

Optimal Taxation of Foreign-Source Investment Income

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Comment

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Analysis of the effects of imposing constraints on the movement of commodities and resources across geographic boundaries is an important part of both economic theory and measurement. The theory of the optimal tariff has occupied international trade theorists for many decades. That the movement of population affects the geographic pattern of wage rates has been recognized in immigration laws enacted by virtually every nation. Laws relating to capital movements also are widespread. Some regulations are designed to slow the flow of capital into a country. Just as domestic laborers favor restricting immigration, domestic owners of capital might be expected to support regulations that would deter the flow of capital into the home country. However, regulations restricting capital inflows also have been supported by labor in some countries.

The policy of the United States toward both capital imports and exports has been ambiguous. Foreign ownership of certain kinds of assets has been prohibited or discouraged, implying that the United States was interested in restricting the importation of capital. On the other hand, special constraints have also been imposed upon the movement of capital out of the United States—for example, the “investment equalization tax” introduced in 1963. It might be argued that there is no inconsistency in impeding both the import and export of capital. Import controls either seek to prevent foreign control of strategic (defense related?) industries or to impede an increase in the relative prices of cer-

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tain assets (farm land, for example). In contrast the objective of the "investment equalization tax" was to reduce the balance-of-payments deficit during an era in which exchange rates were fixed.

Examination of the effect of capital export controls on U.S. national income—its size and distribution over time and among classes of individuals—has only recently occurred. The recent analysis searches for optimal capital exports in a manner analogous to that in which earlier analysis sought an optimal tariff structure. It seeks to maximize some definition of national income with respect to controls on the export of capital. Among the means of influencing the movement of capital abroad is the way in which income from foreign investments is taxed. Consequently, it is almost inevitable that there would be a search for optimal taxation of foreign-source investment income.

Hunting for an optimal tax structure for foreign-source income—if such a phenomenon exists—is not an easy task. Earlier discussions of the taxation of the income of U.S. taxable entities attributable to their capital invested abroad were concerned with an equitable division of tax revenue between the United States and the country in which the investment was made, the avoidance of double taxation, or the allocation of capital in such a way that the marginal contribution of capital to income tended to be the same throughout the world. Recent discussions have focused on the effects of such taxation on U.S. welfare which is not defined in the same manner by all participants in a given discussion. And, of course, participants also hold different views about the relevant facts.

Some of the work that has been done will be reviewed briefly in the next section. Unlike the optimal tariff literature, which is almost exclusively theoretical, some of the analyses relevant to optimal taxation of foreign-source income attempt to produce quantitative estimates that might be useful in deciding how best to tax such income. However, the view of the world that is employed in obtaining the numerical estimates is a very oversimplified one. Usually the rest of the world is treated as if it were a single economic unit; the effect of U.S. tax policy on foreign investment in the United States is ignored. Typically, only direct foreign investment is analyzed, although indirect investment and intergovernmental loans and grants also draw upon the capital

available for domestic investment in about the same way as does direct investment.

The kind of simplification that has been made is useful for obtaining some "feel" of the problem—for making it possible analytically or through simulation to ascertain how changes in certain parameters might affect some endogenous variables of general interest. However, the errors resulting from such simplification cannot be ascertained until the results of a more complicated model are available; the models constructed and simulated to date are unlikely to be adequate for determining how best to tax foreign-source income if the objective is to maximize the present value of a stream of future national income.

Furthermore, if it were decided that U.S. capital exports should be controlled in a way such that some national income concept were maximized, the foreign-source income tax structure would not be an adequate control mechanism. As has been noted above, capital exports can occur in forms other than direct, private, foreign investment; also, if controls are to be exercised, net exports probably should be the relevant quantity. The objectives of foreign-source income taxation thus seem to be no clearer than they have been. The utility, for purposes of tax policy, of analyses seeking a foreign-source income tax structure that maximizes U.S. national income may be small, given the feebleness of the instrument and the many distortions in the economic environment introduced by various government regulations.

The frustration encountered in trying to state and solve the problem of optimal taxation of foreign-source income strengthens the support for a tax structure in which the way in which income is obtained—its source, time distribution, etc.—is irrelevant for tax purposes. Taxing expenditure rather than income contains such a feature, although it also has other characteristics that may produce problems comparable to those encountered in income taxation.

In spite of the large element of futility in trying to evaluate various proposals for taxing foreign-source income, this study will briefly describe and evaluate some recent work relating to the effects of capital exports on national income, will indicate modifications that might be made in such work, and will point out in more detail why the capital export approach to taxing foreign-source income is unlikely to be definitive.

A Brief Review of Some Recent Studies

There are several recently completed studies that deal with capital export controls that would maximize U.S. national income. Some have established theoretical frameworks for analyzing the problem, some have attempted to estimate relevant parameters, and some have produced estimates of certain effects of taxing foreign-source income in particular ways. In a study prepared by Musgrave for the Subcommittee on Multinational Corporations of the Committee on Foreign Relations, United States Senate (1975), estimates are made of the change in U.S. income and its distribution between wages and capital income that would have resulted if the U.S. capital invested abroad as of 1968 had been invested instead in the United States. A CES (constant elasticity of substitution) production function for the United States was assumed, and the elasticity of substitution was varied in order to obtain different shares of total income attributable to labor and capital.

The effects upon the shares of labor and capital are of no interest in the present analysis. The result—total income rose when the capital was shifted from abroad to the United States—is of interest. It was obtained because increased wage income in the United States attributable to the increased capital investment within the country more than compensated for the reduced capital income due to its reduced rate of return. Musgrave does not solve for the optimal rate of foreign taxation—a rate that might have resulted in some foreign investment, though less than had been made through 1968—because she believes that no reasonably accurate estimate of foreign production functions employing U.S. capital is available.

Musgrave treats the employment level as being independent of U.S. investment abroad. Also, she assumes that the total amount invested is invariant with respect to the distribution of capital between the United States and abroad, i.e., that the total stock of capital is fixed.

Ture, in a study prepared for the National Association of Manufacturers (1977), employs a model similar to that of Musgrave except that he assumes (a) a foreign production function with parameters essentially identical to those of the U.S. production function, (b) explicit labor supply functions for both the United States and for U.S. overseas operations, (c) a desired capital: income ratio, and (d) an adjustment of the actual to the desired capital stock. The production function is Cobb-

Douglas, both foreign and domestic labor forces increase with the real take-home pay of workers, and the desired capital stock varies directly with the disposable income of the U.S. economy. Parameter values for the model are estimated from such data as labor's share of total income and past capital: income ratios. With this model, estimates of the effects of changes in tax rates can be obtained.

