetary Area	S.D.R.	Basket of currencies	Indicators	Floating	Σ
Upper income	5		3		11	19
Upper middle income	4	1	2	2	5	14
Intermediate middle income	12	2	3	1	4	22
Lower middle income	9	1	6		4	20
Lower income	23	9	3		4	38
Total :	53	13	17	3	28	
classification by Geographic Zones						
High-Income Primary Production Countries	1		2	1	9	13
Major Petroleum Producing Countries	4	1	2		5	12
Other Developing countries	48	12	13		14	
in - Middle East	4	1	1		3	9
- Africa	24	9	7		1	41
- Asia	5	2	5		5	17
- Latin America	15			2	5	22
Total :	53	13	17	3	28	

⋆ Sources - 1980 - Annual Report of the International Monetary Fund - Appendix I. Table I-1 p. 118
The classifications of Exchange Rate Arrangements , Income, and of the geographic zone correspond to the categories distinguished by the International Monetary Fund.

on the structure of imports and exports, and on the import and export market power of the country.

Thus, the pegging to an "optimum" basket of currencies poses complex problems of evaluation and intervention on exchange markets. On the practical level, then, the developing countries have chosen highly varied regimes of exchange (8) and their classification in terms of this criterion, as it appears in the report of the I.M.F., can hardly be reduced to the analytic classification previously referred to (cf. Table II.1).

Certain countries have simply chosen to peg their currency to that of their main trading partner,(9) which has the advantage of facilitating trade with that country and encouraging the flow of investment and financing from it. This choice also makes it possible for the developing countries to express their determination to align their economic policies with those of the dominant country and provides the monetary authorities of developing countries with clear indications for interventions in the foreign exchange markets. This is counterbalanced by the fact that exchange rate fluctuations relative to other currencies become exogenous to the evolution of the balance of payments and to domestic economic policies.

Other countries have preferred pegging to a basket of currencies. The closest to the theoretical optimum, while remaining simple enough to evaluate, is based on an import-weighted index. For the majority of developing countries, in fact, the prices of exports are set on international markets and are thus independant of the geographical structure of exports.

On the contrary, the index of prices of goods imported by developing countries (especially industrial goods) is affected by changes in the origin of imports or in the exchange rate of the supplier country. The choice of this kind of index, then, makes it possible to reduce the instability of domestic prices induced by exchange rate variations.

For practical reasons (the value of SDR is published daily), and also in order to reduce the cross rate variability between developing countries and to inform better foreign investors and lenders regarding the intentions of the country on their exchange policy, a fairly large number of developing countries have chosen pegging to SDR.

A small number of countries have chosen different methods of floating their currency. Although this theoretically gives them a greater flexibility in the conducting of their domestic economic policy, it also exposes them to drastic exchange variations, with all the disadvantages which this implies for foreign trade and the evolution of the level of domestic prices.

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(8) cf., Crockett-Nsouli, op. cit.
(9) Essentially the dollar, the pound, and the French franc.

This brief discussion of the problems which floating poses for developing countries makes it possible to point out the multiplicity and the complexity of the mechanisms by which exchange rates influence the foreign financial position of developing countries. It also makes it possible to underline the difficulty of quantifying these effects in the absence of a detailed model built on the basis of rigorous numerical data.

Nevertheless, it is obvious that the overall result of the effects of the trends towards higher interest rates which has dominated capital markets for the past few years as well as of the increased instability of exchange rates has been adverse to developing countries. The consequences of these evolutions have been an increase in the burden of the debt service, a worsened instability of the balance of payments, a greater need for reserves, and the discouraging of direct investments and of trade.

These factors, combined with the sluggish demand of imports in industrial countries and the higher cost of oil, tend to make the economies of numerous developing countries even more fragile and, as a result, to increase the country risk in the eyes of lending organizations.

II.2. The Evaluation of Country Risk By Banks

Internationally oriented banks which play an active role in the financing of industrial development are devoting increasingly greater resources to the evaluating of country risk as it does, in fact, determine the overall quality of the loans which the bank will grant to various countries. It is only after this factor has been treated that other factors will be considered, such as the purpose or the loan, the schedule of payment, or the nature of the borrower (the state, a government-owned corporation, a private company) to the extent that this last consideration tends to contrast the risk of the sovereign with classical commercial risk.

The concept of country risk is both extremely broad and somewhat imprecise. It covers, in fact, a whole range of risks linked to the economic, social, and political environment of a foreign country (including government policies aimed at counteracting trends considered as unfavorable within this environment) and which can influence the situation of lenders to the country in question.

Those decision-makers in the area of international finance who have written on the subject seem to agree about including a large number of qualitative factors in their analysis of country risk; however, when it comes to a qualitative estimate of this risk, opinions and methods vary.

II.2.1. The Complexity of the Analysis of Country Risk

The first factor of complexity of country risks is due to the fact that they can materialize in extremely different forms which will have very different repercussions for the lender.

The most serious risk is that of default, as it means that the debtor definitely ceases the making of the service of the debt, whether for voluntary reasons (repudiation) or not.

The renegotiation of the loan is a source of partial loss for the lender because the interest rate or "spread" may be reduced or a part of the principal not be repaid.

Rescheduling only implies a lengthening of the repayment period, which can mean either an opportunity gain or an opportunity cost for the lender depending on the evolution of rates on the market.

Technical default is the consequence of a temporary inability of a debtor to meet its payments and does not usually imply a real loss for the bank which often gets penalty rates for overdue payments.

Lastly, the risk of transfer linked to the adoption of strict foreign exchange controls only concerns private borrowers and generally involves a delay in repayment of the debt.

The second factor of complexity is the chain of causation interconnecting, for example, social disturbances, strikes, or agricultural disasters to debt servicing difficulties.

Nevertheless, if we place ourselves at the end of this chain of causation, the situation always appears to be the same: the country's foreign exchange reserves are insufficient to meet interest payments and repayment of the principal of the foreign debt. This observation led, for a certain time, to a placing of great emphasis on foreign debt ratios, such as the relation of the total external debt / GNP or the relation of the service payments on the external debt / exports of goods and services, or the level of reserves in relation to imports.

This point of view can be accepted when it is a question of foreseeing a default which is more or less imminent. There is a consensus among economists that if three indicators worsen simultaneously, especially over short-term periods, problems could be ahead. These three indicators are the ratio outstanding debt / GNP, outstanding debt / export earnings, and debt service payments / export earnings. This problem of short-term forecasting is of great interest to international organizations or to governements which may be requested to take definite action.

Clearly, banks are more interested in discriminating those countries

which may have difficulties during the whole duration of the credits they might grant than they are in forecasting imminent materialization of a risk.

