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Are Export Duties Optimal in Developing Countries?:
Some Supply-Side Considerations

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## Abstract

Supply-side economists have stressed the negative effects of high
and progressive taxes on the incentives to work, save, and invest.  A
straightforward application of supply-side economics to export taxation
in developing countries would call for the reduction of high implicit
and explicit export taxes to increase the level of exports.  In fact,
from the point of view of efficient allocation of world resources, the
first-best recommendation being to remove all restrictions on world
trade, the most preferable policy would be to remove export taxes
altogether.  The supply-side prescription of lowering export taxes
would, thus, be quite consistent with the economic efficiency criterion
for the use of world resources.

From the point of view of a given developing country, however, which
has few tax bases it can tap and which has limited tax administration
capacity and large revenue needs to finance social and economic develop-
ment, it might be argued that there is some justification for the levy
of export duties:  First, possessing market power in certain commodity
markets, it may be tempted to increase its economic well-being, at the
expense of the importing countries, by imposing an export duty (optimal
export duty argument).  Second, it might want to absorb producer "wind-
fall" profits resulting from high world prices through an export tax.
Finally, export taxes may be levied in the short run in an attempt to
stabilize producers' incomes over time.

The paper reaches three main conclusions.  First, in most of the
developing countries analyzed in the paper the actual level of export
taxation is higher than the level that can be considered even country
optimal, let alone world optimal.  This result is compounded by the
existence of high implicit export taxes, in the form of overvalued or
multiple exchange rates, producer price ceilings, or quantitative
restrictions on exports, prevalent in so many developing countries.
Given the small but significant values of the supply elasticities esti-
mated in the literature, the paper shows that the detrimental effects
of the high export taxation existing in many developing countries on
the level of their exports are significant.  Second, the taxation of
"windfall" profits through export taxes will be nondistortionary only
when the tax is unexpected and temporary; something that is difficult
to attain in practice.  Finally, the operation of the producer income
stabilization schemes reduces significantly the present value of revenue
to producers, without significantly reducing riskiness.  Hence, the
schemes are distortionary, discouraging production and exports.

The authors show that in the majority of sample cases the supply-side prescription of reducing export taxes can be expected not only to increase exports but also to enhance the economic well-being of the specific country and the world as a whole.  Over the short and medium runs, however, the existence of market imperfections in commodity markets could well preclude many developing countries from benefiting from the supply-side effects of lowering export taxes, while the government revenues would be lowered.  With respect to revenues the paper argues that many developing countries can reduce effective levels of export taxation without losing revenue (in a few cases even gaining revenue) if the nonrevenue-yielding implicit export taxes are transformed into revenue-yielding export taxes.

# I. Objectives and Scope of Paper

Export duties play an important role in the revenue structures of developing countries. Data given in Table 5 show that they exist in as many as 67 developing countries. In 26 of them, government budgets rely rather heavily on export duties; that is, they account for more than 1 percent of gross domestic product (GDP) and, with some minor exceptions, exceed 10 percent of the total tax revenue. 1/ In most cases, export tax receipts are derived from high rates of taxation on one or two commodities that feature prominently in the exports of these countries. Frequently, export duties in developing countries are levied in lieu of income taxation on exporters and are justified on grounds of the ease of tax administration. They are also generally made progressive with respect to export prices, and thereby incomes earned by exporters; this is justified on grounds of equity and needs for macroeconomic stabilization. 2/ Furthermore, exports from developing countries are frequently subject to implicit export duties in the form of overvalued or multiple exchange rates, producer price ceilings, and quantitative restrictions on exports. These implicit export duties probably lead to a reduction in the level of exports even though they often do not yield fiscal revenue.

In recent years, supply-side economists have stressed the negative effects of high and progressive taxes on the incentives to work, save, and invest. 3/ Their argument, however, specifically relates to income taxes and not export duties, which are frequently levied in developing countries in lieu of income tax on exporters; because export duties can have important effects on producer incentives significant supply-side effects can occur. 4/ A straightforward application of supply-side economics to export taxation would call for the reduction of high export duties existing in many developing countries to create incentives to produce and export and to generate private incomes and increase employment. In fact, from the point of view of world economic

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1/ For a review of the quantitative characteristics of the tax systems of developing countries, including export taxes, see Tanzi (1983).