Another similar model has been employed by Thurow (1976). He assumes that the U.S. and foreign production functions are Cobb-Douglas and identical, with labor's share equal to 0.7. Like the models of Musgrave and Ture, this one does not allow explicitly for trade nor for foreign investment on account of superior U.S. technology or management, although some conjectures regarding the impact of exporting technology and management are made. In Thurow's model both U.S. and foreign stocks of capital can be dependent upon their respective rates of return, but, like Ture's, Thurow's is not a dynamic model—i.e., some exogenous change must occur to alter the static equilibrium values.

In formulations such as those of Musgrave, Thurow, and Ture, the multinational firms can be viewed as channelers of capital across national boundaries. The amounts firms select to invest at home and abroad are assumed to be made in accordance with some rules such as "choose those allocations that equalize after-tax rates of return." The role played by multinational corporations in transferring management and technology is not an integral part of such models. An assumption such as that the production functions abroad and at home are the same or differ only by a scale factor implicitly accounts for the transfer of management and technology (the production functions would be identical if technology and management also were identical), but the principal role of the foreign investor is to act as a kind of capital broker equalizing rates of return, after tax, among the various investment opportunities.

The impact of taxing foreign-source income in such a model are obtained by solving a system of equations whose unknowns include (a) the domestic level of employment, (b) the total amount of U.S. capital to be employed at home and abroad, (c) the amount of capital employed at home, (d) the amount of labor to be combined with U.S. capital abroad, (e) the after-tax rate of return to capital, (f) the after-tax real wage rate at home, (g) domestic gross national product, and (h) foreign-source income (after taxes have been collected by foreign governments). Param-

eters or exogenous variables in the system in addition to the U.S. tax rate on foreign-source income could be the income tax on wage income in the United States, the tax rate on domestic capital income, the initial capital stock in the United States, the initial capital stock abroad (U.S.-owned capital plus the relevant portion of foreign-owned capital), labor's share of income in the United States (and abroad), the U.S. unemployment rate, the extent of capacity utilization at home (and abroad), and the foreign wage rate.

Assume, for example, that there were initially no U.S. tax on capital income received by U.S. taxpayers and that a tax on foreign-source income were imposed. The overall average rate of return to U.S. capital owners would fall; the U.S. capital stock would rise; the amount of U.S. capital abroad would fall; domestic wage income, employment, and total income would rise; and foreign income would fall. Total income (domestic plus foreign-source) would rise initially but could be smaller in the future than it would have been with no tax on foreign-source income, because the overall future capital stock might be smaller. This growth of the capital stock depends critically upon how the desired capital stock reacts to the return on capital *and* total after-tax income. The effect of the increased labor income could more than offset the effect of the reduced capital income resulting from a higher tax rate on foreign-source income, if the elasticity of foreign demand for U.S. capital is sufficiently small. If this were the case, the optimal tax on foreign-source income would exceed that on domestic capital income—a result obtained by Thurow (1976).

Assuming that the U.S. economy consists of two sectors, each producing a different product, and that the rest of the world can be described in a similar manner permits the terms of trade and the contribution of multinational firms to the technology and management of plants operated abroad to be incorporated into the analysis. Two-sector models have been employed by Thurow and White (1976) and Hartman (1977) in the analysis of taxation of foreign-source investment income.

The model of Thurow and White assumes that the production functions at home and abroad are Cobb-Douglas or CES and that the U.S. functions have different coefficients than the foreign ones. Labor receives the same rate of return after tax in each employment within a country although it cannot move between countries. Capital receives the same after-tax rate of return regardless of where it is employed; i.e., it moves between countries as well as

between industries in response to rates of return. There are also social welfare functions for each country, such welfare in any country depending upon the amounts of the two commodities available for consumption in that country and not upon the distribution of the commodities. These social welfare functions also are assumed to be Cobb-Douglas or CES. The total amount of labor employed within a country is a constant, as is a country's capital stock.

Thurrow and White solve for the home tariff and the amount of capital to be exported by the home country that will maximize domestic utility rather than for the optimal tax on foreign-source income. Obviously one could solve for the tax on foreign-source income that would result in the optimal capital export, so that the Thurrow and White results are relevant to an analysis of optimal taxation of foreign-source income. The analysis assumes that the tariff and capital export restrictions imposed by the foreign country are independent of those imposed at home.

Although the economies (production and utility functions and supplies of labor and capital) selected by Thurrow and White are not necessarily representative of any country and its complement ("the rest of the world"), the results are of interest in that they show that the home country's utility is maximized when capital export is prohibited. Total income of the home *and* foreign country is, of course, maximized when there are no restrictions on trade or the export of capital. But, as was already well known, the home country can benefit from imposing a tariff—if the foreign country does not retaliate—and, in addition, the home country can benefit even more by imposing a tax on foreign-source income that will discourage the export of capital.

Hartman's model is similar to that of Thurrow and White in that it assumes two sectors in each of two countries, Cobb-Douglas production functions in all four sectors, fixed supplies of labor and capital in each country with labor mobility within a country (but not between countries), and capital mobility between countries as well as within them. Hartman assumes demand functions for the two commodities within each country, but these demand functions could have been derived from utility functions of the same form as those employed by Thurrow and White. The principal difference between Hartman's model and that of Thurrow and White is that Hartman assumes that a home-country firm investing abroad has a cost advantage over the foreign producer and that some of the capital employed by the home firm in its operations abroad is obtained abroad. There are thus four production

functions: one describes the home firms in their production of one commodity (that imported by the home country) at home and abroad; one is used by home firms for the commodity, which is exported by the home country; a third is employed by foreign firms producing the commodity, which is imported by the foreign country; and the remaining one describes the foreign firms that produce along with their (U.S.) competitors for export to the home market.

Unlike Thurow and White, who assume that the elasticities of outputs with respect to factor inputs (the illustrative production functions being Cobb-Douglas) differ between the two countries, Hartman assumes that for any product the elasticities are the same in both countries. Export of U.S. capital need not occur in order for these to be foreign-source income. The cost advantage of U.S. firms, whether they produce at home or abroad, due to their superior technology and/or management, could result in U.S. firms producing abroad using only foreign capital. Of course, there may also be capital export because of different factor endowments; and one could assume both a cost advantage and different factor proportions in the two countries. Hartman assumes the factor endowments of the countries to be given, i.e., the capital stock of either country is independent of its rate of return after tax, and employment is a constant in each country.