Moreover, the facts (Zaire was in serious difficulties although its debt servicing ratio was 11%, while Australia sustained without difficulty a ratio of 44%) and a deeper analysis have led experts to consider the value of these simple indicators as relative. In particular, economists have shown that the meaning of a ratio such as the debt servicing ratio is dependant on some twenty structural and institutional characteristics such as the structure of exports and their vulnerability, the compressibility of imports, the structure of the external debt with regard to the schedule of amortization and interest rates, macro-economic prospects (growth, the rate of savings, public finance), and the government's ability to manage its debt properly.

Similarly, the level of external reserves only provides a limited indication of a country's ability to meet its short-term commitments, as it would be necessary to know in what assets these reserves are held, to what extent they are the result of short-term indebtedness, and what sort of cyclic fluctuations may effect the level of reserves of the country being studied.

Nevertheless, three sets of economic ratios seem to be relevant to evaluating a country's ability to pay its debts in the middle run. They concern respectively the country's prospects for long-term growth, the trends of the balance of payments, and its ability to adjust in the event of difficulties, and, finally, the foreign debt. (1)

However, it should be emphasized that no ratio or set of ratios constitutes a sufficient indicator of the phenomena which it is supposed to show (for example, the prospects for long-term growth are highly dependent on the abilities of those who will be managing the economy in the future, and this is an element for which there can be no ratio).

Moreover, these ratios are not easy to interpret, and comparisons between countries are often quite irrelevant. Notably, the "low" or "high" value of a ratio will depend on the size of the country, its level of development, and its economic structure, with the result that there are numerous interdependences among these different ratios. Furthermore, the degree of normalcy of a given ratio or characteristic of a particular economy is highly dependent on experience. Thus, in the case of Brazil, inflation rates of about 30% can be considered entirely "normal".

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(1) A list of these ratios with a commentary can be found in: P.J. Nagy, "Country Risk", Euromoney, 1980, pp. 20-23.

These considerations lead to the conclusion that the best way of evaluating the country risk is to have an in-depth knowledge of the country in question. For both the natural endowments as well as the financial and human resources of a country must be integrated into the analysis. The problems of Zaire, for example, resulted, in part, from the lack of sufficient skills among its population to allow it to overcome the complex technical problems of developing its abundant natural resources. Furthermore, it is necessary to evaluate the extent to which development choices of the government are adapted to the conditions of the country. Lastly, the country's ability to evolve politically without a major breakdown, as happened in Iran, must be appreciated.

The amount of data required and the complexity of interpreting it explains the numerous problems encountered in attempting to quantify the country risk.

II.2.2. The Different Methods of Quantification of the Country Risk

The goal of a quantification of country risk can be simply to classify countries in order of increasing risk with a view to setting exposure guidelines, or to provide banks with a base for determining the rates to be charged various debtors. It can also have the more ambitious goal of providing the required data for optimum management of the bank's portfolio of foreign loans. Thus, the methods currently used by banks vary depending on their goals, and can be classified into three categories on the basis of their degree of sophistication and the precise data they require. (2)

The Method of Indicators

The key advantage of this method is its simplicity and objectivity. It consists in selecting a series of indicators and then classifying the countries being considered from 1 to n, on the basis of the value of each of these indicators, in order to obtain an overall ranking of countries for each indicator. The country with the lowest total is considered to be the country with the lowest degree of risk.

There is a variant to this approach, which is to attach a weight to the various indicators and to fix for them a common scale of variation (from 0 to 10, for example). The total of weighted points obtained by a country then constitutes the evaluation of its relative level of risk.

The main shortcomings of these methods are that they only take into account published data (and thus often out of date), that they do not

(2) On these points see: Nagy, op. cit.

make it possible to foresee future turning-points, that they do not quantify the loss which the bank might sustain, nor do they take into consideration the nature of the debtor.

Econometric Methods

In recent years, several econometric models have been developed whose aim is to predict future debt servicing ability or the probability of eventual default.

In spite of the highly elaborate nature of these models, they call for the following reservations:

- as with all econometric models, they merely project past patterns into the future. This aspect is aggravated in this case due to the fact that they are trying to predict individual countries' debt servicing ability on the basis of past average behavior functions estimated from data concerning a sample of countries.

- by nature, econometric models only integrate quantifiable data. This is all the more regrettable given the fact that concerning country risks, numerous qualitative factors (the abilities of the government, the social situation, etc.) can play a decisive role.

Probability Methods

The most recent and doubtless the most sophisticated method of quantification of which we are aware is that of Nagy, in his previously mentioned work. It is certainly the most satisfying from a theoretical point of view, firstly, because it uses a concept of risk quite similar to that used in the theory of choice under uncertainty and, secondly, because it is oriented solely towards the future and is particularly suited to forecasting turning-points. However, it constitutes, in and of itself, a demonstration of the tremendous subjectivity and uncertainty which govern the quantification of country risk once the simple objective methods which we criticized as inadequate have been rejected.

Nagy defines risk as the product of a potential loss of a given size by its probability of materialization. Potential loss is the difference between the discounted value of the net income anticipated by the bank at the moment when it grants the loan and the discounted value of the actual net income.

The size of the potential loss depends on the type of risk which materializes (default, rescheduling, etc.) and the moment at which it occurs. Moreover, for a given country both the size of the potential loss and the probability of occurrence are dependent on the quality of the borrower.

Once these definitions and basic principles have been established,

the practical method of evaluating country risk consists in showing the complex chains of causation. These extend from a very broadly defined structural and institutional setting to the occurrence of adverse events (strike, overindebtedness, change of political regime), then, to a materializing of one of the four types of risk that can affect the bank, that is, default, rescheduling or technical default, renegotiation, or the inability to make transfers (these risks being considered as mutually exclusive).

This method then requires the evaluation of a series of probabilities:

- what is the probability that an adverse event will take place?
- when will this event be most likely to happen?
- what is the probability that each risk will materialize if this event should occur?
- when do default, renegotiation, etc., have the greatest possibility of occurring?

A study of the flow chart included at the end of this report will show how vast the information required on the current situation of the country and its probable trends is. It also shows the complexity of the networks of causation utilized and the difficulty of assessing the different probabilities required by the method of quantification recommended.

The evaluation (line 1 of the graph) of the probability that the "existence of a powerful extremist group" will lead to a "change of regime" and to the "repudiation of the debt" within a 5-year period is one of the simplest cases: it amounts to evaluating the probability of a revolution, its chances of succeeding, and, lastly, the likelihood of the new government repudiating the debt. On the other hand, in most cases the chains of causation are extremely complex and the problem of assessing the conditional probability of a risk to the occurrence of the different events which may make it materialize appears as particularly chancy and highly subjective, whatever the precautions taken by the credit department in charge of the evaluation.

Moreover, this form of analysis presents several methodological drawbacks, in as much as its complex scheme of causation remains linear, since it excludes the possibility of feedback loops. It considers causation as initiating essentially in the political and social area and affecting the economic and finacial situation, without the possibility that the latter may, in turn, affect the former.