2/ The Appendix contains summary information on the levels and structure of export duties prevalent in many developing countries.

3/ See Gandhi (1985) for a review of the main issues regarding the application of supply-side economics in developing countries.

4/ There is also little reference to export taxes in the public finance literature; however, there is an implicit belief by some public finance specialists that such taxes are more closely related to income (or direct) taxes than to excise (or indirect) taxes. See for instance Prest (1972), who argues that insofar as such taxes do not cover output assigned to the home market, they are only a partial substitute for income taxation of agricultural producers. In the international trade literature, they are treated as equivalent to import tariffs because from a general equilibrium point of view export duties and import tariffs reduce the size of the international trade sector (see Corden (1979)).

efficiency the first-best policy would be to remove all restrictions
on world trade and even remove rather than reduce export duties.  Hence,
the supply-side prescription of lowering or even eliminating export
duties would go hand-in-hand with the economic efficiency criterion for
the use of world resources.

A country might argue that there is some justification for the
levy of export duties under certain circumstances.  First, it might
possess market power in a certain commodity market and be tempted to
increase its economic well-being at the expense of the welfare of the
importing countries by imposing an export duty.  Second, a tax on
exports can be levied to absorb windfall profits, if any, and as long
as it does not affect economic behavior it could be nondistortionary.
However, as the paper shows, to achieve this the tax has to be "unex-
pected" by the economic agents.  Finally, export taxes can also be
levied to stabilize producer incomes over time and, under certain
conditions, this type of taxation can be "efficient."

Following the argumentation underlying the first justification,
the paper estimates country optimal export duties for a few developing
countries by commodity and compares them with the actual effective level
of export taxes that incorporates, wherever possible, the effect of both
explicit and implicit export duties.  The above comparison shows that
for most cases the actual level of export taxation is higher than the
level that can be considered even country optimal, let alone world
optimal.  Furthermore, given the small but significant values of the
supply elasticities, the paper also shows that export taxation substan-
tially lowers exports.  Finally, information is presented for selected
developing countries that suggests that the use of export duties to
stabilize producer incomes does not necessarily reduce risk and can
have a detrimental effect on the incentives to produce.

Section II of the paper describes the rationality for export
duties in developing countries.  Section III then develops a methodology
for estimating country optimal export duties and for measuring the
supply-side effects of export taxation.

In Section IV, an attempt is made to illustrate (it must be stressed
that it is only an illustration) the application of the methodology
developed in Section III to the measurement of the supply-side effects
of export taxation prevalent in many developing countries.  The section
also notes important qualifications that must be borne in mind when
interpreting the results of this exercise and concludes with an analysis
of the impact of country-specific commodity stabilization schemes.

Section V sums up the major findings of the study and discusses the
ways in which existing export taxes could be modified from the standpoint
of supply-side objectives.

The Appendix presents the levels and structure of export duties in
developing countries.

## II. The Rationale for Export Taxes

Developing countries apply export taxes for many reasons 1/ among which the most important are (1) to limit exports to take advantage of the monopoly power in a certain market or to benefit from other market imperfections; (2) to raise revenue from export commodities; and (3) to stabilize producer incomes. 2/ This section describes these arguments and shows that export duties used in connection with (1) may increase the welfare of the country while reducing that of the rest of the world; export duties used in connection with (2) may distort economic efficiency in general; and the use of export duties in connection with (3) may improve a country's economic welfare without lowering the welfare of the rest of the world.

### 1. Export duties and market imperfections

The literature focuses on two kinds of market imperfections: those relating to the existence of some form of monopoly power in the commodity market (the optimal tariff argument) and those arising from protectionism on the part of consuming or importing countries and from other restrictions in commodity markets.

