SHADOW PRICES FOR FACTORS AND NON-TRADED GOODS IN A TRADE-DISTORTED ECONOMY

Ross Parish

I am grateful to Bela Balassa, Max Corden, Al Harberger, and Maurice Scott for helpful discussions of the problems considered in this paper.

May 31, 1973

Shadow Prices for Factors and Non-Traded Goods in a Trade-Distorted Economy

This paper is concerned with the determination of appropriate shadow prices for primary factors of production and non-traded goods in an economy subject to trade distortions. The study's initial purpose was to elucidate and compare the conceptual bases of the valuation procedures recommended by the authors of the OECD Manual of Industrial Project Analysis in Developing Countries (Paris, 1968), and the UNIDO Guidelines for Project Evaluation (New York, 1972). I shall argue that these procedures are correct on certain assumptions but not generally correct; and that so far as conceptual accuracy is concerned, there is little to choose between the two rival appraisal methodologies.

In order to simplify the analysis, it is assumed that the country with which we are concerned is a price-taker in foreign markets, so that it confronts infinitely elastic supply curves for imports and demand curves for exports. As compared with the free-trade situation, its trade, production, and consumption patterns are distorted by tariffs or other trade taxes, or subsidies. If quantitative trade restrictions exist, it is assumed either that these remain unaffected as a result of implementing the project, or that they are relaxed (tightened) just sufficiently to meet the project's demand for (to compensate for the project's supply of) the goods concerned. These assumptions mean that all goods in the economy can be unambiguously classified as being either

fully-traded (traded for short) or non-traded, where a fully-traded good is defined as one that is in perfectly elastic supply to domestic consumers at the ruling domestic price, which equals the border price plus or minus any tariff, tax, or subsidy to which it may be subject. (Goods subject to rigid quantitative restrictions are classified as non-traded, while those subject to relaxable restrictions are treated as fully-traded).

So as to focus on the implications of trade distortions for shadow prices, it is assumed that perfect competition prevails within the economy and that resources are fully employed. Since I wish to make use of the concept of effective protection, I assume that traded inputs enter into production with fixed coefficients, while factor services and non-traded inputs, among which substitution is possible, combine to produce value added.

The term "shadow price" or "accounting price" means different things to different authors, but common to all usages is the notion that the shadow price should measure the social value or opportunity cost of a good or service produced by, or used in, an investment project; and that use of a shadow price is called for when the market price does not properly measure social value or cost. Differences exist concerning the context in which social values and costs should be measured - "context", in this connection, embracing both the social welfare function underlying the analysis, and the trade and production transformations that are deemed to be open to the society. With respect

to the latter, I assume that existing constraints embodied in the government's trade policies will be maintained; the shadow prices to be derived are thus "second-best" shadow prices, intended to describe the value or cost of an item in the existing situation, rather than its value if optimal trade policies were to be pursued. The welfare basis of my analysis is acceptance of consumers' sovereignty, and of the notion that a change is desirable if it meets the hypothetical compensation test. Relative social values are determined by consumers' willingness to pay, and the money value of costs and benefits are summed across individuals without regard to their deservedness on income-distributional grounds.

Social Opportunity Cost of a Factor

The cost of using a unit of a factor in a project is the social value of the resulting loss of production elsewhere in the economy. This loss may occur in the industry from which the factor is withdrawn, or, since factors are substitutable for each other at the margin, the loss - or part of it - may occur in some other industry that gives a quantity of a substitute resource to the industry first affected; or it may occur at several removes, via a chain of factor substitution.[1/] When the output foregone consists of non-traded consumer goods consumption will be affected directly on account of the reduced availability of the goods concerned. When production of a traded good is curtailed, however, consumption will not be directly affected, since the loss of production will be replaced by increased imports or reduced exports of the traded good. The direct consequence will therefore be a loss of foreign exchange. It is important to distinguish between direct-consumption and foreign-exchange costs, even though the latter will, in the final analysis, consist of consumption foregone. In order to measure the consumption cost of a loss of foreign exchange, it will be necessary to multiply the foreign exchange cost by a shadow rate[2/] of foreign exchange which measures the domestic value of the additional consumption made possible by the availability of an additional unit of foreign exchange. Alternatively, an element of direct consumption cost can be made

---

1/ In what follows, "a unit of a factor" is shorthand for "a unit of a factor or substitute resources of equivalent value". It is assumed that where factor substitution occurs, a dollar's worth of the withdrawn factor can be replaced by a dollar's worth of a substitute factor without affecting output.