Lastly, it must be kept in mind that the growing of the number of variables used in models of the multi-criteria type greatly weakens the

discriminating capacity of these models. When a single criterion is used, the result is a brutal and no doubt unreliable classification into "risk countries" and "no-risk countries". However, the taking into account of hundreds of variables doubtless makes it possible to obtain a fuller picture of the real conditions in the country being studied, but it is of little use in making a clear decision regarding the risk factor. Thus, Nagy's model appears to be essentially a method which makes it possible to enumerate and classify the overall factors which can contribute to the determining of the country risk. It is perhaps best considered as a model aiding "intuition" rather than "decision-making" and leaves the decision-maker a great deal of freedom.

The imperfection of models of risk evaluation is inevitable, for, in the words of Valery, "what is simple is false, and what is complicated is unusable". This leads to a questioning of the practices of banks with regard to country risk and how they actually use the models they have developed.

II.3. An Interpretation of the Attitudes of Banks towards Risk

The quantification or evaluation of risk should, theoretically, enable banks to set an interest rate which will compensate it precisely. The difference between the cost of a loan (notably, the cost of its financing) and the rate charged the borrower is incorporated first into the bank's reserves and then into its capital. The role of the capital base is, precisely, to absorb losses without the financial institution being endangered.

Now, the statements of bankers and econometric studies show a total convergence regarding the fact that the country risk plays little or no role in determining the cost of credit (defined as the "spread" or margin in relation to the LIBOR) due, primarily, to the highly competitive nature of international capital markets.

A recent study of 1,500 eurocredit operations made to some fifteen countries (including 7 developing countries and 2 OPEC countries) using 9 risk indicators (5 economic, 3 financial, and 1 political) clearly shows that the level of the spread is highly dependent on the amount and maturity of the loan as well as on whether the loan is warrented by a public or private institution. It is also dependant on an indicator of the intensity of competitiveness of the market. On the other hand, the different variables of risk have only a limited explanatory value, which is often uncertain and statistically non-significant. (1)

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(1) A.Boursier, "Les Banques et le risque géographique", a DEA thesis directed by Joel Métais, Université de Paris-Dauphine, 1980.

TABLE II - 2. ANALYSIS OF THE DEBTS OF DEVELOPING COUNTRIES AN ATTEMPT AT SYNTHESIS.

Geographic Zones (3)	Overall level of debt (number of countries) (1)							Countries with predominantly debt (1) to public institutions		Countries with predominantly debt (1) to private financial institutions		Overall criteria of private financing for each zone (2)
	Over 30	30 / 20	20 / 10	10 / 5	5 / 1	1 / 0,5	< 0,5	Number of countries	Examples	Number of countries	Examples	
I - The most developed countries producing primary goods (6 countries)			1	1	3		1	3	Turkey Yugoslavia	3	Spain Portugal	Level of income per capita Energy dependence on imported oil (% of imports)
II - The major oil producing countries (7 countries)		1	2	1	2	1		2	Indonesia	5	Iran, Irak, Algeria, Nigeria	Level of income per capita (except for Algeria)
III - Developing countries other than the major oil exporting countries :												
- Middle eastern countries (9 countries)			1	1	3	1	3	9	Israel Egypt	-		Level of income per capita High concentration of exports within geographic zone
2 - African countries (38 countries)				1	14	8	15	34	Bangladesh	4	Gabon Ivory Coast	Level of income per capita Share of primary products in total exports
3 - Asian countries (14 countries)		1	1	2	8		2	14	India Pakistan	2	Korea	Level of income per capita Share of industrial products in total exports Share of primary products in total exports
4 - Latin American countries (22 countries)	2			3	8	0	3	13	Bolivia Honduras	9	Brazil Mexico	Level of income per capita Share of industrial products of total exports High concentration of exports within geographic zone
TOTALS	2	2	5	9	38	16	24	73		21		

(1) Sources - World Date Table. 1979. World Bank - EC 167/79, Vol. 1 and 2 and supplement S1, S2, S3. Base Year. 1978.
The dominance of different means of financing were determined on the basis of a threshold of 50 % for each means of financing.
The debt statistics include only the guaranteed debt except for 16 countries.
The overall level is evaluated in billions of dollars.

(2) These criteria were established on the basis of the following factors :
- the level of per capita income,
- the distribution of exports and imports by geographic zone
- the proportion of primary products in exports.

Base year : 1978.

Sources - International Financial Statistics - I.M.F. 1980.
Direction of Trade Yearbook - 1973-1979 / I.M.F.

These criteria are established on the basis of variables which have a high correlation with private debt.

(3) The geographic zones correspond to the categories established by the International Monetary Fund.
The figures in parenthese give the number of countries studied per zone.

Moreover, a survey study made by the Eximbank on the methods of country risk evaluation used by American commercial banks showed that the majority have at their disposal quantitative evaluation procedures which are completed by more qualitative approaches, that many of them use their evaluation system to set limits for each country, that a few are able to estimate the overall quality of their international loan portfolio, and that, finally, none use the results of this risk analysis to set interest rates or commissions. (2)

Thus, it seems certain that the main role of risk studies is to establish a basis for a rationing procedure. It has already been demonstrated (3) that such a procedure is the most rational in a situation in which information on the borrower is incomplete.

Rationing of this sort can be conceptually divided into two complementary phases: first, the establishing of a list of countries eligible for an eventual loan, and the setting, for each of the countries selected, of limits to the amount which the bank will loan.

The study of published eurocredits over the past few years and the study of indebtedness statistics of the World Bank make it possible to establish the list of the developing countries which have actually had access to private financing and to see how this list has changed, primarily in response to market conditions.

Table II.2 makes it possible to draw several conclusions upon the overall criteria of access to private financing in terms of large geographic zones. These criteria were established on the basis of an analytical study of per capita income levels and of the structure of imports and exports of countries belonging to each of these zones. A high level of correspondence emerges between these broad categories of criteria and the access to private financing for all the countries studies.

On the other hand, it is impossible to infer from these statistics the limits of exposure to risk that banks considered as a whole would set, due to the variety of points of view and strategies.

As far as official declarations are concerned, some extremely interesting contradictions can be observed regarding the degree of risk represented by different groups of developing countries. Thus, in October of 1978, J.P. Nagy published the results of the use in 18 countries, with different levels of development, of the method of risk quantification

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(2) Export Import Bank of the U.S.,"A Survey of Country Evaluation Systems in Use", Washington, D.C., 1976.

(3) J.M. Parly and J. Métais, "La capacité de réponse du système financier privé aux besoins de financement du dévelopment industriel", a UNIDO report, 1978.

referred to earlier and came to the conclusion that the country risk began to decrease as per capita income increased, only to increase again with the level of income, with the result that newly industrialized countries can be considered at present "high-risk" countries. (4)

Inversely--and such a radical change in perspective cannot be explained by the impact of the second oil crisis--a French international banker wrote, a few months ago, in the review Banque,(5) that countries in a transitional phase were the greatest risks, as economies either too weak or too heavy cannot, in his view, default.

