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PROTECTION ONCE AGAIN

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AND EFFECTIVE PROTECTION ONCE AGAIN**

by

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Abstract

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Domestic Resource Costs and Effective Protection Once Again

Bela Balassa and Daniel M. Schydrowsky

This note examines some questions relating to the use of the domestic resource cost (DRC) and the effective rate of protection (ERP) measures for project selection and for evaluating the cost of protection (promotion).^{1/} As regards the first-mentioned use of these measures, emphasis will be given to project evaluation under non-optimal policies that has particular importance for developing countries.

I

Let us assume initially that there are no external economies, market distortions, transportation costs, and international factor movements. Maximization of potential welfare^{2/} in a particular country will then require equating domestic product prices to marginal revenue from import substitution or exporting by the use of an optimal set of import tariffs and export taxes. If such measures are applied, the market prices of primary factors will equal their opportunity cost or shadow prices under optimal resource allocation (for short, first-best shadow prices) and a "small" project -- defined as one that does not affect relative prices -- will be evaluated at these prices. This is done by comparing returns to a primary factor (labor, capital, or foreign exchange) in the project to its price, when the outcome will be the same irrespective of whether the calculation is made for one or another primary factor (Chenery, 1961).

^{1/} Other uses of the effective protection measure are described elsewhere (Balassa, 1970).

^{2/} A generalized welfare function would also include income distribution and various non-economic objectives.

Nor will it matter whether we evaluate the project on the basis of processing costs in the last stage of fabrication or combine domestic costs at all stages. Thus, it will be immaterial whether we use a total or a direct measure of the domestic resource cost of saving or earning foreign exchange^{1/} in project selection. This is because, with the market prices of all primary factors being equal to their shadow prices, the cost of domestically produced inputs (the sum of payments to primary factors and the cost of imported inputs used in their manufacture) will equal their marginal cost in the world market.

Consider next the case when the stated assumptions are fulfilled but non-optimal tariffs and export taxes are applied. Market prices of primary factors will now differ from their first-best shadow prices which would need to be calculated from a general equilibrium model under the assumption of optimal policies. If, in evaluating projects, first-best shadow prices are used together with the observed input coefficients, the results will generally depend on the number of stages of fabrication considered, and total and direct DRC will not necessarily give the same results.

^{1/} The total measure is defined as the ratio of direct plus indirect domestic resource costs to the difference between the marginal revenue in terms of foreign exchange derived from the domestic production of the commodity in question and the marginal foreign exchange cost of its direct and indirect imported inputs. By comparison, the direct measure includes in the numerator only the domestic resource costs incurred at the last stage of fabrication while in the denominator the marginal foreign exchange value of all intermediate inputs, whether imported or produced domestically, is deducted from marginal foreign exchange revenue.

This will be apparent if we consider that the application of non-optimal tariffs and export taxes permits the domestic production of inputs that would be imported under optimal policies because they are produced domestically less efficiently than abroad. The domestic cost of producing these inputs, with labor and capital used in their manufacture valued at their first-best shadow prices, will now exceed their world market cost; should this not be the case, the inputs in question would have been produced in the domestic economy under optimal policies. A project that uses inputs produced domestically under protection then may be accepted if evaluated by using direct DRC but rejected if total DRC was the criterion applied.

The equality of the total and direct DRC measures under optimal resource allocation thus does not logically lead to the use of the former in a non-optimal situation. This is because, in applying the observed proportions of domestically produced and imported inputs in project evaluation,^{1/} one implicitly assumes that inefficiently produced inputs will be used in the project.

This was the thrust of the argument in our joint paper (Balassa-Schydrowsky, 1968) where we recommended the use of the effective protection measure in project evaluation,^{2/} ERP values all tradeable inputs at world market cost and thus

1/ For the application of such a procedure, see Bruno (1965, 1967).