2/ In the presence of trade distortions, the official exchange rate will generally not be a correct measure of the domestic value of foreign exchange.

comparable with an element of foreign exchange cost by multiplying the former by the reciprocal of the shadow exchange rate.

Consider first the consequences of withdrawing a unit of a factor from the production of a traded good. Output will be reduced but this loss will be offset to some extent by savings in the use of complementary inputs. The net loss is the marginal value-added product of the factor, which - on the usual assumptions - will be equal to the price of the factor. But the factor's price measures the loss of value added in domestic prices, whereas the actual loss sustained by the economy will be the value added at border prices. Hence the foreign exchange cost of withdrawing a unit of the factor from the production of the traded good is the factor's price multiplied by the ratio of the value added at border prices to the value added at domestic prices. Since the proportion by which the latter exceeds the former is defined as the effective rate of protection of the good, the conversion coefficient is $\frac{1}{1+E_t}$, where E_t is the effective rate of protection of the traded good. If the factor is withdrawn from the production of more than one traded good, the conversion coefficient becomes $\left(\frac{1}{1+E}\right)$, a weighted average of the $\frac{1}{1+E_t}$'s prevailing in the industries concerned, the weights reflecting the proportions in which resources are given up by each industry in order to satisfy the project's demand for the factor.

Next, consider the effects of withdrawing a unit of the factor from production of a non-traded consumer good. Again there will be a loss of output, but in this case the loss is a direct consumption cost since it will not be made good by increased imports. However, if traded inputs enter into the production of the non-traded good, reduced output of the latter will

mean reduced imports or increased exports of the former, and hence the direct consumption cost will be partially offset by a gain of foreign exchange. Since we wish to keep these elements separated, we cannot proceed as we did in the case of a traded good, and consider only the value added. Assuming as before that the price of the factor measures its marginal value-added product, it follows that the direct consumption cost will exceed the price of the factor, since consumers are denied not only the value added but also the traded inputs embodied in the final product. The prices which consumers pay for these embodied inputs are their domestic prices. Denoting by g the ratio of the domestic cost of traded inputs to the value added, the direct consumption cost of withdrawing a unit of the factor from the production of the non-traded good is the price of the factor multiplied by $(1+g)$.

The saving in foreign exchange associated with each unit reduction in value added in non-traded goods production is the value at border prices of the traded inputs no longer required. Since g measures the domestic value of these inputs, g multiplied by their border/domestic price ratio will measure their value at border prices. The discrepancy between domestic and border prices depends on the degree of nominal protection afforded these inputs. The conversion coefficient can therefore be written $g\left(\frac{1}{1+N}\right)$, where N is the nominal rate of protection given to the bundle of inputs entering into the production of the non-traded good.

When production of more than one non-traded good is affected by the project's demand for the factor, g and $g\left(\frac{1}{1+N}\right)$ are to be conceived of as weighted averages, the weight for any non-traded good industry being its proportionate contribution of resources to meet the project's demand for the factor.

To summarize: In an economy subject to trade distortions, the opportunity cost of using a factor in a project will consist of three elements:

1. The foreign exchange cost of replacing lost output of traded goods. This cost will be smaller, the higher the average rate of effective protection in the industries whose output is curtailed.
2. The direct consumption cost arising from reduced output of non-traded consumer goods.
3. A partially offseting gain of foreign exchange as a result of fewer traded inputs being required by those non-traded goods industries where output is curtailed. This gain will be greater, the greater the proportion of the cost of the relevant non-traded goods attributable to the traded inputs; and it will be smaller, the higher the level of protection of the traded inputs.

Conversion Coefficient for a Factor

Coefficients for converting the market price of a factor into its opportunity cost have been described above, for each of the three cost elements separately. These may be combined to form a single conversion coefficient, which will consist of a weighted sum of the separate coefficients, the weights reflecting the proportions in which resources (the factor or substitute factors) are withdrawn from traded-goods production, and from non-traded goods production. These proportions will be denoted by w and $(1-w)$ respectively. The foreign exchange and domestic consumption elements of costs have to be made comparable with one another by multiplying the former, or dividing the latter, by the shadow rate of foreign exchange -

denoted by s. If domestic value is the numeraire, the conversion coefficient is

$$V_d = \left[w\left(\frac{1}{1+E}\right)s + (1-w)(1+g) - (1-w)g\left(\frac{1}{1+N}\right)s\right]$$

Alternatively, if, like Little and Mirrlees, one chooses foreign exchange as the numeraire, the conversion coefficient is

$$V_f = \left[w\left(\frac{1}{1+E}\right) + (1-w)(1+g)\frac{1}{s} - (1-w)g\left(\frac{1}{1+N}\right)\right]$$

The three terms of each conversion coefficient correspond to the three cost elements described above.