Such drastically different outlooks cannot, it seems, be entirely explained either by the differences in the method of risk evaluation since they have, as has been shown, a low discriminating power, or by the heterogeneous strategies of international banks. However, the latter of these would explain the different levels of commitment of banks to debtor countries considered individually.

For it must be kept in mind, on the one hand, that banks manage portfolios of international loans, and that what is important to them is less the specific risk of each asset than its impact on the overall risk of their portfolio. An identical loan can, in this perspective, appear to reduce the overall risk of bank A, while it would increase the risk of bank B. This apparent paradox can be explained by the multiform aspects of the diversification of risks, whether geographic, in terms of sector, or type of currency.

Furthermore, there are, often for historical reasons (for example, the colonial inheritance) privileged and continuous relations between certain banks and specific countries, whether these relations were established directly or through links between banks and multinational corporations established in those countries. In such a situation, it seems appropriate to distinguish for each bank between those countries with which there is a permanent business relationship (analogous with relationships with firms) and those to which it grants loans essentially for the sake of diversifying its risk portfolio.

Thus, there can be no overall and homogeneous position of the private banking sector towards individual developing countries.

As important as the aforementioned elements are, the fact remains that there is general agreement that the country risk is the key obstacle

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(4) J.P. Nagy, "The Richer Developing Countries May be the Poorer Risk", Euromoney, Oct., 1978.

(5) H. Cheynel, "L'évolution des risques-pays sous l'effet du deuxième choc pétrolier", Banque, Sept., 1980.

to the recycling of the current account surplus--in favor of developing countries, especially--made more urgent than ever by the second oil crisis. Although the aggravation of the risk factor which would be the inevitable result of an increase in the burden of debt of these countries is the argument most frequently advanced to justify the reluctant position of banks, the problem should be placed in the more general context of the risks which currently affect the private international financial system.

For borrowers, the main problems are linked to the increase in the burden of the debt and to an unfavorable structure of maturities. The average debt service ratio for developing countries rose from 9% to 17.5% from 1974 to 1979 and exceeded 25% for the largest borrowers. In addition, the shortening of maturities which occurred around 1975 and the high concentration of loans over the past few years have had as a result that over 50% of the outstanding debt of developing countries should be repaid between 1978 and 1982. (6)

For banks, the first cause for concern arises from the unfavorable trend of their capital base which can be observed in all industrialized countries and, especially, in the United States. Thus, in 1971 the average capital / assets ratio of the fourteen leading world banks was 4.27%, and had fallen to 3.18% by 1979. This decline can be explained both by the situation of the stock market which was unfavorable to the issuing of stock and, chiefly, to a general long-term trend towards a reduction of the margins of financial intermediation. This decrease is in part the consequence of the increased competition between financial intermediaries engendered both by the internationalization of the banking system and by the decompartmentalization of the financial system of numerous countries. However, it also is the result of the increasing of the operating expenses of banks, due primarily to the process of computerization. The declining spreads (since, for example, the spread paid by developing countries for 5 to 7 year credits was about 1½% to 2% in 1975 while it is only 3/4% in 1980 for maturities as long as 10 years) are only one of the signs of this situation.

To all this must be added the high concentration of the overall debt on a small group of borrowers as well as in the hands of a limited number of lenders, which is a factor of nervousness within the whole system. Brazil, Mexico, Korea, and the Philippines accounted for 59% of developing countries' bank borrowing between 1974 and 1978 and 54% of the developing countries' public debt outstanding to international banks at the end of 1978.

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(6) Furthermore, by 1982, 27% of eurocredit loans were for a refinancing of debts due, and, according to forecasts, will reach 50% in 1990 and 60% in 1995. cf. L. Rigny, "Evolving Problems of International Financial Intermediation", OECD Conference, Oct., 1981.

The same concentration holds true for lenders as 3/4 of the loans made by U.S. banks to developing countries are held by ten large money-center banks.

Thus, a diversification of lenders seems to be called for, and is, in fact, well under way, due to the relative withdrawal of American banks (linked to the decline of the dollar and to their already high degree of exposure to risks) and the pressure of Japanese and European banks. However, this diversification appears, given the present state of the system, to be limited to the largest banks, as the main depositors concentrate their deposits in a small number of very large banks which they are reasonably certain that the supervisory authorities would not let fail. (8) (This in fact gives these banks a great market power regarding the interest paid on these deposits).

There is, in addition, a growing concentration of euromarket deposits in the hands of a limited number of clients. In particular, the debts of eurobanks to OPEC countries represented 8% of the total deposits in 1973, but had doubled by 1974 and had reached 17% in 1979. From 1974 to 1978 the OPEC countries deposited 32.5% of their surplus on euromarkets, and the figure was 58% in 1979.

The fact that depositors on euromarkets constitute a specific group including official organizations and large corporations having broad access to information and sophisticated means of management poses problems that are perhaps less of a threat than certain commentators have suggested. Indeed, their funds are invested in short-term deposits so that the banks do practice transformation, but this process is not very conspicuous as it takes place progressively through the chain of interbank operations. Of course, the liquidity of particular banks can be compromised by the withdrawals of the funds of large depositors, but the funds are redistributed within the financial system by the interplay of adjustments of interest and exchange rates. For, if the liquidity of the entire market seems to depend on the permanent preference of OPEC countries for this kind of investment, there is currently no real alternative for them. (9)

In such conditions, the problem of the risk of default linked to the worsening of country risks is closely interconnected with the risk of liquidity, since it would only take several serious losses over certain loans (to developing countries, for instance) to set off a liquidity crisis which, starting in the banks immediately concerned, could cause the collapse

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(8) The American authorities had no qualms about letting the thirtieth ranking bank of the united States fail.
(9) c.f. M. Cheynel, op. cit.

of the system.

It is no doubt the fear of such a domino effect which explains the progress which has recently been made in the field of supervision and control of the international operations of banks and, ultimately, of the sharing of responsabilities of lenders of last resort. (10)

The financial tremors of 1974 stimulated the governors of the Central Banks of the Group of Ten to adopt a Concordat establishing the bases for a cooperation between the supervisory authorities of the so-called "parent" countries and "host" countries.

As far as solvency is concerned, the basic principle is that the "parent" country authorities are responsable, even regarding legally independant subsidiaries.

For liquidity, the principle is that of supervision by the "host" country authorities. However, for international banking operations, it seems that the liquidity situation cannot be evaluated independantly for the parent bank and its subsidiaries. The authorities of the "parent" country are thus given the responsability of this overall evaluation on a consolidated basis, if possible.

Finally, if liquidity pressures calling for the intervention of an ultimate lender originate from the local operations of the subsidiary of a foreign bank, it is the central bank of the host country which should act, while it is the parent central bank if the international operations of the same subsidiary are involved.

The special responsabilities which are bestowed upon the authorities of the "parent" country regarding the international banks under its authority, but also of their local branches and subsidiaries, provides--together with the other characteristics of the present situation mentioned previously--the basis for an interpretation of the attitudes of banks regarding the problem of risk.

