SHOULD THE FOREIGN AFFILIATE REMIT DIVIDENDS OR REINVEST?

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Foreign investment is exposed to significantly greater environmental uncertainty than domestic investment and requires special analysis and evaluation. The remittance of foreign funds as dividends poses problems of taxation, remittance restrictions, transfer costs and reinvestment. Multinational financial decision-makers, therefore, face the dilemma of incurring the costs of funds remittances or of accepting the particular uncertainties of foreign investment in host countries. The problem is a recurring one, and a resolution must be found.

The use of optimization models of various kinds, in particular linear programming models, have recently received increased attention as tools that may be employed to analyze investment, financing, pricing, and exchange risk management problems of multinational corporations. In the Winter, 1972 issue of *Financial Management* see articles by Ness [2], Petty and Walker [3], and Robbins and Stobaugh [4]. This article applies linear programming to the disposition of foreign generated funds.

In a multinational enterprise, funds allocation should employ decision rules for the efficient allocation of foreign generated funds among competing uses. The suggested approach involves a linear programming model that determines optimal funds allocation on a basis of relative profitability, risk exposure, and tax impact of the decision alternatives, within the framework of corporate policy and environmental decision constraints.

The characteristics of the multinational corporate system referred to in this paper are primarily those of a large, internationally operating company headquartered in the United States and owning one or more subsidiaries abroad. The model evaluates the desirability of foreign dividend remittances in relation to foreign investment but does not fully reflect the possibility of remitting foreign funds to cash centers or investment alternatives in countries other than the parent's home country. In addition, the possibility of remitting funds in the form of royalties, fees, loans or transfer prices is not reflected in the suggested decision model.

Dividend Remittances

Foreign generated funds may be used at the discretion of corporate management and presumably are allocated to those investment opportunities—including the payment of dividends to parent company shareholders—that will yield the highest return

to the firm. This return may be measured by a future worth coefficient, a_k, for funds in the hands of the parent company. If the dividend paid by a foreign subsidiary is D, the adjusted foreign dividends received by the parent company is D_a, the expected domestic rate of return of remitted funds is r, and the planning horizon of the parent company is n, $a_k = D_a(1+r)^n/D$ for foreign subsidiary k. The terminal value of dividends received by the parent company and allocated to the best investment alternative available, thus, may serve as an estimate of the future worth coefficient of foreign dividends remitted home.

Foreign Withholding and Remittance Taxes

Remitted foreign funds are subject to a number of adjustments and costs, many based on the amount of dividends transferred. These costs may be avoided if no foreign dividend remittances are made. Many foreign host countries, for instance, subject dividends and other forms of payments to withholding or remittance taxes at varying rates. Withholding and remittances taxes are usually collected at the source—the foreign subsidiary—and accrue as a direct result of the payment of dividends to foreign sharcholders.

Transfer Costs

Another class of adjustments involves the cost of transferring funds across national boundaries and the cost of converting foreign-denominated funds into domestic currency. Transaction costs depend on the demand and supply of the particular currencies in the foreign exchange markets, the type and strength of the host currency to be converted, the expectations of possible changes in exchange rates between the currencies used, the efficiency of international banking channels, the level of competition among banks and foreign exchange traders, and the established conversion practices in the host country. Transaction costs, as a result, vary widely but usually are insignificant relative to the total of the transaction.

Domestic Taxation

Finally, foreign dividend remittances must be adjusted for the impact of domestic taxation. Under currently effective United States tax law, normally all dividends of wholly-owned foreign subsidiary firms are subject to the ordinary corporate income tax in the United States. In addition, U.S. taxation of foreign earnings applies to the income of controlled foreign base companies, regardless of whether or not such income was actually paid to the United States taxpayer.

Corporate taxpayers in the United States, however, may avail themselves of a credit against the firm's United States corporate tax liability. The so-called "foreign tax credit" is designed to avoid, at least in part, the double taxation of foreign income that would otherwise occur if such income were taxed once by the foreign tax jurisdiction and again by the United States. Therefore, United States taxes on foreign earnings, in many cases, may only be payable on the difference, if any, between the foreign taxes paid on such earnings and the United States taxes that may accrue from those same earnings.

Since many foreign host countries have lower average tax rates than the average tax rates under the United States tax laws, additional United States taxes may, in many cases, be due and payable by the parent company on remitted foreign income which was earned by affiliates abroad. The law, however, provides for a number of specific relief provisions, such as "less-developed country exemptions" and "minimum earnings distribution provisions," which allow, within certain limitations, an effective modification of the stringent rules for taxing foreign income. Except in the case of relatively unusual situations, the relief provisions provide an effective partial escape of foreign earned income from the full impact of U.S. taxation.