These coefficients may be compared with those recommended in the Manual and the Guidelines.

It would appear that, in the absence of factor market imperfections, the UNIDO recommendation is to value the factor at its market price.[1/] The conversion coefficient is therefore 1.

1/ With regard to the valuation of labor, the UNIDO authors say as follows: "Having identified the relevant labour component of the inputs to a project, it remains to determine the ultimate consumer willingness to pay for a unit of labour services of each particular kind. Once again, if the necessary condition involving competitive markets and relatively small changes in supply can be assumed to hold, the market price, or wage rate, of a particular grade of labour may be taken as an appropriate measure of willingness to pay." (Guidelines, p. 60)

And regarding land:
"Where land markets are competitive, and where the project demand for land does not appreciably bid up its price, it may be thought at first glance that the market price of land (or the market rental rate) may be taken as the measure of the willingness to pay for the land (or its use). This would not be quite correct, since the interest rate one would wish to use is not the market rate but the social rate of discount." (Guidelines, p. 61)

Each of the quoted statements is immediately qualified to take account of imperfections which may exist in the markets for the factors concerned.

The error arising from use of the recommended rather than the correct coefficient is therefore

$$e_d = 1-w\left(\frac{1}{1+E}\right)s + (1-w)g\left(\frac{1}{1+N}\right)s - (1-w)(1+g)$$

which may be written

$$e_d = w\left[1 - \left(\frac{1}{1+E}\right)s\right] + (1-w)g\left[\left(\frac{1}{1+N}\right)s - 1\right]$$

The first source of error in the UNIDO procedure (the first term in the above expression) is its failure to revalue traded output foregone, by first deflating its domestic value by $\left(\frac{1}{1+E}\right)$ and then reflating it by s. If one of these two parameters is not very different from the reciprocal of the other, or if w is small, the error will be small. The second source of error is the failure to revalue in a similar fashion the traded inputs embodied in non-traded goods whose consumption is foregone. The total error will be smaller, the smaller are w and g, and the more nearly equal are $\left(\frac{1}{1+E}\right)$, $\left(\frac{1}{1+N}\right)$, and $\frac{1}{s}$. The limiting cases in which the error is zero are $w=g=o$, on the one hand, and $\left(\frac{1}{1+E}\right) = \left(\frac{1}{1+N}\right) = \frac{1}{s}$, on the other.

The Manual says virtually nothing about the valuation of land, and its discussion of the pricing of labor is so dominated by special assumptions about market imperfections that the procedure to be adopted in reasonably well-functioning labor markets remains unclear. However, the practitioners of the OECD procedures appear to have used two methods of valuing factor services (or of determining the value of their marginal product, in cases where this is but one element in the factor's shadow

price). One method - as used, for example, by Stern in valuing skilled and unskilled agricultural labor in Kenya[1/] - is to deflate the factor's price by the standard conversion factor - which we will denote by k - where the latter is some sort of weighted average of accounting to market price ratios of goods produced and consumed in the economy.[2/] The other method is to use a conversion coefficient specific to the particular factor concerned. Thus, in estimating the marginal product of agricultural labor in Malaysia, Little and Tipping[3/] guessed that such labor would be drawn from the production of padi, rubber, and miscellaneous (mainly non-traded) goods and services in the proportions 50 percent, 10 percent, and 40 percent, respectively. The resulting conversion coefficient was $(0.5\ R_p + 0.1\ R_r + 0.4\ k)$ where R_p and R_r are the border/domestic price ratios for padi and rubber and k is the standard conversion factor. The general form of this type of conversion coefficient is therefore $\left[w\left(\frac{1}{1+N}\right)_t + (1-w)k\right]$, where $\left(\frac{1}{1+N}\right)_t$ is a weighted average of the reciprocals of the rates of nominal protection existing in the traded goods industries from which the factor is expected to be withdrawn.