For the banks must lend the deposits which they receive and the strongest needs are by far within the developing countries. To a certain extent, the taking of risks is inevitable, and is, in fact, an integral part of the activity of a financial intermediary.

The uncertainties of the country risk evaluation procedures and also the increasing importance given to political factors in these analyses make one suspect that the final question that a bank asks before granting a loan to a developing country can be formulated in the following manner. What would be the attitude of multinational institutions, but also of the government and of the supervisory authorities of the bank's home country in the event of

(10) H.J. Muller, "Changes in Banking Supervision and their Consequences for Banks", SUERF Conference, Oct., 1980.

major difficulties? The problem of the country risk would then consist of establishing a list of the countries which, for reasons of political stability, whether regional or worldwide, the major powers could not "abandon".

In such a case, there is an objective alliance or a converging of interests among multinational banks and the governments of their home country. For it is in the interest of the latter that the banks finance preferably certain allied or politically sensitive countries, and the former have the benefit of a relative guarantee that a major financial crisis will be avoided.

This interpretation of the strategy of multinational banks must be qualified, as certain countries have a strategy which is closer to traditional economic imperialism to the extent that their multinational banks' goal is to penetrate certain economic areas by, for instance, facilitating the implantation of the multinational corporations of the home country and by gaining markets for their exports.

Such an interpretation of things may seem to be in contradiction with the strengthening of controls by the supervisory authorities regarding the degree of risk exposure of their national banks in their international loans. In fact, this is not the case at all, as this strengthening makes it possible simultaneously to limit the overindebtedness of certain developing countries, to emphasize the purely commercial nature of international financial operations, and, ultimately, to provide the ultimate lender with the necessary basis for an eventual decision to intervene. Thus, the role played by the analysis of country risk can be defined less as a decisive element in the granting of a loan, than as an <u>ex post</u> justification of this decision for the benefit of the supervisory authorities.

CONCLUSION

At the end of this study of the effects of the variability of exchange and interest rates on industrial development, several final conclusions should be drawn.

On the microeconomic level, this variability makes the use of classical methods of investment selection highly uncertain beyond a relatively short time period. It reduces the number of projects selected due to the increase in the discount rate which is used to evaluate their rate of return. Finally, it introduces effects which distort the choice of projects depending on their technical and economic characteristics.

On the macroeconomic level, the increased variability of exchange and interest rates causes a degradation of the financial situation of developing countries by adding to the burden of the service of their debt and by its negative effects on the balance of payments. The impact of these different effects varies from one developing country to another, primarily in function of the degree of indebtedness, the maturity structure of the debt, the exchange rate system, and a certain number of structural facts. In such conditions the country risks, as they are evaluated by international banks, who are the principle agents financing industrial development, are tending to increase, although in a different manner depending on the countries.

The growing difficulty of forecasting the future with a minimum of confidence has caused both investors and lenders to reduce their time horizon and has encouraged the latter to require more and more guarantees. This shift in attitutes can, in certain cases, lead to a reorientation of investment choices in developing countries the full consequences of which must be evaluated. It is certain that it has led banks to be far more discriminating in their relations with the various developing countries.

The above observations do not entitle us to blame bankers alone for the financing problems which developing countries face, particularly since the second oil crisis. For international banks are the keystone of the worldwide payment system and they are merely doing their job when they try to limit their degree of exposure to risk both individually and collectively.

Nor should we wait for a greater consensus on the international scene to emerge and thus allow a progressive restoration of a more solid monetary system which would be more favorable to the private financing of industrial development.

Indeed, it has been shown that a certain number of innovations which could be implemented by the private financial system would contribute

to improving the credit terms offered to developing countries, regarding either maturities and rates or an increase in the total volume of long-term financing available. (1) A relatively exhaustive survey of these innovations and a detailed presentation of their technical characteristics was recently carried out on behalf of the UNIDO. (2) However, this survey failed to touch upon the most basic question of whether or not there is a realistic chance that these innovations will come about spontaneously in the near future. Now, although it is relatively easy to make ex post forecasts in this area on the basis of a cost-benefit analysis, ex ante forecasting is a delicate matter. It is obvious that banks are devoting considerable resources with a view to developing new financial products, but no one can say which of these products would be adapted to the needs of industrial development nor in what market conditions these innovations would become profitable for banks.

Independently of these considerations, it is not desirable that the dependency of developing countries on private financing become more marked. Whatever future improvements may be made, bank loans are by nature often ill-adapted to the requirements of industrial projects in developing countries. An excessive dependancy of developing countries on multinational banks leads the latter to intervene in the macroeconomic policies of the country they finance, although their competence in this field is by no means an established fact. Lastly, as has often been pointed out, certain developing countries are totally excluded from this source of financing.

Last but not least, the very dimensions of the financing needs of developing countries over the coming years are such and the conditions created by the most recent oil crisis are so unfavorable that it would be unreasonable to expect that the private financial system could singlehandedly

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(1) D.L. Lessard and Ph. Wellons, "Financing Development: Innovation and Private Capital Markets", International Financial Flows, I, UNIDO, Dec., 79. J.M. Parly and J. Métais, "La capacité de réponse du système financier privé aux besoins de financement du développement industriel", UNIDO Report, March, 1979.
(2) Lessard and Wellons, op. cit.

meet the three major challenges constituted by the recycling of balance of payment surplus capital, the financing of new sources of energy, and development financing. (3)

Many have demanded, and will continue to demand, that the most favored countries increase their aid to developing countries in bi-lateral or multi-lateral form. However, the combined impact in the industrial countries of a slowdown in growth and of increased external constraints has created a climate which is hardly favorable to an increase in the proportion of the national income devoted to development aid.

In such conditions, the most fruitful course of action to be explored is that of multi-lateral financing organizations. However, is it sufficient to increase the means of action which are at disposal of existing organizations? The answer to this question seems to be that it is not, for reasons due both to their sectorial orientation and their ways of operating.

In spite of the emphasis recently placed on loans to the energy sector, the activity of the World Bank has essentially been focused on loans to agricultural and rural development projects which are certainly of vital importance to developing countries. The International Financial Corporation, which is much more oriented towards industrial development, has special modes of intervening which make it less of a lender than a catalyst for risk-capital.

Moreover, the World Bank has an extremely conservative management philosophy, which has, in fact, contributed to its great prestige on the major financial markets and which has enabledit to become one of the foremost "signatures" on those markets. Its cautious approach is evident in its selection of "bankable" investment projects, but also in its purely financial operations. In order to prevent the possibility of being forced to issue bonds in an unfavorable financial situation and, consequently, at high rates, the World Bank tries to conserve short-term assets representing 40% of the amounts it will require over the three following financial years,(4) that is, roughly ten billion dollars. Thus, it is clear that this instituti does not undertake atransformation from short-term to long-term- --which, in any case, its statutes do not allow. On the contrary, it practices a "reverse transformation", since it invests in short-term deposits a portion of its long-term borrowed funds.

