III. Methodology for Estimating Tax Discrimination

Three important steps

An analysis of tax discrimination of domestic, *vis-à-vis,* foreign products owing to domestic trade taxes requires three steps. First, an identification of the underlying factors contributing to such discrimination; second, choosing a set of commodities where the probability of such discrimination is high; and third, estimating the extent of the net tax disadvantage to either the domestic or the foreign industry.

The tax disadvantage (advantage) to the domestic producer in respect of a commodity, owing to domestic trade taxes, can be estimated in two ways. First, in terms of shortfall (excess) in tax burden on imports over that on the domestic produce. Second, in terms of the contribution of such domestic taxes to the ERP provided through protective customs duties. Under the second methodology, if ERP for a commodity comes down from 15 per cent without domestic trade taxes to 10 per cent with domestic trade taxes, the domestic trade taxes may be said to discriminate against domestic producers by 5 percentage points. However, discrimination against domestic producers *per se* does not lead to the conclusion that such producers are at a net disadvantage, *vis-à-vis,* foreign producers, as long as the ERP is positive.

## Identification of factors leading to tax discrimination

The factors resulting in tax discrimination of domestic products have to be found in the structure of taxes – customs duties and domestic trade taxes – falling on imports and/or domestic products. Some of the imports may escape domestic trade taxes or get taxed at lower rates than those applicable to domestic products. For example, direct imports of machinery and equipment by manufacturers are subject to a special additional duty (SAD) in lieu of sales tax at the rate not exceeding 4 per cent, while purchase of the same from a domestic manufacturer attracts a substantially higher rate of sales tax in some states, like Maharashtra.

Who pays what taxes on domestic products

The taxes applicable to domestic products by type of manufacturers are given in Table III.1. OCT is payable on all products, irrespective of whether it is produced domestically or imported from abroad. Applicability of UED and ST, however, depends on the nature of the producer and the seller.

Manufacturers can be divided into two types: (i) those registered for both UED and ST, and (ii) those not registered for UED or both UED and ST (Figure 1).[17,18] Output of domestic manufacturers registered for UED and ST, when sold domestically, is subject to all taxes: UED, ST and Octroi (wherever applicable), irrespective of subsequent sales by registered or unregistered traders. Exports are not subject to UED and ST. However, these are not fully relieved of input taxation resulting from domestic trade taxes.

Figure 1
Types of Manufacturers and Domestic Trade Taxes

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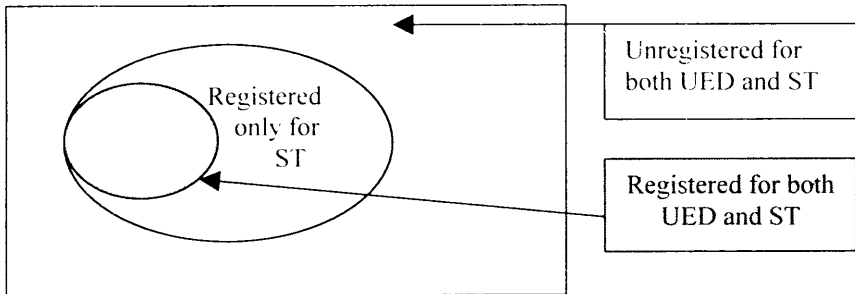
[17] Medium and large manufacturers with annual turnover above Rs.50 lakh are subject to UED. All products, except tobacco, textiles, petroleum products, cinematographic films and matches, are covered under MODVAT. Small-scale manufacturers – defined as units with annual turnover not exceeding Rs. 3 crore – can go for compounded levy for their annual turnover up to Rs.1 crore, instead of availing MODVAT credit.

[18] Manufacturers, wholesalers and retail traders with annual turnover in excess of a specified limit are required to register for ST in their respective states. The limit varies across states. Only manufacturers are subject to UED registration, ST registration requirement applies to both manufacturers and traders.

Table III.1
Major Domestic Trade Taxes Applicable to Domestic Products

Type of domestic producer	Domestic trade tax		
	UED	ST	OCT
Selling in the domestic market			
a. Registered manufacturers[1]	Yes	Yes	Yes
b. Manufacturers not registered			
i) For UED only	No	Yes	Yes
ii) For both UED and ST[2] with sales to			
--- Registered traders[3]	No	Yes	Yes
--- Unregistered traders[3]	No	No	Yes
Selling outside			
Exporters	No	No	Yes

[1] Manufacturers registered for both UED and ST.
[2] A product sold to a person in another state is subject to CST while that sent on consignment or branch transfer is neither subject to GST nor CST.
[3] Traders can be registered only for ST.