Hartman's results indicate that maximum income (and hence the optimal tax) depends upon (a) the percentage of the capital used by U.S. firms in their foreign operations that is obtained from the U.S., (b) the cost advantage of U.S. firms over foreign firms, and (c) whether the foreign investment is for the production of the labor-intensive or the capital-intensive good. The optimal tax varies *inversely* with the proportion of U.S. funds obtained in the United States: it is higher when the U.S. foreign investment is for the production of the labor-intensive good than when it is for the production of the capital-intensive good, and it is *directly* related to the cost advantage of U.S. firms investing abroad.

Hartman's model is more general than those of Musgrave or Thurow and White, but it is not comparable with those of Ture and Thurow since the latter permit the total stock of capital to depend upon the rate of return to capital after tax. The estimated gains from restricting capital export in Hartman's model could be greater than in the others, although—as noted earlier—the optimal tax policies might be similar. In Ture's formulation, the optimal tax on foreign-source capital income could be less than

that on domestic capital income if the foreign elasticity of demand for U.S. capital is large and the overall stock of capital is sufficiently responsive to the rate of return received by capital owners in the United States.

In summary, the models of Musgrave, Thurow, and Ture characterize the U.S. economy and the rest of the world as two economies, each employing labor and capital and producing a single homogeneous product. Capital moves across national boundaries to equalize rates of return to capital owners, after payment of taxes. Musgrave assumes that supplies of both labor and capital within an economy are independent of wage rates and rates of return to capital. Consequently, the tax rate on foreign-source income that maximizes U.S. national income depends upon the relative U.S. and foreign elasticities of demand for U.S. capital. If the foreign demand for U.S. capital were infinitely elastic, so that the marginal rate of return to U.S. capital were equal to the constant rate of return on foreign investment after payment of foreign and U.S. taxes, the optimal U.S. tax on foreign-source income would be the same as that on domestic-source income. If the elasticity of demand by foreigners for U.S. capital were less than infinite, the tax on foreign-source capital income would exceed that on domestic-source income. The excess of the optimal tax on foreign-source income over the given tax on domestic-source income varies inversely with the elasticity of foreign demand for U.S. capital.

Ture's and Thurow's results are similar except that because the stock of capital accumulated by U.S. capital owners varies directly with its rate of return, the present value of U.S. national income will be maximized for tax rates on foreign-source income that are smaller relative to those on domestic income than would be derived by Musgrave for identical production functions and supply functions for U.S. labor. For example, with an infinitely elastic foreign demand for U.S. capital, the optimal tax on foreign-source income would be less than the tax on domestic income—providing the latter were greater than zero. Given the (positive) elasticity of the capital accumulated by U.S. capital owners with respect to the rate of return on capital, there is some elasticity of foreign demand for U.S. capital at which the optimal foreign-source income tax is equal to the positive tax on domestic-source capital income. For elasticities of foreign demand for U.S. capital smaller than the one just denoted, the tax on foreign-source income should exceed that on domestic income; for larger elasticities of foreign demand for U.S. capital, the foreign-source tax should be less than the domestic tax. The foreign elasticity of

demand at which the two tax rates should be identical varies directly with the elasticity of the U.S. capital stock with respect to its rate of return and inversely with the rate at which future income is discounted.

In the models of Musgrave, Thurow, and Ture parameter values that are believed, by each of the authors of the models, to describe more or less accurately the framework within which the U.S. tax on foreign-source income ought to be selected are employed. Musgrave does not solve for the optimal tax but shows that prohibiting the export of U.S. capital would have made U.S. income larger than that achieved by tax regulations, resulting in the effective tax rates on foreign-source income and capital export that prevailed until 1968. Similarly, Thurow shows that the United States should import capital. Ture concludes that the effective tax rates achieved by deferring tax liability until the income is repatriated and by crediting foreign taxes paid is better than taxing foreign-source income at a rate of 48 percent.

None of these models accounts for effects upon terms of trade, nor does any explicitly incorporate differences in technology and/or management that create cost advantages that in turn encourage direct investment abroad.

Although the model proposed by Thurow and White permits analysis of the changes in the terms of trade and the model proposed by Hartman includes these effects plus inclusion of the impact of superior technology and management available to the capital exporting country, the parameters describing the capital stocks and labor availabilities of the two "countries" are not necessarily representative of the United States and the rest of the world. The general nature of the policy implications of the two-sector models is not strikingly different from that of the one-sector models that make similar assumptions with respect to production functions and resource endowments *when the export of capital is for the labor-intensive commodity*. Hartman's estimate of the potential increase in U.S. income from optimizing the export of capital is larger than those obtained from the other models *when the export of capital is for the production of the capital-intensive good*.

Some Modifications in Procedures for Estimating Optimal Foreign-Source Rates

There are many ways one might expand the kind of investigation that already has been undertaken and has been summarized

in the previous section. Increasing the number of commodities and increasing the number of countries are obvious possibilities. If the impact of capital export on the terms of trade is of negligible importance, as appears to be the case in the model of Thurow and White and that of Hartman, then expanding the number of commodities is not likely to result in much change in the results. The assumptions regarding preferences in the home country and abroad will affect the estimated changes in the terms of trade. However, I have no more knowledge about preferences than the other investigators have had and see no reason to alter their assumptions drastically.