#### a. Monopoly power of the exporter

The optimal export duty argument is that a given country, or a group of countries, with monopoly power in the world market of a commodity should levy an export duty to extract monopoly profits 3/ and thus to obtain a net welfare gain. The export duty, however, will improve the welfare of the individual country that exerts monopoly power but not of the world as a whole. Partial equilibrium analysis shows that the level of taxation that can be considered country optimal (i.e., that will maximize the gain to an exporting country) equalizes the marginal revenue and marginal cost of exporting the commodity as given by the inverse elasticity rule 4/ (Figure 1).

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1/ See Aguirre, Griffith, and Yucelik (1981), Goode, Lent, and Ojha (1966), Goode (1984), and Tanzi (1976), who discuss extensively the role of export duties in developing countries.

2/ Export duties are also used to promote the growth of the untaxed activities by changing the producer terms of trade against traditional exports. This rationale for export duties is not pursued here since import tariffs are more commonly employed for this purpose (see Corden (1979)).

3/ Quotas can also be used instead but in that event monopoly profits accrue to individual producers rather than to government.

4/ See Corden (1979) and Johnson (1967).

$$t_k^i = 1/\eta_k^i$$

where $t_k^i$ is the country optimal ad valorem export duty on the f.o.b. price of the export commodity k, and $\eta_k^i$ is the country-specific long-run elasticity of demand for exports of the taxed commodity. The country in question does not have to be a "pure" monopolist in the export market for the optimal tariff argument to apply.

b. Protection by the importing countries and other restrictions on trade in commodity markets

Importing countries often protect domestic producers of particular commodities by restricting the volume of imports through import quotas or other means. 1/ Furthermore, producing countries have signed agreements, sometimes with the participation of major consumers, to stabilize and regulate commodity markets by means of restrictions on the level of exports by assigning export quotas to producing countries or by relying on international buffer stock arrangements. 2/ Such trade restrictions give rise to a dual world market price structure--the commodity price in countries that have a protected market is higher than the price in the nonrestricted market--and the producers in an exporting country have an incentive to overproduce, given a positive elasticity of supply, as long as they assign a positive probability to selling extra output in the protected market. 3/ One way the authorities of the exporting countries can restrict overproduction, and avoid an excessive world supply of the commodity, is to levy an export tax, which would efficiently achieve the desired level of production (Figure 2).

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1/ For instance, domestic sugar production is protected in the EC countries and the United States; tobacco is protected in the United States; and rice is protected in Japan.

2/ At present, there are five international commodity agreements of which only those for coffee and rubber are at this time fully operational; cocoa and tin agreements have recently run into difficulties. A similar arrangement for stabilizing sugar prices through export quotas and special stock provisions lapsed after 1983, following the lack of agreement between parties concerned. See Singh (1977) for a discussion of coffee and cocoa agreements; Baldwin (1983) analyzes the tin agreement; and Hart (1976) discusses the use of export taxation in connection with commodity agreements.