Investment by the Foreign Affiliate

Foreign investment decisions are in many ways similar to domestic capital allocation decisions. Future cash flows of projects are uncertain in both environments, and the expected returns from alternative investments must be adjusted and ranked, based in part on an assessment of the riskiness of the undertaking.

Once desirable investment opportunities have been identified by the foreign affiliate, capital budgeting techniques can be used to assess relative benefits. A series of weighted certainty-equivalent profitability coefficients, similar to those developed by Robichek and Myers [5], may be developed for the various investment opportunities. Such coefficients serve as a measure of the expected benefits of choosing foreign investment opportunities rather than dividend remittances.

A risk-adjusted, certainty-equivalent profitability coefficient, b_{kj} of foreign affiliate (k=1. . .M) investment projects (j=1. . .m) is used to equate the benefits of funds in the hands of the parent company

with those that may be earned if the funds are retained abroad: $b_{kj} = q_{kj}\, p_{kj}$. The symbol q_{kj} represents the foreign environmental risk coefficient as defined subsequently, and p_{kj} is defined immediately below.

If F_t represents the cash flow of a foreign capital project in time t; F_0 represents the initial cash outlay for the capital project j; s_t represents the certainty-equivalent coefficient for cash flows in time t; i represents the risk free capitalization rate; and n represents the number of time periods considered, the certainty-equivalent profitability coefficient, p_{kj}, of a foreign capital project, j, may be defined as:

$$p_{kj} = F_0^{-1} \sum_{t=0}^{n} s_t F_t/(1-i)^t \quad \text{for } k = 1 \ldots M. \quad (1)$$

These coefficients reflect the business risks of the expected cash flows from the foreign investments but do not incorporate foreign environmental risks. The certainty-equivalent profitability coefficients, therefore, must subsequently be weighed by a number of environmental risk-adjustment factors.

Foreign-Risk Exposure

The character of the environment of host countries is expressed in their distinctive cultures and their distinctive legal, monetary, and economic systems. In particular, there are three groups of environmental uncertainties that may have a major influence on the financial decisions of foreign subsidiaries; host country inflation, foreign currency devaluation, and political risks, including the risk of controls that may be imposed on capital transfers. Under conditions of adverse developments in any of the host countries in which the multinational corporation operates, such uncertainties may cause substantial financial losses to the affected foreign subsidiary and, consequently, to the corporate system as a whole.

Given the existence of foreign environmental adversities, specific risk-adjustment factors must be developed for each host country. A generalized form of the foreign risk adjustment coefficient may be expressed as $q_{kj} = 1-\bar{P}_{kj}$. $\bar{P}_{kj}$ is the weighted average probability of the occurrence of the specific risks of inflation, devaluation, and political exposure. The risk-adjustment coefficients are used as weights that modify the certainty-equivalent returns. They represent estimates of opportunity costs associated with management's decision to retain funds abroad and, therefore, make it possible to compare the potential returns of domestic and foreign investments.

Inflation

Inflation is one of the more common problems facing businessmen in many foreign countries. It is a risk to which assets are exposed when they are fixed in terms of their nominal local currency monetary value. Managers must be skillful in their operational planning to protect inflation-exposed assets from such value losses. In many cases, the value of cash or other liquid assets can be protected only if such assets are transferred to a less inflation-prone environment abroad. Dividend remittances to the parent company at the earliest possible time in the cycle of a foreign subsidiary's cash generation may accomplish this purpose.

The process of inflation in a host country can be viewed as a continuous, strong upward bias of product and factor prices over time. Assuming a positive secular price trend in an economy, excessive price movements over and above the secular trend during relatively short time periods reflect inflationary pressures. Estimates of the values of the expected rate of secular price trends can be made by applying probability distributions to empirical data. If the risk of inflation is defined as the probability L_{kI}, that prices in a particular host country will exceed the secular trend, and P_{ktI} is defined as the cumulative probability that a secular price expansion of an expected amount may occur during the time horizon t, inflation risk may be defined as $L_{kI} = 1-P_{ktI}$. For instance, if it is assumed that there exists a cumulative probability of 0.7257 that a particular host country will experience a secular price expansion rate of at least 5% during the next twelve months, the risk, L_{kI}, of price rise greater than 5% would amount to 0.2743.

In addition, the relative importance of the inflation risk variable for the dividend decision must be evaluated to determine the relative impact this risk variable may have on the remittance decision.

The latter variable, W_{kI}, thus, represents the relative weight of the risk of inflation in the dividend decision process for the foreign subsidiary k. W_{kI} may be subjectively determined by management policy and may reflect management's attitude towards that particular risk in a specific foreign environment.

Devaluation

Unlike inflation, devaluation may result in large and relatively visible losses on the parent corporation's books and financial statements and, as a consequence, affect the valuation of the corporation as a whole and the value of its shares of common stock in the hands of the public.