Adjusting for the Ratio of U.S.-Supplied Capital to a Country's Total Capital Stock

Considering all of the foreign countries in which U.S. investment might take place as if they constituted a single country is likely to result in a different solution for the optimal foreign-tax structure than if there were some disaggregation. The result, derived from the one-sector models with a fixed stock of U.S. capital available for investment at home and abroad, that the tax on foreign-source income should exceed that on domestic income is due to the fact that the entire contribution of a domestic investment is a part of U.S. income whereas a part of the contribution of a U.S. investment abroad is captured by the other factors of production and is thus a part of foreign rather than U.S. income. Let X_D be U.S. income, X_F be foreign income, K_D be the amount of capital employed in the United States, and K_F be the amount of capital employed abroad of which K_F^* is U.S. capital. If the amount of U.S. capital available for use at home and abroad is a constant, then a small change in U.S. investment at home results in the following change in U.S. income from both foreign and domestic sources:

$$\frac{\partial X_D}{\partial K_D} - \frac{\partial X_F}{\partial K_F^*} + K_F^* \frac{\partial^2 X_F}{\partial K_F^{*2}} \quad (1)$$

The first term is the marginal productivity of capital used in the United States; the second term is the marginal productivity of capital abroad, and the third term is the change in the income of U.S. capital invested abroad due to the change in the marginal productivity of foreign capital. If the foreign and domestic elasticities of output with respect to capital were α_F and α_D respectively, equation (1) could be written as

$$\alpha_D \frac{X_D}{K_D} - \alpha_F \frac{X_F}{K_F} \left[1 + (\alpha_F - 1) \frac{K_F^*}{K_F} \right]. \quad (2)$$

If $\frac{K_F^*}{K_F}$ were small (i.e., if U.S. investment abroad were a small percentage of the total foreign capital) then the expression in brackets would be unity and equation (2) would be approximately equal to zero when the marginal productivity of capital at home and abroad were equal. Taxing domestic and foreign-source income at the same rates would induce U.S. capital to be allocated between domestic and foreign investment so that U.S. income from both foreign and domestic sources was approximately a maximum. However, if each U.S. investor abroad ignored the impact of his actions on the productivity of capital abroad and if $\frac{K_F^*}{K_F}$ is not negligible, then the tax on foreign-source income should exceed that on domestic income. This is the recipe proposed by some of the investigations described previously.

Obviously, equation (2) could be replaced by a system of equations, one for each country, and the optimal tax rate in country i would depend upon the elasticity of output with respect to capital α_{F_i} and the ratio of U.S.-furnished capital to total capital $\frac{K_{F_i}^*}{K_{F_i}}$ in that country. Assuming that elasticities of output with respect to capital were the same in all countries, U.S. tax rates on foreign-source income should vary directly with the percentages of a country's capital supplied by the United States.

There is considerable variance among countries in the ratio of U.S.-owned capital to the total capital of the country. Estimates have been made of the gross product of foreign affiliates of U.S. companies as percentages of the gross domestic product of the host country for 1966.¹ There are also estimates of total U.S. assets in various regions of the world,² so that rough estimates of the ratio of U.S. assets to total assets can be obtained for various countries. Total U.S. capital is the sum of private investment (direct and indirect), U.S. claims on unaffiliated foreigners (reported by banks and nonbanks), and U.S. Government loans and other long-term assets. Direct investment made by U.S. firms and

¹ See Howenstine (1977).

² See Scholl (1976).

financed by loans from abroad is not differentiated from investment financed from U.S. sources. Subscriptions and contributions to international financial institutions are not included since they could not be allocated easily. These, together with U.S. Government grants and loans, are mixtures of additions to the stock of capital competing with private investment and consumption loans plus additions to "public capital"—roads, port facilities, communications, education, etc.—that might increase the marginal productivity of private investment. For the most part, the Government grants and loans are made to underdeveloped countries in which U.S. private investment is relatively unimportant. Also, such "investments" made up only about one-sixth of the relevant capital, so that the manner in which they are treated in this part of the analysis is not of major importance.

If the country's production function is Cobb-Douglas and its labor supply is fixed so that substitution between capital and labor cannot occur, the elasticity of the marginal productivity of capital with respect to additional investment is equal to the elasticity of output with respect to capital minus 1. Assuming an elasticity of output with respect to capital of 0.25, the elasticity of the marginal productivity of capital with respect to capital is -0.75 . If the labor supply varies directly with the wage, the absolute values of the elasticity of demand for capital with respect to its own price would be larger than the number cited above. However, the correction for this effect is not likely to be important. The ratios of foreign-source income tax rates to domestic income tax rates that would equate the marginal returns to the United States from foreign investment with the marginal returns to domestic investment for selected countries are presented in table 1. These estimates assume that the amount of U.S. capital for investment at home and abroad is independent of the rate of return to capital.

If only a single tax rate can be applied to all foreign-source income, that rate that would maximize the contribution of U.S. foreign-source income to total income in the simplified circumstances that have been assumed here could be estimated. For the countries listed in table 1, the optimum single rate would be about 17 percent above the rate applied to U.S. income, the estimated ratio

$$\frac{\text{total capital in the relevant group of countries}}{\text{total capital minus U.S. capital in these countries}}$$

being approximately 1.17.

TABLE 1.—*Estimated percentages of U.S. capital to total capital and corresponding optimal U.S. tax rates on foreign-source investment income*

Country	U.S. direct investment as percent of total capital ¹	U.S. assets abroad ÷ U.S. direct investment ²	U.S. assets as % of total capital ³	Ratio of "optimal" tax on foreign-source income to tax on domestic income ⁴
Canada	14	1.90	26.6	1.36
United Kingdom	5	1.57	7.9	1.08
Belgium and Luxembourg	3	1.57	4.7	1.05
France	2	1.57	3.1	1.03
Germany	2	1.57	3.1	1.03
Italy	2	1.57	3.1	1.03
Netherlands	3	1.57	4.7	1.05
Denmark	1	1.57	1.6	1.02
Ireland	3	1.57	4.7	1.05
Norway	2	1.57	3.1	1.03
Spain	1	1.57	1.6	1.02
Sweden	1	1.57	1.6	1.02
Switzerland	3	1.57	4.7	1.05
Japan	1	5.69	5.7	1.06
Australia	5	2.95	14.8	1.17
New Zealand	2	2.95	5.9	1.06
South Africa	4	2.95	11.8	1.13
Argentina	3	2.75	8.3	1.09
Brazil	3	2.75	8.3	1.09
Chile	9	2.75	25	1.33
Colombia	4	2.75	11	1.12
Mexico	4	2.75	11	1.12
Panama	13	2.75	36	1.56
Peru	9	2.75	25	1.33
Venezuela	18	1.6	29	1.41
Jamaica	16	1.6	26	1.35
Liberia	21	1.6	34	1.52
Libya	37	1.6	59	2.43
Nigeria	1	2.95	3	1.03
Iran	5	2.95	14.8	1.17
India	1	2.95	3	1.04
Philippines	4	2.95	11.8	1.13

¹ Estimates are for 1966 and are taken from Howenstine (February 1977, table 4, p. 19).