Just as the World Bank has not taken the risk of transformation, similarly, it does not risk foreign exchange exposure and lets borrowing

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(3) D. Wigny, "Evolving Problems of International Financial Intermediation", SUERF Conference, Oct., 1980.
(4) Annual Report of the World Bank, 1980.

countries assume in entirety the risks stemming from the variability of exchange rates. Through 1979, the sharing of these risks among borrowers was more or less random, but since then, the creation of a currency pool has made the sharing more equitable.

Regional development banks have taken an interest in both infrastructural programs and in the industrial sector. However, their operating procedures have also been criticized by developing countries. For example, if we only consider the case of the Asian Development Bank, we see that current practices--practices having something to do, of course, with the power structure within the organization--tend to discriminate along political lines among developing countries and to transform financial aid to developing countries into a means of promoting the exports of industrialized countries, with the result that the latter amply recover the capital they provided, while local suppliers are penalized. (5)

As far as the I.M.F. is concerned, there is little point in returning to the obvious problems affecting it regarding its structure, the means of financing at its disposal, and its procedures of operation.

Thus, there can be little doubt that a reappraisal is called for. If we limit ourselves to the problem of industrial development, both further thinking and further discussions on the solutions which should be implemented should have two clear aims:

- to increase the overall volume of long-term financing available for industrial projects in developing countries,

- to prevent the effects of the variability of exchange and interest rates which characterizes international markets from being shifted onto developing countries.

An increase of the overall volume of long-term financing means that the sizeable liquidities available on euro-currency markets be transformed into long-term loans. Thus, there is a role to be played by a multi-lateral organization which would borrow on euro-currency markets in order to re-lend on a middle or long-term basis to developing countries. To the extent that, as was shown earlier, the private financial system progressively transforms short-term resources into middle-term resources, the intervention of this second level of financial intermediation would make it possible to offer maturities more compatible with the needs of development. (This is the principle of double-stage inter-mediation).

Such a transformation implies a liquidity risk which would take the form, essentially, in the absence of a major market crisis, of the necessity to accept high interest rates at the time of refinancing of the debt.

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(5) R. Wihtol, "The Asian Development Bank: Development Financing or Capitalist Export Promotion?".

This brings us back to the problems of exchange and interest rate variability which must equally be solved.

Whatever the complexity of the technical solutions experts may devise, we must not lose sight of the clear and unambiguous question: which countries, ultimately, are going to assume the risks and costs connected with the international financing of industrial development?

The range of technical means of reducing and sharing these risks is quite broad and the theoretical principles through which such means can be devised have been analysed elsewhere. (6) Nevertheless, among the different groups of countries which would ultimately participate in a multi-lateral organization financing industrial development, there would have to be a consensus on a basic point: to make borrowing countries bear the risks would not only be a mistake, but would be morally indefensible.

It would be a mistake, for an increased fragility of developing countries contributes to the fragility of the international financial system as a whole, as the risks within the system are directly dependant on the vulnerability of the weakest links in the chain.

And it would be morally indefensible, for, although one can theoretically prove the efficiency of a market economy system based on selfish individual behavior, the inefficiency and the dangers of an international system based solely on national interests and a nearsighted vision of power relationships has become clear to all.

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(6) Parly-Métais, op. cit.

APPENDIX

I - THE MONETARY FLOWS GENERATED BY INVESTMENT PROJECTS

The methods of selection of investment projects generally try:

1) to define the effects of the projects being considered on financial return and on the financial situation of the investor (financial evaluation),
2) to evaluate the direct or indirect effects that these projects may have on the national economy in general ("economic" evaluation).

Financial Evaluation

This first step, of a microeconomic nature, consists of an economic and financial estimate making it possible to evaluate the advisability of supplying funds for the investment operations being considered. At this initial stage, the approach remains limited to the corporation or institution which will actually handle the project.

This process consists essentially of:

- a forecast of the monetary flows directly generated by the investment project being studied,
- a recapitulation of this flow at the time of the synthesis of the accounting and financial statements making it possible to measure the expected earnings (an estimated operating account) and the conditions of their short-term (budgets) and long-term financial adjustments (investment and financing plan),
- the application to this flow of quantitative or qualitative selection criteria.

Economic Evaluation

In this second stage, the analysts try to situate the project as fully as possible in its socio-economic background. For this reason, they try not only to point out the costs and benefits directly affecting the firm or institution responsible for its implementation, but also the overall external effects on the national economy, whether direct or indirect.

Financial evaluation leads to a reducing of an investment to a schedule of monetary flows which can be broken down as follows:

- one or several injections of capital corresponding to the purchase of equipment and the associated equipment costs (#1),

- working capital requirements (#2),

- the annual flows of goods and operating expenses of the project during its operational phase (#3),

- lastly, the eventual market value of used equipment at the end of the project.

We shall now briefly analyze the sensitivity of these different kinds of flows to the variability of exchange rates.

#1 - The Purchase of Equipment and Related Expenditures

The injection of capital for the purchase of equipment is done in one or several stages, depending on:

- the length of the project implementation period (the purchase of simple equipment can be made over a short period, while complex installations require outlays distributed over several years),

- the divisibility of equipment and projects considered (certain equipment can be set up progressively and in installments, while other equipment requires complete and immediate installation).

a/ Purchasing Costs

In developing countries, the sensitivity of purchase costs to exchange rate fluctuations should be evaluated in the light of two considerations. First, the equipment purchased is most often imported. Investors within these countries must thus have recourse to foreign exchange. However, on the other hand, the foreign exchange risk run by the country receiving the investment is a function of the implementation and payment schedules. In the case of a rapid payment, the exposure to the foreign exchange risk is limited due to the fact that the period during which the exchange rate can fluctuate is briefer. Inversely, if the importation of equipment is distributed over several years, the risk exposure is more difficult to control.

b/ Associated Costs

The expenses that go with the purchase of equipment generally concern the payment of services provided by the constructor or by his representatives (technical assistance, training of the staff who will operate the equipment, etc.) and the technical circumstances of the installation of the equipment (the construction or remodelling of buildings, for example). These expenses are less sensitive to foreign exchange fluctuations for the following reasons:

- on the one hand, these kinds of services can more generally be provided by local firms--such is the case for construction;

- on the other hand, the costs associated with technical assistance

are occasionally paid in the local currency--assistance or training provided by the local importers of the equipment, for instance.

#2 - Additional Working Capital Requirements

In addition to the equipment purchase costs, an investment project also involves additional working capital requirements implying a durable outlay of capital, similar to the fixed capital outlay.

In the case of a new investment, this outlay is due to the need to provide for:

- stocks (S) of raw materials, products being processed, or finished products,
- a portfolio of commercial claims (C) linked to the payment schedule agreed upon with clients,
- which is partly offset by a corresponding possibility of credit obtained from suppliers (D).