Devaluation of a country's currency is both a political and economic decision, and it is usually taken by a host country government to protect its international currency reserves, as well as its trading position vis-a-vis other trading nations. External economic trends and trading patterns frequently force devaluation on a country's policy makers, and, in some cases, it is used as a means of last resort to shore-up a deteriorating balance of international payments and to improve the competitiveness of a country's products in world markets. Thus, devaluation of its currency is a discretionary policy measure of the host country and is very difficult to forecast.

Lieter [1], Shulman [6] and others have developed various quantitative estimating procedures to assess the risk variable "devaluation" in the context of managerial decision-making. In general, time-weighted probability distributions, such as $P_{kD} = 1-P_{ktD}$ may be used to estimate the likelihood that an expected rate of devaluation (or revaluation) may take place during the time horizon t. Similar to the case of inflation, P_{kD} measures devaluation risk, and P_{ktD} represents the cumulative probability that a devaluation of an expected magnitude will take place during time t. In attempting to quantify the devaluation risk, however, care must be taken to recognize the process of currency devaluation or revaluation as a discrete process in contrast to the more nearly continuous process of inflation.

For decision purposes, the devaluation risk must be weighed by a subjective factor, W_{kD}, which reflects the relative importance of the devaluation risk to the management of a particular affiliate and the particular circumstances of a specific foreign environment.

Political Uncertainty

The category "political uncertainties" encompasses a number of imponderables that reflect the volatility of the political environment in many developed and less developed countries. Restrictions on the free flow of capital, as well as expropriation and nationalization of foreign owned private property, occur relatively frequently in certain regions of the world, and even revolutions and armed insurrections are not unknown in many areas of the globe. Such uncertainties, therefore, cannot be ignored.

The major uncertainties commonly included in the term "political uncertainties" are the uncertainty of the convertibility of local currency claims into dollar and other hard currency payments; the uncertainty of capital flow restrictions; the uncertainty of expropriation and/or nationalization of foreign owned private property; and the uncertainty of war damage that may be inflicted on company owned property.

Political uncertainties are hazards that cannot be satisfactorily quantified. In order to incorporate political uncertainties in the present decision model, certain assumptions must be made in an attempt to measure the influence of the variable on the dividend decision.

Since political uncertainties often materialize into financial losses relatively suddenly, and since their occurrence in any one host country is erratic, a random process may be assumed. In most cases, it is not possible to quantify this risk satisfactorily or to ascertain a probability distribution from sample information. As an alternative, therefore, a subjective evaluation of the expected political risks during the period of the future planning horizon may be made. The risk of political loss P_{kP}, therefore, may be set equal to P_{ktP}, a subjective probability estimate of the occurrence of political losses during the time horizon; thus, $P_{kP} = P_{ktP}$. Management, for instance, may judge that there exists a 5% chance of loss due to political uncertainties in a particular host country during the planning period; thus, $P_{kP} = 0.05$. This subjective measure must be weighted in the decision process by a factor, W_{kP}, in order to reflect the relative influence of this variable.

The Combined Risk Coefficient

The various environmental risk adjustment factors described above must be combined to determine a certainty-equivalent coefficient that varies inversely with risk. $\bar{P}_{kj}$, the weighted average risk coefficient of the specific risks of inflation, devaluation, and political exposure, thus, may be defined:

$$\bar{P}_{kj} = (W_I L_I + W_D P_D + W_P P_P)/(W_I + W_D + W_P) \quad \text{for } k=1\ldots M. \qquad (2)$$

The foreign environmental risk coefficient, therefore, equals $q_{kj} = 1-\bar{P}_{kj}$. This environmental risk coefficient, thus, must be applied to that portion of foreign subsidiary earnings retained abroad. Management's foreign dividend decisions, therefore, can be based on a comparison of the implicit benefits that an optimal allocation of foreign generated funds affords within the constraints of a multinational corporate system.

Funds Allocation Procedure

The optimization of the funds allocation procedure may be accomplished by a linear mathematical pro-

gramming technique which allows the system's funds to be allocated among the various alternative demands for funds, i.e., foreign investment projects and dividend payments to the parent corporation. The objective function of the program reflects the differential returns obtainable from the alternatives at a point in time. In addition, the procedure includes those constraints which represent the decision framework and the business environment. Policy-determined decision constraints, reflecting management's attitudes towards risk and other variables, such as the stage of host country's economic development, attitudes towards inflation, and so forth, may also be included in the optimizing procedure.