The error associated with the standard conversion factor method e_f, is given by

---

1/ OECD, An Appraisal of Tea Production on Small Holdings in Kenya, by N.H. Stern, (Paris, 1972).

2/ The nature of k is discussed further below.

3/ I.M.D. Little and D.G. Tipping, Estimation of Shadow Wages in Malaysia, Appendix A. (Mimeo).

$$e_f = k - w\left(\frac{1}{1+E}\right) - (1-w)(1+g)\frac{1}{s} + (1-w)\,g\left(\frac{1}{1+N}\right)$$

which may be written

$$e_f = k - \left[w\left(\frac{1}{1+E}\right)+(1-w)\frac{1}{s}\right] + (1-w)\,g\left[\left(\frac{1}{1+N}\right) - \frac{1}{s}\right]$$

The error arising from use of the second method, e'_f, is

$$e'_f = w\left[\left(\frac{1}{1+N}\right)_t - \left(\frac{1}{1+E}\right)_t\right] + (1-w)\left(k-\frac{1}{s}\right)+(1-w)\,g\left[\left(\frac{1}{1+N}\right) - \frac{1}{s}\right]$$

The third term in the above expressions is the same - allowing for the change in numeraire - as the second term in the expression for e_d : both the UNIDO approach and each variant of the OECD approach are subject to this source of error. The error involved in using k to convert the domestic values of both traded and non-traded production foregone into foreign exchange values depends on how close k is to an appropriately weighted average of the two correct coefficients, $\left(\frac{1}{1+E}\right)$ and $\frac{1}{s}$. Similarly the error involved in the second variant of the OECD method depends on the difference between average rates of nominal and effective protection in traded goods production, and on the difference between k and $\frac{1}{s}$.

Comparison of UNIDO and OECD Appraisal Methods

In comparing the UNIDO and OECD procedures, several points have to be borne in mind.

First, while the OECD method requires that k be estimated in order for factors to be valued, the UNIDO procedure does not require that s be estimated for this purpose: however, it does require that an estimate of s be made so as to revalue the foreign exchange costs and benefits of

traded goods in terms of domestic value. It is therefore desirable to compare the sensitivity of the two methods to errors in the estimation of s and k, but this can be done only by considering factor costs in conjunction with traded-good costs and benefits.

Second, some assumption has to be made concerning the relationship between s and k. While the Guidelines gives a clear account of the conceptual basis of s 1/, the Manual is rather vague concerning the nature of k and its manner of estimation. However, in a recent symposium Little and Mirrlees have stated that "the standard conversion factor is the reciprocal of a shadow exchange rate",2/ and it will simplify the comparison to assume that the shadow exchange rate of which it is the reciprocal is UNIDO's s.3/ Hence it will be assumed that $k = \frac{1}{s}$ and that $\hat{k} = \frac{1}{\hat{s}}$, where $\hat{}$ indicates an estimated value.

Third, what we wish to compare is the ability of the two methods to rank projects correctly, which is not necessarily the same thing as their ability to estimate the net benefit of a project with small absolute error.

Each method is subject to two sources of error: errors arising from the use of an estimated value of s or k, which may differ from the true value; and conceptual errors, arising from the use of an incorrect

---

1/ Guidelines, Chapter 16.

2/ I.M.D. Little and James Mirrlees, A Reply to Some Critics of the OECD Manual. Bulletin of the Oxford Institute of Economics and Statistics, 34:1 (February 1972). p. 154.

3/ Equally, it could be assumed that UNIDO's s is the reciprocal of OECD's k. I wish to beg the question of how s should be estimated, but to assume that the UNIDO and OECD procedures do not require conceptually different measures of the shadow price of foreign exchange.

conversion coefficient for factor services. Formula for the conceptual errors have been derived above. Substituting $\frac{1}{s}$ for k in the formula for the OECD standard-conversion-factor method, we have

$$e_f = \frac{1}{s} - w\left(\frac{1}{1+E}\right) - (1-w)(1+g)\frac{1}{s} + (1-w)g\left(\frac{1}{1+N}\right)$$

which may be compared with the UNIDO conceptual error

$$e_d = 1-w\left(\frac{1}{1+E}\right)s - (1-w)(1+g) + (1-w)g\left(\frac{1}{1+N}\right)s$$

It is evident that $e_d = e_f.s$: so that, when allowance is made for the difference in numeraire, the two errors are identical. Hence, given that $k = \frac{1}{s}$, there is nothing to choose between the two methods so far as conceptual accuracy in the valuation of factor services is concerned.