As soon as the project reaches full operating capacity and its component elements have become relatively stable, the working capital requirements can be analyzed as follows: WKR = S + C - D.

An increase in the level of activity will bring about an increase in these requirements.

In the case of an investment aimed at increasing existing production capacity (an expansion project), one must consider only additional needs for stocks and credits, and only the extra funds which must be foreseen for supplier credit. In this case, the working capital requirements implied by the project will only affect S + C - D.

#3 - Anticipated Operating Flows of the Investment

The financial evaluation of the investment is based on the comparison of the cash flows it provides and the initial costs it demands (for both the purchase of equipment and the working capital requirements).

The income figures obtained are themselves influenced by foreign exchange fluctuations due to certain flows of sales and expenses which must be compensated for.

Thus, the gross operating income (1) can be defined as:

GOI = V - (A + P + E).

And the earnings after taxes as:

EAT = V - (A + P + E) - I

= depreciation allowances + net profit.

In which: V is the flow of sales,

A is the flow of purchasing,

P is the total of staff costs,

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(1) We have merely provided a simplified formulation that does not raise the accounting problems linked to a rigorous definition of cash-flow.

E is the total of miscellaneous expenses,

I is the total of taxes on profits.

We see, thus, that earnings after taxes expected from the investment are only sensitive to foreign exchange rate flucuations if the flow of sales or the flow of inputs is established between the investing country and foreign markets and is settled in a foreign currency.

II - NOTES ON THE PRINCIPLES OF DISCOUNTING

The process of discounting can be defined in the broadest possible manner as the attempt to measure the devaluation of a standard of measurement of values in time. In order to deepen this definition, we must first specify:

- the general mode of determining discount rates for an industrial project,
- the underlying mechanisms of the discounting procedure at the time of project selection.

a) The Selection of a Discount Rate

Unlike aid planning organizations which use private consumption or public spending as a reference base for evaluating the discount rate within a corporation, capital cost represents the essential variable of our calculations.

More precisely, two determining factors will be considered successively regarding the estimate of the discount rates: the mode of financing the project and its technical characteristics.

For the first of these, we admit that the discount rate is equal to the average interest rate borne by the financing which implements the investment. Two cases should be distinguished In the case of the creation of a firm, the aggregate monetary and financial flows of the project will be taken into account. On the other hand, if an existing infrastructure is being expanded, then the structure of the financial capital of the existing firm will be the base of calculation. Concretely, the discount rate will be calculated, depending on whether the financing is through:

- self-financing, by using the opportunity cost of capital, that is, the interest it earns when invested outside the firm (for example, through partnership or investing on capital markets),
- an issuing of stocks or bonds, by evaluationg the expected yield of the stocks or long-term interest on the financial market,
- bankloans, the discount rate being equal to the weighted average of the interest rates applicable to each category of equipment.

In the case of mixed financing, as previously, the weighted structure of the various interest rates and yields expected will be taken into account.

At this juncture, it is necessary to make an important remark.

Bank rates or financial market rates are nominal interest rates, in as much as they more or less integrate the anticipated inflation rate. However, capital budgeting methods most often use evaluations in real terms. Thus, one must refer to a real interest rate in order to determine a real discount rate. (1)

The level of the discount rate established on the basis of financing costs can be more or less adapted to the intrinsic characteristics of the project being considered and the industrial context in which the investment is to be programmed. One must consider the capital intensity of the project, its implementation period, and its life expectancy. In particular, to take into account the risks linked to the investment, longer-term projects generally will have a higher discount rate (by 1 or 2 points) and the inverse will be true for shorter-term investments. Another element which should be considered at this point is the complementarity of proposed projects. This involves examining whether it is an entity which is totally independent in relation to its industrial or economic surroundings. As an example, we can mention as a factor favoring a lower discount rate those investments which are:

- in direct contact with existing sources of raw materials or existing industries,
- the basis for a vertical or horizontal integration of production or a diversification of activities.

b) The Principles of Selection of Investments on the Basis of Discounting

The discount procedure makes possible two types of operations: the evaluation and establishing of the return of a project, on the one hand, and the ranking of competing projects, on the other.

This method of evaluating the different variables of the project according to their time profile makes it possible to determine the present value of monetary and financial flows generated by the investment (discounted cash-flow). Two factors will influence this value:

- the length of the production process, to the extent that the value of a sum available in the future decrease with the passing of time. For this reason, the time required for the completion of infrastructures or the implementation of operations, on a technical level, and the nature of

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(1) If we represent respectively by r, i, and π^*, real discount rate, the nominal discount rate, and the anticipated inflation rate, then:

$$[1 + r]^{-t} = [1 + \pi^*] \cdot [1 + i]^{-t}$$

that is, as an initial approximation: $r = i - \pi^*$.

the repayment schedule and the "grace periods", on the financial level, are especially crucial for the rate of return of the investment,

- the level of the discount rate, as the value of a sum available in the future, is inversely proportional to the level of the discount rate. In other words, the higher the discount rate, the more long-term maturities will play a negligeable role in the overall evaluation of the flows generated.

Secondly, as a criterion for the selection and ranking of projects, discounting is able, on the basis of monetary and financial flows, to supply data on the intrinsic profitability of an investment and elements which make it possible to classify the different alternatives when there are several competing projects. (1) Such a ranking is made either on the basis of discounted cash-flows or of internal rates of return. (2)