² Derived from data for 1975 presented by Scholl (August 1976, table 3, p. 32). For all Western European countries the number employed is the aggregate for Western Europe; for Latin America and other Western Hemisphere countries (except for Venezuela and Jamaica, which are considered as if they were Western European), the estimate is from the aggregate for these countries; for Nigeria, Australia, New Zealand, and South Africa, the estimate is from the aggregate for "Other Foreign Countries"; and for Libya and Liberia, the Western European ratio was employed.

³ From Scholl (August 1976).

⁴ Total capital ÷ (Total capital—U.S. assets abroad).

Adjusting for Effect of Taxation on Saving

That the stock of U.S. capital is independent of its rate of return is an assumption that—in a world of one-sector economies—forces the optimal tax rate on foreign-source income to be at least as large as that on domestic income. Ture assumes that the U.S. stock of capital for investment at home or abroad depends on its after-tax rate of return. From an initial stationary equilibrium, a change in the tax structure that increases the after-tax rate of return to capital would result in a new higher equilibrium capital stock achieved linearly in 3 years. Thurow's assumption regarding the capital stock is equivalent to assuming that the stock adjusts instantaneously to its rate of return. In the event that a policy change increases both current and future income—as would be the case with Thurow's model—the appraisal of the outcome is independent of the discount rate. If some future incomes are increased and some diminished, the ranking of the outcome will depend on the discount rate.³

The effect that a change in the rate of return to capital, resulting from a change in the tax rate on foreign-source income, might have upon total capital stock and U.S. income from both domestic and foreign sources over time can be indicated by an example. The numbers employed are approximations of some of those relevant for describing the U.S. economy. Assume that both foreign and domestic income are taxed at the same effective rate—say 60 percent—and that the after-tax rate of return on income from both sources is 4 percent so that the before-tax rate is 10 percent. Let the tax rate on foreign-source income be reduced so that it is 59 percent, and assume that the rate of return before taxes is independent of U.S. investment abroad and therefore remains at 10 percent. In order that domestic investment yield an after-tax rate of return of 4.1 percent, it must yield a before-tax return of 10.25 percent; i.e., the cost of capital for domestic investment will be increased by 2.5 percent and there will be a loss in income of approximately 0.125 percent for each unit of capital moved from the United States abroad as a result of the tax change, *providing that the overall stock of capital for investment at home and abroad is independent of the tax structure*. This is a limiting case for some of the studies described earlier. With an elasticity of output with respect to capital of 0.25 and a level of employment

³ Hartman's outcomes are evaluated in terms of utility. He states that he did not wish to make intertemporal comparisons, i.e., to employ a utility function in which the amounts of commodities available at different times are the arguments. Consequently, he assumed that the capital stock was fixed.

of labor that is fixed, a U.S. domestic income of \$1.5 trillion would require a domestic capital stock of \$3.75 trillion. The reduction in the tax on foreign-source income would reduce employment of capital in the United States by 1.875 percent, moving about \$70 billion abroad and reducing income by about \$875 million annually.⁴

However, if the reduction in the overall tax rate—the weighted average rate on foreign-source and domestic investment income—induces a larger capital stock, this impact must also be included in the cost or benefit of the tax change. This larger capital stock is achieved at the expense of current consumption, so some kind of “utility” or “valuation” function must be introduced if scalar comparisons are to be made. It is highly unlikely that all reasonable people will concur in the valuation function to be employed in this analysis, but the function could be modified without drastically altering the conclusions. First, let income at any time be given the same value independent of its disposition between saving and consumption. This may seem unreasonable if individuals’ utilities depend upon their consumption, but is not so strange if it is assumed that incomes are optimally allocated between consumption and saving—given the terms, established by “nature” and the government, by which current consumption can be exchanged for future income. Second, future and current income may be aggregated by discounting future income. The appropriate discount structure is the subject of much debate. Where the discount rate is important, the effects of using different discount rates can be estimated. The adjustment in the capital stock resulting from a change in the rate of return to saving will take place over time. The more rapid the adjustment, the greater the importance of the outcome, for positive discount rates. Or, for a given adjustment, the importance of the outcome is inversely related to the discount rate.

In most growth models, the rate of growth is independent of the rate of saving and depends upon the steady-state rate of growth in employment and in the improvement of technology. The capital stock and, therefore, income per capita, however, does vary directly with the saving rate. If one compared only the steady-state incomes at various levels of saving induced by vari-

⁴ This estimate would be smaller if the rate of return to U.S. investment abroad declined with the amount of such investment. For example, if foreign elasticity of demand for U.S. capital were zero, the tax change would not move any capital. For an average elasticity of about minus 7 (the elasticity implied in the previous section), the approximate annual loss would be \$750 million.

ous tax structures, their rankings would be independent of the discount rate.

Estimates of the response of saving to its rate of return vary considerably. Most estimates of the elasticity of saving with respect to its rate of return have not exceeded 0.2, and some analyses that were conducted assume that saving was independent of its rate of return. However, a recent study by Boskin (1976) indicates that the elasticity is likely to be considerably higher than the estimates previously reported, 0.4 being a reasonable estimate.

Continuing with the numbers employed in the previous illustration in which it was assumed that the "before" (U.S.) tax rate of return on foreign-source income was 10 percent and the tax rate on income from both foreign and domestic investment was 60 percent, a tax change that increased the after-tax rate of return on investment from 4.0 to 4.1 percent would increase saving by 1 percent—if the elasticity of saving with respect to its rate of return were 0.4. This additional saving is assumed to have no impact on national income in the time period in which it is made, but it yields a rate of return of 10 percent. This is the same rate of return as would be obtained from any additional domestic income achieved by reducing foreign investment and increasing investment at home, so discounting is not required in order to obtain a ranking.

Assuming that saving is 10 percent of income, the tax change that would bring a yield of 4.1 percent rather than 4 percent on saving would raise the saving level to 10.1 percent of income, i.e. by \$1.5 billion and yield \$150 million annually. This is considerably less than the \$875 million loss in domestic income from the shift of capital abroad that otherwise would have been employed at home. Since the assumed elasticity of saving with respect to income is relatively large, no important differential between foreign-source and domestic tax rates seems warranted by the effect of taxation on saving.⁵ A similar inference probably also is warranted for other devices that reduce the overall tax cost of saving but distort the opportunities facing investors. Overall reduction in the cost of saving without distorting investment opportunities obviously is a preferred policy.

⁵ Because domestic employment varies with the real wage in Ture's model, the loss in domestic income from additional capital export would be larger than the number obtained here. Thurow assumes that additional capital export by the United States reduces saving abroad so that the total capital stock of the United States and the rest of the world would change by less than the estimate made here.