Turning now to the question of project ranking, let us suppose we wish to compare the net benefits of two projects, the outputs of each of which consist of traded goods, and the inputs of traded goods and the services of a factor. Denote the net output of traded goods (i.e. output minus traded-good inputs) valued at border prices at the official exchange rate by t_i, and the input of factor services, valued at market prices, by f_i. The net benefit of the i^{th} project is then either

$$B_i^d = t_i s - f_i V_d \qquad \text{(domestic value numeraire)}$$

or

$$B_i^f = t_i - f_i V_f \qquad \text{(foreign exchange numeraire)}$$

However, the estimated net benefits will be

$$\hat{B}_i^d = t_i \hat{s} - f_i \qquad \text{(UNIDO)}$$

or

$$\hat{B}^f = t_i - f_i/\hat{s} \qquad \text{(OECD)}$$

Because of errors in the estimation of s, and the failure to use the correct factor conversion coefficient, the two projects may be wrongly ranked, under either procedure. But suppose that, using the UNIDO method, we find that

$$t_1\hat{s} - f_1 > t_2\hat{s} - f_2 .$$

If must also be true that, had we used the OECD procedure, we could have found that

$$t_1 - f_1/\hat{s} > t_2 - f_2/\hat{s}$$

Hence, provided that $\hat{k} = \frac{1}{\hat{s}}$ and a common $\hat{s}$ applies to all projects being considered, the two procedures will always rank projects in the same order. In such cases there is nothing to choose between the two methods, even though one may generally be subject to larger absolute errors than the other. /For example, if t_i are generally larger than f_i, an error in the estimation of $\hat{s}$ will be magnified more by the UNIDO method than by the OECD procedure./ A common $\hat{s}$ will usually apply to a set of projects within a single country, except where s is expected to change over time and the projects have different time-distributions of net benefits.

If projects for different countries are being ranked, each project will have its own value of s, and it is no longer assured that the two appraisal methods will give the same ranking. The more reliable method will be the one subject to the smaller error arising from mistaken estimates of $\hat{s}$ - since, as has been shown, each method is subject to the same conceptual errors. If t_i are expected, on average to be larger than f_i, then the OECD method is likely to be more reliable than the UNIDO procedure, and vice versa.

Summary

If the inputs and outputs of project consist solely of - or can be decomposed into - traded goods and factor services, the UNIDO and OECD appraisal procedures are essentially equivalent so far as their basic logic is concerned. Each requires that an estimate be made of the shadow rate of foreign exchange, or its reciprocal, the standard conversion factor; and each values factor services inaccurately. If the source or sources of a factor used in a project can be identified, more accurate estimates of its opportunity cost can be made, under either the OECD or UNIDO approaches. Where the source is a traded-good industry the relevant conversion factor depends on the rate of effective protection prevailing in that industry, not the rate of nominal protection used by Little and Tipping. Where the source is a non-traded good industry which uses traded inputs, the conversion factor should allow for both the loss in consumption of the traded inputs embodied in the good, and the gain in foreign exchange resulting from the reduced use of these inputs. The error involved in neglecting this refinement will often be slight, but may be quite important in some cases.

Valuation of Non-Traded Goods

Project demand for a non-traded input can be met at the expense of existing consumption, or through increased production, or by some combination of both.[1/] If the supply of the good is quite inelastic, project demand will be satisfied entirely by depriving existing users of the good of the quantity required by the project. If the good is a final consumer good, it should be valued at its market price, or, if foreign exchange is the numeraire, at its market price times the standard conversion coefficient, since this is the price consumers would be willing to pay for each unit appropriated by the project.[2/] However, if the good is an intermediate good, the cost of using it in the project is reduced output of other goods in which it is embodied. Such a good is indistinguishable, in relevant respects, from a factor, and hence should be valued in the same way as a factor, as described above.

If the supply of the non-traded good is perfectly elastic, project demand for it will be met from increased production, and it should be valued at its marginal social cost of production (MSC). Because of the presence of trade distortions, its MSC will probably differ from its market supply price. Its MSC can be determined by

---

1/ Similarly, production of a non-traded output may allow increased consumption of the good, or reduced production of it elsewhere in the economy, or some combination of both. The ensuing discussion considers the case of a non-traded input, but the conclusions are applicable to non-traded outputs as well.