3/ Given that exports to the quota market are restricted, the marginal social revenue to the exporting country is equal to the free trade nonquota price. Optimality would dictate equality between marginal social revenue and marginal social cost. If the expected producer price (private marginal revenue) is a weighted average of the free and protected market price, the producer will tend to produce more than what is actually optimal in the hope that he can export more to the quota market. An export tax could close the gap between private and social marginal revenue.
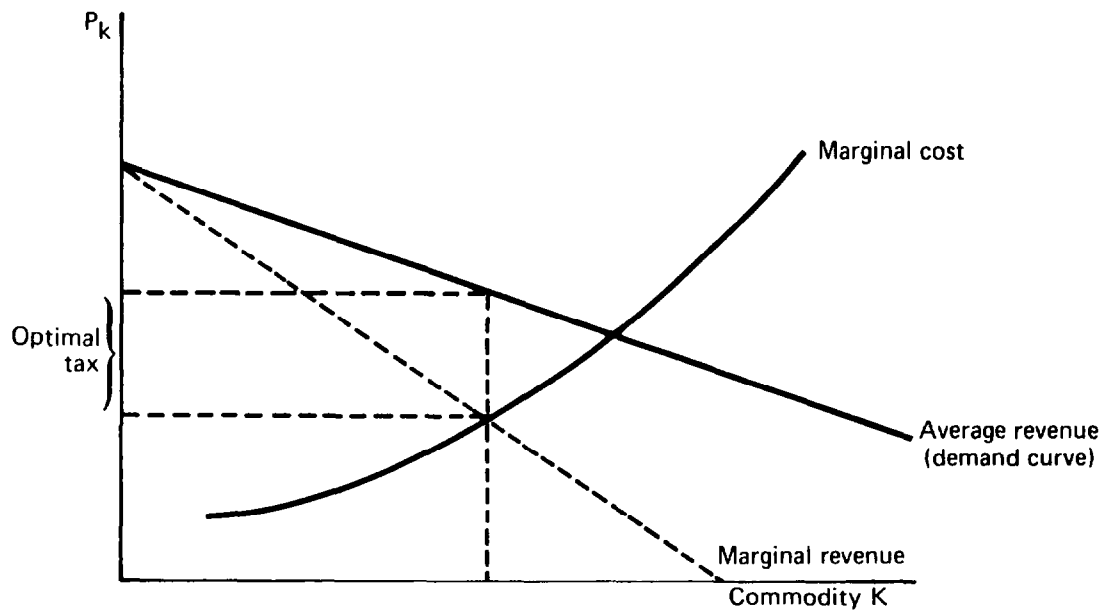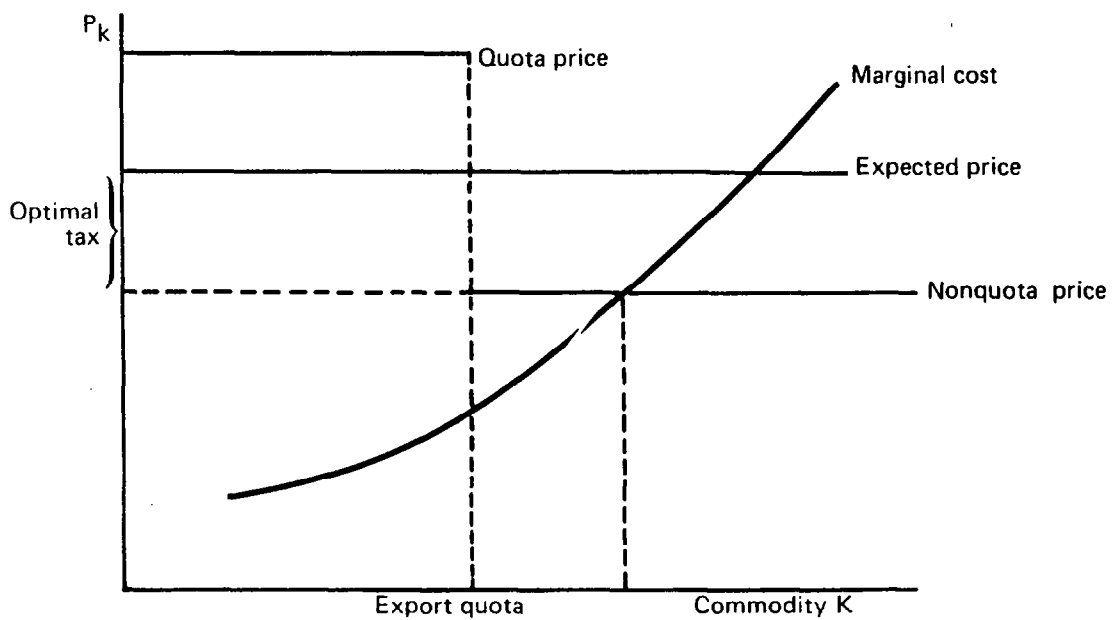
## FIGURE 1. COUNTRY OPTIMAL EXPORT DUTY



## FIGURE 2. EXPORT TAXATION IN QUOTA MARKETS

## 2. Taxes on exports as income taxes

Export taxes are commonly used simply to collect revenue from export activities. Public finance literature has tended to assimilate these taxes to income or direct taxes because insofar as export taxes cannot be shifted to consumers in the international market, they obviously affect the income of domestic producers. 1/ The export tax can also have an "excise" effect to the extent that the decline in the export price of a commodity relative to its domestic price reduces the level of exports (Tanzi (1976)). Whether export duties should be treated as an income tax or an excise tax is still controversial.