Effective U.S. Tax Rates on Foreign-Source Investment Income

In the previous section, it was noted that the impact of reduced taxes on saving did not appear to warrant any substantial difference between the tax rate on domestic income and that on foreign-source income net of foreign taxes levied. The fact that the marginal social return to the U.S. from foreign investment may be less than the marginal productivity of U.S. capital in the country in which such investment is made does not mean that capital export should be prohibited, but rather that tax rates on foreign-source income might be made higher than those on domestic income. If only direct foreign investment by the United States were affected by the tax treatment of foreign-source income relative to that of U.S. domestic income (i.e., if foreign investment in the United States and other forms of U.S. investment were held constant at 1975 levels), foreign-source income after deduction of foreign taxes paid should have been taxed at a rate 15 to 20 percent above the rate on domestic income.

A number of studies have presented summary descriptions of the effective tax rates on foreign-source and domestic income. Just as an aggregate production function for an economy or for one of two sectors of an economy cannot describe characteristics that may be of importance in the choice of economic policies, a single number describing an average effective tax rate on domestic capital income or foreign-source income obviously omits the differences in tax treatment accorded various taxpayers. These taxpayers choose different ways of producing, accounting for assets and income, etc., and these choices affect their tax liabilities and incomes and also obviously affect the ratios of tax to income.

Among the estimates of effective tax rates on foreign-source income are those of Leftwich (1974), who estimated that in 1970 tax rates of majority-owned foreign affiliates of U.S. corporations averaged 42.5 percent compared with an average of 38.5 percent for the parent companies and 33.2 percent for all U.S. corporations. The rate on income from developed countries was 38.6 percent, whereas that for developing countries was 49 percent. The ratio of the average effective rate on income of foreign affiliates to that of all U.S. corporations was thus 1.28. The ratio was 1.16 for developed countries, and 1.48 for developing countries. Leftwich's estimates are based on data obtained from a survey conducted by the Bureau of Economic Analysis, U.S. Department of Commerce.

Horst (1977a) has analyzed effective rates of taxation in five countries of corporation net income earned from investment in capital used for production and sale at home, from investment for export, and from foreign investment. For the United States, the statutory rate for income in excess of \$50,000 per year is 48 percent. Various allowances for depreciation, deferral of taxes, tax credits, etc. make the effective rates—the ratios of the present discounted value of future tax payments to their respective present discounted values of income—vary among firms. However, an average effective rate on foreign investment income and an average effective rate on domestic (nonexport) income can be estimated under various assumptions.

Horst estimates the effective tax rate for a typical domestic (U.S.) corporation to be 36.7 percent. For a foreign subsidiary subject to a foreign tax of 50 percent with dividends equal to one-half of after-tax income and a 15 percent withholding tax applicable to these dividends, the effective rate is estimated to be 50.9 percent—if the subsidiary has surplus foreign-tax credits overall. If there are deficit foreign-tax credits overall, the effective rate for a foreign subsidiary subject to a foreign tax as described above is 47.5 percent.

For a foreign subsidiary subject to a foreign tax rate of 10 percent and with surplus tax credits overall, the effective tax rate is zero. If there are deficit tax credits overall, the effective rate is 27.5 percent.

The estimated effective tax rate of 36.7 percent in the United States for a domestic corporation is only about 76 percent of the statutory rate of 48 percent because of the reduced tax liability brought about by accelerated depreciation and the investment tax credit (10 percent). A U.S. investor can use neither average depreciation range nor the investment tax credit in computing his tax liability on foreign-source income. Consequently, the basic tax rate, before allowance for foreign taxes and the value of deferment, applicable to foreign-source income is 48 percent. The effective rate of 47.5 percent for a “high-tax” foreign subsidiary with deficit tax credits overall is very near this 48 percent basic rate, and the 50.9 percent effective rate for a “high-tax” foreign subsidiary with surplus tax credits overall is about 6 percent above this basic rate. For a “low-tax” foreign subsidiary with surplus tax credits overall and instantaneous depreciation of capital assets for tax purposes, the effective tax rate is zero since there is no taxable income.

Horst's estimate of the effective rate for a U.S. domestic corporation is about 10 percent higher than that of Leftwich. Horst's "high-tax" foreign subsidiary pays rates about the same as those estimated by Leftwich for a majority-owned foreign affiliate in a developing country. The rate (47.5 percent) for a "high-tax" foreign subsidiary with overall surplus tax credits is 1.29 times the effective rate on domestic income, and that (50.9 percent) for a "high-tax" foreign subsidiary with surplus tax credits overall is 1.39 times the effective domestic rate. A subsidiary in a low-tax country with an overall deficit of tax credits pays an effective rate of 27.5 percent, 0.75 times the effective U.S. rate.

In another paper Horst (1977b) estimates the effective rate of global taxation of foreign subsidiary income for manufacturing subsidiaries to have been 42.8 percent in 1974. Direct foreign investment in manufacturing constituted about 43 percent of total direct investment in 1974, and its worldwide tax rate as estimated by Leftwich (1974) was 94 percent that of all investment. Hence, Horst's effective tax rate on foreign-source income appears to be about 124 percent of the domestic tax rate in 1974.

Because the effective tax rate depends upon choices made by the taxpayer with respect to depreciation, tax credits, dividends distribution, etc., one should interpret comparisons of effective tax rates with caution. However, assuming the numbers that have been employed here are reasonably accurate measures of the relevant variables and parameters, the major modification warranted in the taxing of foreign-source income would be to treat the taxes paid to other governments as deductions rather than credits. If maximization of U.S. income, subject to the limitations of the foreign-source income tax as a control device for capital exports and imports, is the criterion to be employed in formulating the foreign-source income tax code.

In the previous analysis, the conditionally optimal rate on foreign-source income was estimated at 115 to 120 percent of the domestic rate. The actual foreign-source rate was estimated at 120 to 130 percent of the domestic rate with much of the foreign taxes paid being credited against U.S. tax liabilities.

Taxation of Foreign-Source Income as an Instrument for Income Maximization

Whether foreign-source income taxation should have as its objective the maximization of U.S. national income seems questionable, given the many other government regulations that could be

altered in ways that could increase income by much more than could be achieved by a change in the foreign-source income tax code. Furthermore, the impact of foreign income taxation on income is not so clearly known that an optimal system of such taxation could be formulated—if maximum U.S. income were the goal.