The Objective Function

Each of the decision alternatives requires financing. Debt, equity, or both may be used to finance those decision alternatives which represent the optimum allocation of foreign-generated corporate resources within the multinational system. The objective function of the linear decision program, thus, may be expressed as follows:

$$\text{SYSTEM OPTIMUM} = \sum_{k=1}^{M} a_k(D_D + D_E) + b_{kj} \sum_{j=1}^{m} I_{jD} + I_{jE}, \quad (3)$$

where D_D and I_{jD} represent the debt-financed proportions, and D_E and I_{jE} represent the equity-financed proportions of dividends and investment projects, respectively. The coefficients a_k and b_{kj} are the adjustment factors which allow an evaluation and comparison of the decision alternatives. To optimize the corporate system, all investment alternatives (j=1. . .m) for a given foreign subsidiary (k) must be assessed, and the decision alternatives must be summed for all foreign affiliates (k=1. . .M).

Constraints

There are many different types of decision constraints that may be built into this decision model. The constraints listed below, therefore, should be taken as illustrations of the range of possible environmental and policy-determined constraints, rather than as an exhaustive list.

Total Retained Earnings Constraint. The amount of the equity-financed portion of dividends to be remitted to the parent company, plus the sum of equity-financed proportions of projected foreign investments, cannot exceed the total amount of equity ($EQTY_k$) of the foreign subsidiary firm.

$$D_E + \sum_{i=1}^{m} I_{jE} \leq EQTY_k \quad \text{for } k=1\ldots M. \quad (4)$$

Liquidity Constraint. The equity-financed portion of the dividend alternative, plus the equity-financed portion of foreign subsidiary investments, is limited to the amount of cash and marketable securities ($CASH_k$) the firm holds over and above a minimum cash level for transaction and precautionary purposes ($PCSH_k$).

$$D_E + \sum_{j=1}^{m} I_{jE} \leq CASH_k - PSCH_k \text{ for } k=1\ldots M. \quad (5)$$

Capital Structure Constraint. The debt-financed portion of the proposed dividend remittances and the debt-financed portion of desired foreign investments is limited to that proportion (p_k) of subsidiary assets ($ASST_k$) which may be debt-financed under an optimal or policy-determined capital structure—total subsidiary assets minus total subsidiary liabilities ($LIAB_k$).

$$D_D + \sum_{j=1}^{m} I_{jD} \leq p_k\,(ASST_k - LIAB_k) \quad (6)$$

for k=1. . .M.

Over-all Investment Budget Constraint. The equity-financed and debt-financed new investment projects of the foreign subsidiary firm are limited to the total amount of a predetermined capital expenditures budget (BUDT), which may be set by corporate management for a particular foreign subsidiary and for all foreign subsidiaries of the corporation.

$$\sum_{k=1}^{M} \sum_{j=1}^{m} I_{jE} + \sum_{k=1}^{M} \sum_{j=1}^{m} I_{jD} \leq BUDT \quad (7)$$

Individual Capital Budget Constraints. Individual new foreign investment projects are subject to individual capital budget limitations ($PROJ_{jk}$) that may be predetermined by the management of a foreign subsidiary.

$$I_{jE} + I_{jD} \leq PROJ_{jk} \quad \text{for } k=1\ldots M. \quad (8)$$

Non-negative Constraint. The equity-financed and debt-financed portions of proposed foreign dividend

remittances to the parent company and all proposed foreign investments must be zero or larger.

$$D_E, D_D, I_{jE}, I_{jD} \geq 0 \quad \text{for } k=1\ldots M. \tag{9}$$

A computer program may be used to solve the problem and to determine the values of the primal and dual variables under conditions of system optimum. Depending on the exact nature of the restrictions that may have been incorporated in the program, the decision model will allocate available funds to the decision alternatives in such a manner that it will yield the optimal system value to the decision maker.

The dual variable values which may be generated by the program enable the decision maker to evaluate the opportunity costs of certain binding constraints. For instance, constraints such as the liquidity, capital structure or budget constraints may impose limits on the amounts of funds that may be allocated to a particular alternative. If a particular constraint is binding and thus critical in the final program, the dual variable for the restriction will show a value of more than zero; otherwise, it will be zero. If a critical constraint can be relaxed or modified, a higher system optimum may be achieved. The dual variable value, thus, will provide the decision maker with an estimate of the potential benefits which may be gained if a critical constraint can be modified.

Conclusions

The described financial decision procedure is concerned with the optimization of the relative allocation of foreign generated funds to the alternatives of foreign dividend remittances and foreign investments within a multinational corporate system. By giving explicit recognition to the key decision variables of foreign funds allocation decisions, the decision procedure may serve as a framework for the process of corporate financial decision-making under conditions of uncertainty in a rapidly changing foreign and domestic financial environment. Given a set of policy assumptions, which must be stated explicitly and built into the procedure, the use of the program enables financial managers to ascertain the relative desirability of foreign dividend remittances to the parent company quickly and with a minimum of guesswork and, thus, will improve the quality of their decisions.

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