2/ Ignoring any increase in the price of the good engendered by its greater scarcity. If the project results in large changes in the availability of a good on the domestic market, consequent price changes should be taken into account.

decomposing it, via input-output analysis, into traded goods and factor services, and valuing the former at their border prices and the latter in the manner described above.

In most cases, the conditions of supply of non-traded goods will be intermediate between the two extremes discussed above, so that their use in a project will involve some increase in the total quantity supplied but some reduction in the supply available to the rest of the economy. There will thus be: (a) reduced output of goods in which the non-traded goods figure as inputs, (b) increased expenditure of foreign exchange on traded inputs used in producing them, and (c) reduced output of goods which compete with them for factor services. If the non-traded good is - like electricity, for example - both a final consumer good and producer good, there may also be (d) reduced final consumption of the good itself. Note also that items (a) and (c) can be further resolved into (i) increased expenditure (reduced earnings) of foreign exchange - as a result of reduced output of traded goods - and (ii) reduced consumption of non-traded goods. As in the case of factor services, the two elements of cost, foreign exchange and domestic consumption foregone, can be brought into relation with one another by the use of shadow rate of foreign exchange or the standard conversion coefficient.

The UNIDO Guidelines stresses that the valuation of any input depends upon whether it comes from reduced consumption or from increased production; and similarly that the value to be placed on an output

depends on whether it represents an addition to total consumption or substitutes for existing production. It also notes that, in the case of producer goods, the market price may misrepresent the consumption cost or benefit,[1/] and that "any input whose supply is increased in response to a project must be valued according to the resources used up in its production. If these resources include foreign exchange. . . then to that extent the relevant net input consists of foreign exchange." The use of input-output analysis in tracing out the impact of a project is mentioned but not stressed.

Two criticisms can be made of the UNIDO discussion. First, while it correctly stresses that the valuation of a good depends on whether adjustment takes place on the demand margin or on the supply margin, it implies that typically the situation is either the one or the other, rather than a combination of both. Second, in the case studies reported in the Guidelines, non-traded goods are invariably valued at their market prices thus suggesting, despite the many caveats in the text, that this procedure will usually be satisfactory.

In the OECD approach, non-traded goods are valued, wherever possible, in accordance with their marginal social cost. Ideally, this involves their decomposition by means of input-output analysis into traded goods and factor services; however, more rough-and-ready methods are also recommended where input-output data are not available, or where the item is a small one. These short-cut methods include deflation of the market price by the standard conversion factor, or by the

---

1/ "In principle, the aggregate consumption costs involve not only the immediate would-be purchaser's willingness to pay, but also the excess of willingness to pay over actual payment for all purchasers further down the line." (Guidelines, p. 56)

shadow/market price ratio for a similar good. While the writers of the Manual recognize that the MSC does not necessarily represent the good's social value if it is not the market-equilibriating price, they argue that such instances are often temporary phenomena which provide insufficient excuse for departing from MSC as a measure of opportunity cost.1/

Routine use of the decomposition method implies, strictly speaking, that all non-traded goods are in infinitely elastic supply, i.e., produceable at constant cost - not a very plausible assumption. Alternatively, the procedure may be rationalized on the pragmatic grounds that adjustments are more likely to occur on the supply margin than on the demand margin, and that to value non-traded goods routinely at their MSC is less conducive of error than to value them as a matter of course at their MSV. A third possible defense of the procedure is that - at least in the case of producer goods - MSC can be estimated more accurately than MSV. But the greater accuracy of estimates based on input-output analysis may be more apparent than real, given the errors to which the technique is subject; and, in any case, greater accuracy is poor compensation for irrelevancy, if MSV is the more relevant measure.

Valuing non-traded goods at their market prices (domestic value numeraire) is exactly equivalent to valuing them at their market price deflated by the standard conversion coefficient (foreign exchange numeraire) - as was shown above in the discussion of factor valuation.

1/ Manual, p. 153

Each procedure is correct if adjustment takes place on the demand margin and if (a) the good is a final consumer good, or (b) it enters as an input into industries receiving zero effective protection.

Summary

No new principles are involved in valuing non-traded goods: if their supply is fixed, they are valued in the same way as a factor; if they are producible at constant cost, they can be valued by valuing the traded inputs and factor services that enter into their production; in intermediate cases, both methods should be used, and an intermediate value taken.