The analysis presented in this paper and those analyses in the reviewed studies examined the effect of taxation on the stock of capital employed in the United States and the U.S.-owned capital employed abroad. Foreign-source income taxation was considered to affect U.S. direct investment abroad without having any impact upon the investment by foreigners in the United States or other forms of U.S. investment abroad. As can be noted from table 2, total U.S. assets abroad at the end of 1975, excluding U.S. official reserve assets, were estimated to be about \$288 billion, of which \$133 billion represented private direct foreign investment. Foreign assets in the United States totaled about \$210 billion, of which only about \$27 billion was direct investment. U.S. direct investment abroad is believed to be of much greater importance, both absolutely and relatively, than foreign direct investment in the United States because of the supposed superiority of U.S. technology and management. It is thought that this comparative advantage can best be utilized through establishing foreign affiliates.

Since foreign investment in the United States contributes to U.S. income in the same manner as does U.S. capital invested at home, regulations that decrease the export of U.S. capital but also reduce foreign investment in the United States may decrease U.S. income. I know of no studies relating foreign investment in the United States to the tax treatment of U.S. foreign-source income, and the terms granted U.S. investors abroad in tax treaties usually are related to the terms granted foreign investors in the United States rather than to the way in which the United States treats its foreign-source income for tax purposes. Nevertheless, if the United States pursued an avowed policy of restricting capital exports—through tax or other measures—other countries might react by imposing restraints on their citizens' investments in the United States. In the same manner that an optimal tariff structure in the absence of retaliation will not be the same as in the presence of retaliation, the best foreign-source tax structure based on the assumption that other countries will discourage investment in the United States as the U.S. discourages capital exports will not be the same as that which assumes that other coun-

TABLE 2.—*U.S. assets abroad and foreign assets in the United States at year end, 1975*¹

Type of asset	Billions of \$
U.S. assets abroad (excluding U.S. official reserve assets)	
U.S. gov't. loans and other long-term assets	41.8
Private direct investment abroad	133.2
Foreign bonds, privately held	25.6
Foreign stocks, privately held	9.6
Nonbank claims on unaffiliated foreigners	18.3
Bank claims	59.5
Total	287.9
Foreign assets in the United States	
Holdings of U.S. gov't. securities	67.5
Holdings of other U.S. gov't. liabilities	21.2
Direct foreign investment in the US.	26.7
Corporate and other private bonds	9.8
Corporate stocks	26.7
Other private loans	55.1
Other	3.5
Total	210.5

¹ Data are taken from Scholl (August 1976, p. 32, table 3).

tries ignore our capital export policy in formulating their own policies.

Diminishing direct private investment abroad by raising effective foreign-source income tax rates may serve to increase U.S. Government loans and grants as well as U.S. indirect private investment abroad. Indirect U.S. investment abroad, particularly the purchase of corporate stock, has been inhibited by the absence of well-organized markets for corporate shares in most countries outside of the United States. In a sense, the U.S. investor is placing his capital abroad by buying certain U.S. stocks rather than shares of foreign corporations. If U.S. foreign-source income were to be subject to higher tax rates, more lending abroad to foreign corporations by U.S. financial institutions might take place. U.S. technology and management could be used abroad through licensing agreements and management contracts.

The structure of private capital export that would emerge if there were higher tax rates on foreign-source income cannot be accurately predicted. The present arrangements probably are most profitable for the present tax structure, but reducing private direct foreign investment may have little effect on total private investment abroad because of the relative ease by which new arrangements can be found to place capital abroad.

It should be noted that capital employed by U.S. foreign affiliates has been treated in this analysis and in most others as if it were available for investment in the United States, even though such capital is obtained from foreign sources. Similarly, I have made no distinction between "real" capital and "financial" capital, although some others have talked only about "real" capital.

Aggregating capital obtained abroad with that obtained from U.S. sources is consistent with the notion that the tax revenues obtained from taxing foreign-source income are perfect substitutes for the revenues obtained from other tax sources. Schmidt (1975) contends that higher tax rates on foreign-source income would permit a lower rate on domestic income. He does not consider the possibility that even if the stock of U.S. capital were fixed, a reduction in foreign investment of one dollar might result in less than a dollar of additional domestic investment. Adding the capital obtained abroad to that obtained in the United States will have little effect on the estimated change in foreign-source income due to a tax change, if the cost of the capital is equal to its marginal productivity. The change in domestic income, however, would be smaller than the estimate obtained in the previous section.

Making no distinction between "real" and "financial" capital assumes that dollars obtained from all sources are used productively and that funds obtained from reinvested earnings and loans from banks, for example, are perfect substitutes in financing purchases of equipment, in holding inventories, or in maintaining an optimum cash balance. Direct foreign investment, indirect investment, and Government grants and loans draw from the same "pool" of capital as domestic investment and Government expenditure. If Government lends an additional dollar abroad, it must obtain that dollar from taxpayers (who may borrow to pay the tax) or from the sale of bonds. The Government bond (or the taxpayer's note) competes with corporate bonds and stocks, mortgages, personal notes, and the other financial instruments issued by private borrowers. This view of the various U.S. assets abroad is analagous to the "crowding out" theory of the effects of Government borrowing.

A final word on the inconsistency of restricting U.S. direct private investment abroad and the improvement in per capita incomes in some other countries, which is an avowed objective of U.S. foreign policy. Again, many actions of the U.S. Government affect incomes abroad, so that it would be asking too much of foreign-source tax policy to be consistent with not harming foreign countries, whereas trade and immigration policies are formu-

lated according to other criteria. Nevertheless, the U.S. Government, through foreign grants and loans, might at least partially offset the impact of the tax system. To date the purpose of most Government grants and loans is to alleviate the effects of the economic policies of the recipient governments rather than to make up for deficiencies in the operations of U.S. investors abroad. The Government has talked about increasing the flow of both private and Government capital to developing countries. Would those favoring tax policy designed to keep more capital in the United States also favor reducing Government grants and loans?

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COMMENT

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The complex array of U.S. legislation governing the taxation of income earned abroad can be compared with the standards of two competing philosophies—one instrumental, the other equitable. The instrumental philosophy evaluates tax policies in terms of national economic welfare:¹ "Tax foreign income so as to maximize economic benefits accruing to the United States." The equitable philosophy, on the other hand, evaluates tax policies in terms of horizontal equity:² "Tax all producers who compete in a single market equally."