Products of manufacturers not registered for both UED and ST, attract ST and OCT (wherever applicable) when registered traders purchase them. While products exported to other states are not subject to GST of the exporting state, they attract CST in the exporting state. A product sent on a consignment or branch transfer is neither subject to GST nor CST, but is accompanied by a higher retention of GST on inputs, in Maharashtra. In general, domestic products suffer some input taxation because of less-

than-full set off for the taxes paid on inputs (domestic or imported). [19]

Who pays what taxes on imported products?

Taxes payable on imports by various types of importers are given in table III.2. OCT is payable on all products, irrespective of who produces it domestically or who imports from abroad. ST, on the other hand, applies to only goods imported by registered traders.

Table III.2

Taxes / Duties Applicable to Imported Products

Type of importer	Tax					
	BCD	SD	CVD	SAD	ST	OCT
a. Unregistered manufacturers	Yes	Yes	Yes	Yes	No	Yes
b. Registered manufacturers	Yes	Yes	Yes	Yes	No	Yes
c. Unregistered traders	Yes	Yes	Yes	Yes	No	Yes
d. Registered traders	Yes	Yes	Yes	No	Yes	Yes
e. Exporters	No	No	No	No	No	Yes

Note: Imports by final consumers (i. e., baggage imports) are subject to a composite duty rate of 50 per cent.

Manufacturers (both unregistered and registered) and unregistered traders are liable to pay BCD, SD, CVD, and SAD on their imports. The levy of SAD was motivated by the limitation imposed on domestic products because of ST that does not apply to imports by manufacturers and unregistered traders. Thus, while imports by registered traders attract

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[19] Only manufacturers registered for UED can get a set off of 95 per cent of the duty paid on inputs. This set off, however, is not available to the other users of the product. Similarly, when a product is sold to a manufacturer registered for sales tax, the burden of sales tax can be reduced by the set off available to the manufacturer, that is, the extent of sales tax in excess of retention rate of sales tax paid on inputs. This set off, however, is not available to other manufacturers and traders.

BCD, SD, and CVD, they are exempt of SAD. Imports by exporters do not attract BCD, SD, CVD, and SAD.

Choice of specific commodities

Products subject to high rates of customs duty may continue to enjoy a positive degree of protection in spite of discriminatory higher burden of domestic trade taxes on domestic products. However, products subject to low rates of customs duty may suffer negative protection because of such discriminatory domestic taxes. Thus, to select commodities where the probability of a net tax disadvantage to the domestic producers is high, we focus on the products subject to *nil* or low rate of customs duties. Some of these products are subject to a lower rate of CVD than the corresponding rate of UED and some are exempt of SAD.

Two alternative methods of estimating net tax disadvantage

Two alternative methods of estimating the net tax advantage or disadvantage for domestic producers, *vis-à-vis*, foreign producers have been followed: (i) calculation of ERP by taking account of taxes on output as well as inputs, and (ii) calculation of the composite duty rate (covering BCD, UED, CVD, GST and OCT) on domestic products and on imported products and a comparison of the two.

Calculation of ERP

The standard definition of ERP is the proportional change in value added owing to a particular tax regime. Following Corden (1971), for the jth activity, ERP (for brevity, referred to as E_j) can be expressed as:

$$E_j = \frac{v_j{'} - v_j}{v_j} \tag{3.1}$$

where v_j = value added in the process of production of a unit of jth commodity in the absence of taxes and trade restrictions; and
         $v_j{'}$ = value added in the process of production of a unit of jth commodity in the presence of taxes.

In general, for v_j and $v_j' >0$, $E_j>0$ implies positive protection, and $E_j<0$ implies a negative degree of protection. If v_j is negative and v_j' positive, it is clearly a case of positive degree of protection, and E_j takes a value less than -1. So, under such a scenario, a negative value of E_j should be taken to imply a positive degree of protection due to the tax under consideration.