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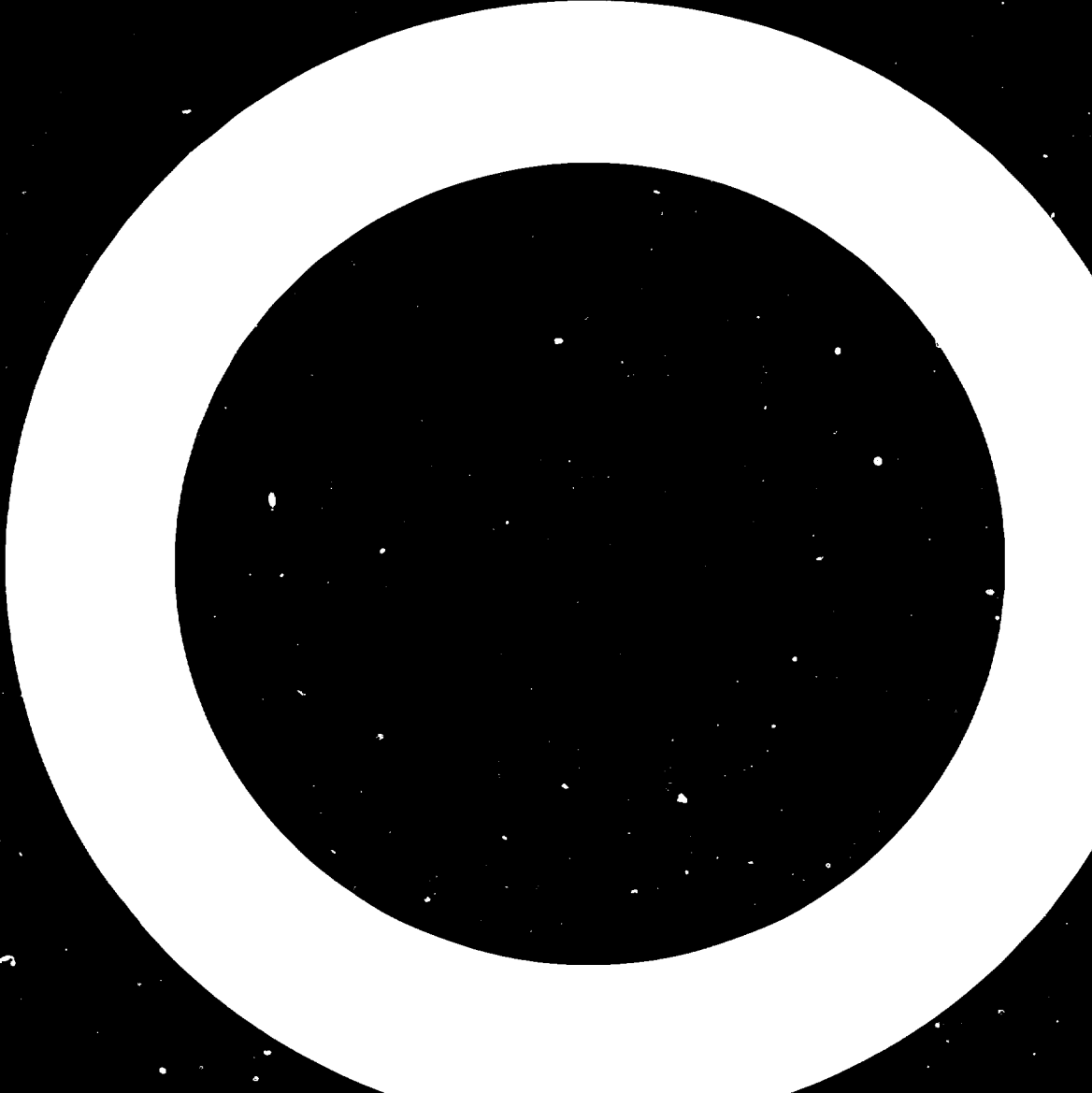
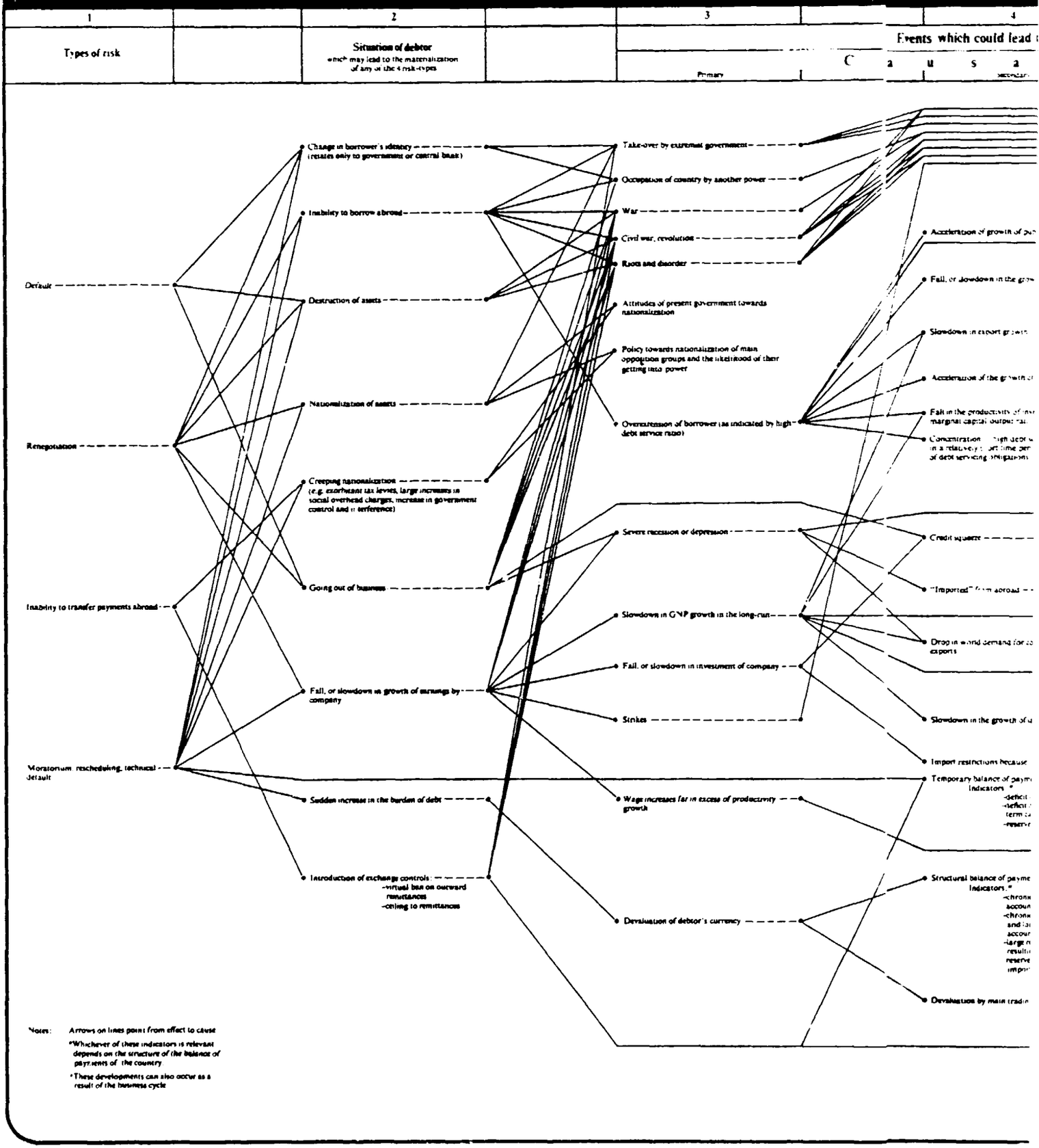
(1) The basic principles in this field are:

- a project is considered unprofitable if the discounted cash-flow produced is negative and/or if the rate of internal yield is less than the discount rate.
- the return of a project is proportionate to the amount of the discounted cash-flow and/or the size of the difference between the internal yield rate and the discount rate.

(2) These two criteria do not provide the same type of selection except in specific cases.



The country risk flow chart: Cause-effect relationships in the assessmen



Notes: Arrows on lines point from effect to cause

*Whichever of these indicators is relevant depends on the structure of the balance of payments of the country.

+ These developments can also occur as a result of the business cycle

e-effect relationships in the assessment of country risk