The instrumental and equitable principles may be loosely associated, respectively, with the disciplines of economics and law. The strength of these associations should not be overrated, however, since an instrumental approach can be translated into legal doctrine, while an equitable approach requires economic analysis for its implementation.

Instrumental Taxation

Professor Brownlee's paper evaluates the considerations that should govern a sophisticated application of the instrumental approach to international tax questions. Briefly stated, these considerations include at least four elements:

1. The difference created by the tax wedge between the private and the social returns to capital (or, for that matter, between the private and social returns to know-how or labor);
2. The effect of changes in the private return to capital on the rate of capital accumulation in the United States;

¹ Economic welfare has several dimensions, and different dimensions may of course be emphasized by different advocates of the instrumental approach.

² Another aspect of the equitable philosophy—vertical equity between individual taxpayers who enjoy different levels of wealth or income—is not particularly relevant in the arena of international taxation.

The views expressed in this paper are those of the author and do not necessarily reflect the views of the Department of the Treasury.

3. The extent of U.S. power to affect the international terms of trade for goods and capital—either directly or indirectly—via the use of tariff and tax policy; and

4. The extent of retaliatory and avoidance measures that might be devised by foreign governments and corporations to avert the impact of tax policies adopted by the United States.

Brownlee's paper suggests that, from the U.S. viewpoint, the "conditionally optimal" combined rate of tax imposed by the United States and the foreign host government on the foreign earnings of an American corporation should range between 115 and 120 percent of the U.S. tax rate imposed on the domestic earnings of the same corporation. He contrasts this "conditionally optimal" rate with the combined rates that would prevail if the foreign tax credit were repealed and foreign taxes were allowed as a deduction instead. Without the foreign tax credit, the combined tax rate would range from 120 to 130 percent of U.S. tax rates now imposed on domestically earned corporate income. In other words, Brownlee suggests that the United States would be imposing *too high* a tax burden on the foreign income of U.S. corporations, if foreign taxes were treated as deductions rather than credits.

It should be pointed out that any estimate of the "conditionally optimal" rates will turn not only on the particular parameter estimates, but also on the range of instrumental considerations taken into account. For example, if only the tax wedge difference between the private and social return to capital were considered, the United States should allow a deduction but not a credit for foreign taxes paid, and thereby impose a much higher combined rate of tax on foreign than domestic corporate income. On the other hand, if the effect of this differential tax burden would indirectly prompt an outflow of portfolio capital from the United States, different conclusions might be reached on the appropriate level of instrumental taxation.

Equitable Taxation

An intellectual genealogy can be traced from the just price to the principle of horizontal tax equity.³ In the arena of international taxation, the concept of horizontal equity has traveled under the doctrinal banner of "avoiding double taxation," a banner that has inspired numerous statutory tax provisions in the

United States and abroad and a vast web of international tax treaties.

Broadly speaking, the goal of international tax specialists has been to equalize effective corporate tax rates both as between firms operating in different countries and as between firms operating in the same country but owned by shareholders residing in different countries. This broad goal would require harmony both in nominal tax rates and in the measurement of corporate income as between companies operating in different countries. Such harmony is far from practical realization. Accordingly, insofar as governments have been guided by equitable principles, they have had to decide whether to equalize tax rates as between production abroad and production at home, or as between producers of diverse shareholder nationality operating in the same country. Faced with this choice, the United States blinked and said "both." If the corporate tax rate is higher on domestic income than on foreign income then, after allowing for the foreign tax credit, the U.S. domestic tax rate ultimately prevails; if the rate is higher abroad, then a credit is allowed (roughly speaking) for only so much tax as the United States would have imposed on the same income if earned domestically, and thus the higher foreign rate prevails.⁴

Starting with these foundations, the U.S. tax law has witnessed numerous modifications. The resulting structure is far too complex to be described here. The important point, however, is that while the edifice was erected on equitable principles, instrumental considerations have influenced its subsequent design.

Tension Between Principles

The reconciliation of instrumental and equitable principles of taxation is a maddening exercise, attempted anew each year by Congress. In the arena of international taxation, the tension between these principles creates three basic conflicts.

First, while the instrumental approach is largely concerned with the distribution of tax revenues and economic benefits be-

³ The "scientific tariff" is another descendant of the just price. The scientific tariff was legislated in the United States by the Tariff Act of 1922 with the purpose of equating costs of production at home and abroad. Subject to ridicule by Gottfried Haberler and other scholars, the scientific tariff descended to the netherworld of academic economics, while retaining a tenacious hold on the congressional mind.

⁴ This brief outline neglects the many nuances of deferral, the overall limitation on the foreign tax credit, and other special features.

tween countries, the equitable approach concentrates on the equivalence of total tax burdens borne by competing producers.

Second, under the instrumental approach, the ratio between the tax imposed on foreign income and the tax imposed on domestic income might well vary from place to place (raising conflicts with the most-favored-nation principle) and even industry to industry. By contrast, under the equitable approach, a fixed relationship would be set between the taxation of foreign and domestic income, and that relationship would presumably be the same for investment in different foreign countries and different industries.

Finally, the two principles pose an inherent conflict between repose and change in the tax law. Equitable principles naturally stress repose. The history of the just price as applied to interest rate is instructive. The charging of interest on a money loan, defined as usury, was prohibited in England from approximately 1300 to 1545; an interest rate of 10 percent was tolerated from 1545 to 1624; an interest rate of 8 percent was legislated from 1624 to about 1652; and then the magic figure was lowered to 6 percent.⁵ In much the same spirit, believers in equitable taxation share a Walter Mitty dream of a tax reform to end all reforms. By contrast, the instrumental approach calls for frequent change in tax legislation to accommodate changes both in the economic landscape and in political realities.

Successive tax acts have gradually added instrumental goals to the basic equitable structure of the international tax system. The foreign tax credit has been subjected to progressively tighter limits, the deferral of taxes on income earned by foreign subsidiaries has been circumscribed, and in other ways foreign income earned by U.S. corporations has been subject to higher taxes than domestic income. Yet the Congress is a long distance from embracing a purely instrumental approach. It seems safe to predict that the tension between equitable and instrumental principles will occupy tax specialists for years to come.

⁵ W. Cunningham, *Growth of English Industry and Commerce in Modern Times, Part I: The Mercantile System*, 4th ed. Cambridge: University Press, 1907, pp. 153-154.