A tax regime impacts value added not only through the tax on output but also taxes on inputs. Thus, the quantification of the effect of a tax regime on value added requires information on the input-output coefficients. Let a_{ij} represent value of the ith commodity used in the production of a rupee worth of the jth commodity. In the absence of any taxes, v_j can be expressed as:

$$v_j = 1 - \Sigma\, a_{ij} \qquad\qquad i = 1,2,......,n \qquad\qquad (3.2)$$

Given the complexities of the Indian tax regime, under the most general case, value added with taxes, v_j', can be written as:

$$v_j' = \frac{(1+t_j)(1+d_j^{mr})(1+d_j^{m})}{(1+d_j^{dr})(1+d_j^{d})} - \Sigma a_{ij}(1+t_i)[(1+d_i^{mr})(1+d_i^{m})(1+d_i^{dm}) - \alpha d_i^{mr}] \quad (3.3)$$

where t_i = customs duty on the i-th commodity,

d_i^{mr} = partly rebatable CVD on the customs duty inclusive value of imports of the i-th commodity,

d_i^{m} = non-rebatable domestic trade tax, namely SAD, on the customs duty and CVD inclusive value of imports of the i-th commodity,

d_i^{dr} = partly rebatable domestic trade tax, namely UED, on domestic production of the i-th commodity,

d_i^{d} = non-rebatable domestic trade tax, namely ST, on the domestic production of the i-th commodity,

d_i^{dm} = non-rebatable domestic trade tax, namely OCT, on the customs duty inclusive value of imports as well as the other tax inclusive value of domestic production of the i-th commodity, and

α = fraction of d_i^{mr} that is rebatable when the i-th commodity is used as an input.

The expression (3.3) can be derived as follows. A rupee worth of import of the j-th good. after payment of taxes. costs Rs. $(1+t_j)(1+d_j^{mr})(1+d_j^{m})(1+d_j^{dm})$. Assuming no quantitative restrictions on imports and the law of one price. for every one rupee worth of the j-th good. domestic producers will get Rs. $(1+t_j)(1+d_j^{mr})(1+d_j^{m})(1+d_j^{dm})$ in gross tax-inclusive terms. With domestic trade taxes d_j^{dr}. d_i^{d}. and d_i^{dm} the receipt of the domestic producer – net of taxes – will equal the first term on the right-hand side of (3.3). On the other hand. the i-th input (a_{ij}) required to produce one rupee worth of the j-th good. will cost Rs. $[a_{ij}(1+t_i)[(1+d_i^{mr})(1+d_i^{m})(1+d_i^{dm})- \alpha d_i^{mr}]$. The second term on the left-hand side of (3.3) is the sum of all the input costs in the production of the j-th good. The difference between the two terms on the left-hand side of (3.3) evidently is the value added in the production of the j-th good.

Now. the ERP for the j-th commodity is given by

$$E_j = \frac{\frac{(1+t_j)(1+d_j^{mr})(1+d_j^{m})}{(1+d_j^{dr})(1+d_j^{d})} - \Sigma a_{ij}(1+t_i)[(1+d_i^{mr})(1+d_i^{m})(1+d_i^{dm})-\alpha d_i^{mr}]}{(1 - \Sigma a_{ij})} - 1 \quad (3.4)$$

As is well known. the calculation of ERP (as in (3.4)) assumes unchanged technology and hence unchanged input-output coefficient a_{ij} in the two regimes with and without taxes. The ERPs for 60 broad commodity groups have been calculated with the help of the 60 by 60 input-output matrix. Furthermore. for expositional purposes. to quantify the contribution of different taxes to ERP. the following has been calculated in a sequential manner:

$E_j^1 = E_j$ for $d_i^{dr} = d_i^{mr} = d_i^d = d_i^m = d_i^{dm} = 0$ for all i, (i.e., with only CD)

$E_j^2 = E_j$ for $d_i^d = d_i^m = d_i^{dm} = 0$ for all i, (i.e., with only CD, UED and CVD)

$E_j^3 = E_j$ for $d_i^m = d_i^{dm} = 0$ for all i, (i.e., with only CD, UED, CVD and ST)

$E_j^4 = E_j$ for $d_i^{dm} = 0$ for all i, (i.e., with only CD, UED, CVD, ST and SAD)

We interpret E_j^1 as the <u>contribution of customs duty</u> to ERP. The <u>contribution of UED and CVD</u> to ERP is measured as $E_j^2 - E_j^1$. Similarly, $E_j^3 - E_j^2$, $E_j^4 - E_j^3$ and $E_j^4 - E_j^2$ measure the <u>contribution of ST, SAD and jointly of ST and SAD</u>, respectively. E gives the net ERP while $E_j - E_j^2$ gives the joint contribution of ST, SAD and OCT. $E_j - E_j^1$ gives the contribution of <u>domestic trade taxes</u> to ERP.