2/ A similar position has recently been taken in Bacha and Taylor (1971).

measures the direct domestic resource cost of foreign exchange in a particular activity while the total measure combines domestic costs at various levels of fabrication. Rather than being a "red herring", the choice between the two alternative methods of project evaluation is of particular importance in developing countries that apply non-optimal protective measures. This problem is faced every day by national authorities and international agencies and, as we suggested in the paper cited above, they have to make appropriate assumptions as to the origin and the cost of the major inputs to be used in the project.

II

We have followed so far the conventional procedure that involves evaluating projects at first-best shadow prices of primary factors. Such a solution would be appropriate if optimal policies were indeed applied by the time the project is implemented. The conclusions will be different, however, if non-optimal policies persist and are reflected in the market prices of primary factors during the life of the project. If this were the case, as it is in most developing countries, consumers' and producers' decisions would continue to be based on (non-optimal) market prices as would all investment decisions not subject to project evaluation at first-best shadow prices.

In such a situation, first-best shadow prices will reflect neither the marginal social cost of inputs into the project nor

the marginal social utility of its output. In particular, to the extent that non-optimal policies entail a bias in favor of import substitution and against exports, the shadow price of foreign exchange derived for an optimal situation will understate the marginal social utility of foreign exchange and overstate its marginal social cost. Correspondingly, the net social benefits of saving or earning foreign exchange will be underestimated.

In making decisions on projects, one should therefore use second-best shadow prices reflecting marginal social costs and utilities under existing policies, with adjustment made for prospective policy changes. This would require constructing time series values of marginal social costs and utilities and deriving the shadow prices corresponding to them (Schydrowsky, 1968; Feldstein, 1970). To construct such values, it would be necessary to solve a general equilibrium system under present policies and simulate changes in policies in order to derive the time path of the relevant variables. Needless to say, such an effort would involve substantial data and estimation difficulties and it could be attempted in few developing countries.

If decisions extend to all potential projects, public and private, and if distortions are due only to protection, it may be suggested that in the absence of appropriate shadow prices projects be ranked by direct DRG (ERP). This would involve evaluating primary factors other than foreign exchange at their market prices, and using available investment funds in the higher ranking projects. This alternative is, however, based on the

implicit assumption that non-optimal measures of protection do not affect the relative prices of primary factors other than foreign exchange and the nonfulfillment of this assumption will introduce errors in estimation.

Further problems arise if only a single (or at most a few) projects are considered as is generally the case for an international agency and also for countries where a relatively small proportion of total investment takes place in the public sector or decision-making on projects is decentralized. Project evaluation will now necessitate estimating a cut-off point that indicates the highest direct DRC (ERP) at which the project will be accepted.

The shadow exchange rate calculated under the assumption that optimal policies are applied will not be appropriate for this purpose since, as noted above, it will express neither the social marginal utility nor the social marginal cost of foreign exchange under non-optimal policies. Rather, if the alternative to implementing the project is a reduction in investment or an increase in consumption, the social marginal utility of foreign exchange will provide the cut-off point. In turn, if the alternative is to lend the funds to the private investors, the cut-off point will be marginal direct DRC (ERP) in the private sector. Estimating the former requires a knowledge of marginal foreign expenditure proportions (Harberger, 1965; Schydrowsky, 1968) whereas the latter requires information on marginal input-output coefficients and prices in the private sector.

III

Additional considerations are introduced if we remove the assumptions of no transportation costs, no international factor movements, and perfect factor markets that have been retained so far. This will be done in examining the validity of an assertion by Anne Krueger that the direct DRC and ERP measures are equivalent only if "(1) all goods are traded (or tradeable); (2) there are no transportation costs; (3) factors of production are perfectly mobile within the domestic economy but perfectly immobile internationally; and (4) all domestic markets are perfectly competitive" (Krueger, 1971).