Calculation of composite duty rates on imports and domestic products

Composite duty rates neglect the burden of taxes on a commodity because of taxation of inputs. In the absence of information on input intensity of various commodities, the composite duty rate constitutes a short-cut approximation for computing the total indirect tax rate on a commodity. Such composite rates on imports and domestic products can be computed by taking into account customs duties and domestic trade taxes for imports, and domestic trade taxes for domestic products.

For imports, total indirect tax payment is given by

$$T^I = WP(1+BCD+SD)(1+CVD)(1+SAD)(1+ST)(1+OCT) - WP$$
$$-WP(1+BCD+SD)(\alpha CVD)$$
$$- WP(1+BCD+SD)(1+CVD)(1+SAD)(ST-ST^*) \qquad (3.5)$$

where WP is the world price of the product and $ST^* (\leq ST)$ is the retention

rate of sales tax when a commodity is used as an input. On the right hand side, the first term gives the price paid by the buyer, while the second, third and fourth terms give the world price paid to the international producer (WP), the rebate on CVD and the sales tax set off, respectively.[20] Note that, α, the rebate on CVD is zero for all except manufacturers registered for UED. This rebate, which was 95 per cent for registered manufacturers during 1998-99 has been restored to 100 per cent in the recent 1999-2000 budget. The expression can be simplified to

$$
\begin{aligned}
T^I = \quad & WP(1+BCD+SD)(1+CVD)(1+SAD)(1+ST)OCT \\
& + WP(1+BCD+SD)(1+CVD)(1+SAD)ST^* \\
& + WP(1+BCD+SD)(1+CVD)SAD \\
& + WP(1+BCD+SD)((1-\alpha)CVD) + WP(BCD+SD) \qquad (3.6)
\end{aligned}
$$

The five terms on the right hand side of (3.6) capture the contributions of unrebated octroi, retained sales tax (ST*), SAD, CVD and customs duty, respectively.

Similarly, for domestic products, the total indirect tax payment is given by

$$
\begin{aligned}
T^D = \quad & DP(1+UED)(1+ST)(1+OCT) - DP \\
& - DP(\alpha\,UED) - DP(1+UED)(ST-ST^*) \qquad (3.7)
\end{aligned}
$$

which can be simplified to

$$
\begin{aligned}
T^D = \quad & DP(1+UED)(1+ST)OCT + DP(1+UED)ST^* \\
& + DP((1-\alpha)UED) \qquad (3.8)
\end{aligned}
$$

The three terms on the right hand side of (3.8) can be interpreted as the contributions of unrebated octroi, ST* and UED, respectively.

The composite duty rates on imports (C^I) and on domestic products (C^D) can be constructed as:

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[20] With effect from 1998-99, a provision was made to disallow MODVAT credit to the extent of 5 per cent.

$$C^I = T^I / WP$$

$$
\begin{aligned}
= \ & (1+BCD+SD)(1+CVD)(1+SAD)(1+ST)\ OCT \\
& + (1+BCD+SD)(1+CVD)\ (1+SAD)\ ST^* \\
& + (1+BCD+SD)(1+CVD)\ SAD \\
& + (1 + BCD + SD)((1 - \alpha)\ CVD)\ + \ (BCD+SD)
\end{aligned}
\tag{3.9}
$$

and,

$$C^D = T^D / DP$$
$$= (1+UED)(1+ST)\ OCT\ + \ (1+UED)\ ST^*\ + \ ((1 - \alpha)\ UED) \tag{3.10}$$

A comparison of C^I and C^D can reveal discriminatory tax treatment of foreign or domestic products, if any, due to all indirect taxes (including customs duty), as follows:

$$C^I_I = C^D_D =>\quad \text{Neutrality of indirect taxes}$$
$$C^I_I > C^D_D =>\quad \text{Discrimination in favour of domestic products}$$
$$C^I < C^D =>\quad \text{Discrimination against domestic products}$$

Now, because the applicability of SAD and ST differs across registered and unregistered traders and across registered and unregistered manufacturers, there are four different possibilities enumerated in table III.3 that need to be considered. For example, for imported products, registered traders do not come under the purview of SAD, while registered manufacturers and all others apart from registered traders do not have to pay ST.