To begin with, assumption (1) is redundant since, as Krueger herself notes "in the absence of transport costs, all goods would be traded goods". As regards (2), Krueger incorrectly states that ERP would ignore the indirect costs of nontraded (or home) goods. Following Corden, in the joint article referred to above it was stated that a semi-input-output method be used in treating nontraded goods^{1/} and this method has been applied in the study of effective protection in seven countries referred to in the paper (Balassa, 1971a). In turn, in the literature on DRC, nontraded inputs have not

^{1/} "Tradables used directly or indirectly in the production of non-traded goods are considered together with tradables employed directly in the production process, while the sum of direct and indirect domestic factor content (value added) of non-traded goods is included with the cost of processing" (Balassa-Schydrowsky, 1968, p.354). Krueger misquotes us on this issue in claiming that "Balassa and Schydrowsky later stated that home goods should be treated as having zero tariffs and subtracted from both domestic and international value added".

been separately considered prior to Bruno's and Krueger's latest contributions.^{1/}

In our joint article, it was also stated that in the event of imperfect factor markets, adjustment should be made for the difference between the shadow and the market prices of primary factors. In the article, we have introduced the concept of the "social effective rate" -- as distinct from the private effective rate -- which reflects such adjustments. This distinction is reintroduced by Bruno but disregarded by Krueger, hence her incorrect conclusion as regards the non-equivalence of direct DRC and ERP in the event of factor market imperfections.

Nor have writers on the effective rate of protection neglected the implications of international capital movements. Basevi (1966) first calculated ERP in the event that capital is mobile and the implications of capital inflow into protected industries have also been noted (Balassa, 1971a, p.79). In a research project under way at the World Bank, calculations are being made on the costs and benefits of foreign investment, utilizing a formula similar to that suggested by Krueger except that allowance is made for undistributed profits of foreign companies as well as for taxes developing countries levy on

^{1/} It should be added that the existence of transportation costs will modify the calculations of DRC and ERP if a move from a non-optimal to an optimal situation leads to shifts from the import to the export category. If such a commodity is used as an input, one has to make a choice between using its c.i.f. or f.o.b. prices in project evaluation. Similar problems arise if commodity shifts from the import to the nontraded or from the nontraded to the export category.

foreign investors' income (Balassa, 1971b). Taking account of such taxes may well reverse Krueger's conclusion that "the loss from a given effective tariff will be greater if foreign-owned factors of production are employed in an industry and their earnings repatriated than if only domestic factors are employed in production".

IV

While the methods described provide a social cost-benefit analysis of new projects, they can also be applied to evaluate a completed project, a product or an industry and to estimate the cost of protection for the national economy as a whole. The main difference is that one now starts out with the existing allocation of resources and the standard of comparison is a situation under optimal policies.

We again face the question, however, if the analysis be made at the last stage of production of traded goods or in all previous stages combined.^{1/} ERP is concerned with the cost of protection at the last stage of fabrication of each product. With calculations made for intermediate as well as for final products, it thus provides information on the distribution of the cost of protection of a particular product among different stages of fabrication (Balassa, Guisinger and Schydlofsky, 1970). Moreover, aggregated over all industries, it will be the appropriate choice in estimating the cost of protection for the national

^{1/} This choice is unrelated to private ERP as Bruno seems to suggest since we are concerned here with the social cost of production.

economy as a whole (Balassa, 1971a). Social effective rates should be used for this purpose while private effective rates will provide an indication of the incentive effects of protection.

Note finally that in the event of quota protection or tariff redundancy percentage differences between domestic and foreign prices rather than tariff rates should be used in calculating ERP.^{1/} Moreover, as Bruno also observes, there is a variety of governmental incentives other than measures of protection. In the research project referred to above, account is taken of tax, credit, and government expenditure preferences in calculating the combined effects of the various incentive measures as well as their cost (Balassa, 1971b). This involved reformulating the effective protection concept and estimating the effective rate of subsidy governmental incentive measures provided to particular activities.

^{1/} This was first stated in Balassa-Schydrowsky, 1968 and the method was applied in the empirical studies referred to in that paper (Lewis, Guisinger, 1968 and Balassa, 1971a). There is no difference, therefore, between DRC and ERP on this point.

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