Table III.3
Four Duty Regimes for Imports

Type of manufacturer	Means of acquiring imported input	
	Importing directly	Purchase from an importer (registered trader)
Registered	$ST = ST^* = 0, \alpha = 0.95$	$SAD = 0, \alpha = 0.95$
Unregistered	$ST = ST^* = 0, \alpha = 0$	$SAD = 0, \alpha = 0$

Note: All taxes other than those indicated as *zeros* apply.

Furthermore, given that OCT is limited to a few areas in only six states –
for example, even in Maharashtra, it is limited to twenty-two
municipalities – it is useful to consider two alternative cases, namely with
no OCT and with OCT. Combining the four cases of Table III.3 with the
two alternatives of OCT = 0, and OCT ≠ 0, we get eight possibilities. Of
these eight, we concentrate on four:

Case 1   ST = ST* = 0, α = 0.95   registered manufacturers
importing directly in an area
with octroi;

Case 2   SAD = 0, α = 0.95   registered manufacturers
importing through a
registered trader in an area
with octroi;

Case 3   ST = ST* = 0, α = 0.95,   registered manufacturers
OCT = 0   importing directly in an area
without octroi; and

Case 4   SAD = 0, α = 0.95,   registered manufacturers
OCT = 0   importing through a
registered trader in an area
without octroi.

The composite duty rates on imports for cases 1-4 are as follows:

$$C^{11} = (1+BCD+SD)(1+CVD)(1+SAD)\ OCT$$
$$+ (1+BCD+SD)(1+CVD)\ SAD$$
$$+ (1 + BCD + SD)(0.05\ CVD) + (BCD+SD) \qquad (3.11)$$

$$C^{12} = (1+BCD+SD)(1+CVD)(1+ST)\ OCT$$
$$+ (1+BCD+SD)(1+CVD)\ ST*$$
$$+ (1 + BCD + SD)(0.05\ CVD) + (BCD+SD) \qquad (3.12)$$

$$C^{13} = (1+BCD+SD)(1+CVD)\ SAD$$
$$+ (1 + BCD + SD)(0.05\ CVD) + (BCD+SD),\ \text{and} \qquad (3.13)$$

$$C^{I4} = (1+BCD+SD)(1+CVD) \; ST^*.$$
$$+ (1 + BCD + SD)(0.05 \; CVD) + (BCD+SD) \qquad (3.14)$$

Comparable composite rates of indirect taxes on a domestic supplier of the good are given by

$$C^{D1\&2} = (1+UED)(1+ST) \; OCT + (1+UED)ST^* + 0.05 \; UED, \text{ and } (3.15)$$

$$C^{D3\&4} = (1+UED) \; ST^* + 0.05 \; UED \qquad (3.16)$$

A comparison of C^{I1} and C^{I2} with $C^{D1\&2}$, and C^{I3} and C^{I4} with $C^{D3\&4}$ can indicate discrimination due to indirect taxes – including customs – with and without octroi, respectively. The excess of composite duty rates on imports over that of domestic products in the four alternative cases are given by:

$$e^1 = C^{I1} - C^{D1\&2}$$
$$= [(1+BCD+SD)(1+CVD)(1+SAD) - (1+UED)(1+ST)] \; OCT$$
$$+ [(1+BCD+SD)(1+CVD) \; SAD - (1+UED) \; ST^*]$$
$$+ 0.05 \; [(1+BCD+SD)(CVD) - UED] + (BCD+SD) \qquad (3.17)$$

$$e^2 = C^{I2} - C^{D1\&2}$$
$$= [(1+BCD+SD)(1+CVD)(1+ST) - (1+UED)(1+ST)] \; OCT$$
$$+ [(1+BCD+SD)(1+CVD) - (1+UED)] \; ST^*$$
$$+ 0.05 \; [(1+BCD+SD)(CVD) - UED] + (BCD+SD) \qquad (3.18)$$

$$e^3 = C^{I3} - C^{D3\&4}$$
$$= [(1+BCD+SD)(1+CVD) \; SAD - (1+UED) \; ST^*]$$
$$+ 0.05 \; [(1+BCD+SD)(CVD) - UED] + (BCD+SD), \text{ and } (3.19)$$

$$e^4 = C^{I4} - C^{D3\&4}$$
$$[(1+BCD+SD)(1+CVD) - (1+UED)] \; ST^*$$
$$+ 0.05 \; [(1+BCD+SD)(CVD) - UED] + (BCD+SD) \qquad (3.20)$$