It might be argued that the supply of the typical export of a developing country is highly price inelastic, either because its producers are not price responsive or because the commodity is produced with a sector-specific factor of production whose supply is fixed. This being the case, a tax on exports can be simply considered as an income tax on an immovable factor of production and hence nondistortionary. 2/ The assumptions underlying this conclusion can be questioned. With respect to the first point, there is ample empirical evidence that the supply of export commodities is affected by the producer price. 3/ With respect to the second point, it can be argued that even when an export duty is fully capitalized in the price of an immovable factor of production (say, land), it still can have undesirable "excise" or supply-side effects. 4/

In the long run, an export duty imposed on an activity that employs an immovable factor of production will tend to be fully capitalized in the price of this factor of production; a result which may seem to indicate that the tax is nondistortionary. 5/ The output of the taxed commodity, however, will tend to decrease because the export duty reduces

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1/ This is strictly true of export duties levied by a country that is a price taker in the world market and faces a perfectly elastic demand curve for its exports. Hence, a tax imposed on exports will, by necessity, be shifted back to producers. When exports are intermediated by traders, part of the tax burden can be borne by them as well (Tanzi (1976)).

2/ A tax on the income of an immovable factor of production is nondistortionary because it does not alter either the level of production or the level of exports of the commodity that employs the taxed factor, since the factor of production has no alternative use.

3/ Section IV (page 12 and Table 1) presents the elasticities of supply of export commodities that have been estimated in the literature for developing countries; they are all positive, though small.

4/ The land used in the production of certain cash crops is not necessarily suitable for the production of other crops.

5/ Owing to space considerations, the proof of this proposition is not included here. See Mussa (1974), who derives the above result for an import duty.

the producer price of export goods compared with other goods and thus creates a distortion. It is the contraction in the level of output of the export good that reduces the price of the immovable factor of production. Furthermore, the export tax will create a "wedge" between the international price and the price paid by domestic consumers, creating an additional distortion. Hence, notwithstanding the fact that the export tax is fully shifted back to the immovable factor of production, the tax still can have excise effects; that is, it distorts the production and the consumption decision. To this extent, the export tax in the long run is not necessarily equivalent to a tax on the income of the immovable factor of production. In the more general case, when the export sector employs factors of production that are movable across sectors, the distortionary effects of the export tax are straightforward.

It might also be argued that over the short run, unexpected increases in the international price of an export commodity can sometimes lead to temporary "windfall" gains to exporters that can be taxed through an export duty. 1/, 2/ This tax is presumed to be nondistortionary and, some might argue, the windfall gains are "unnecessary" to induce the given level of exports. For the analysis here, the distinction should be made between systematic (expected) and unsystematic (unexpected) tax policy changes. A systematic export duty that applies when prices are above a certain "normal" level will discourage production and exports because if the market is, by and large competitive, there will be no "excess" profits in the long run, as good years will balance out the bad ones. 3/ In addition, any systematic, though temporary, export tax policy with respect to windfall gains will sooner or later be incorporated by producers in their expectations, distorting their economic behavior. Only the taxation of profits, resulting from unsystematic changes, will have no effect on producers' behavior concerning exports, although it might make smuggling more profitable.

Devaluation of the exchange rate can generate windfall profits for the exporters, similar to the unexpected increase in the international price of a commodity described above; however, it will also raise the cost of imports and other costs to the exporter. Therefore, after a

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1/  See Davis (1980) who analyzes the resurgence of export taxation in developing countries after the second oil crisis and the increase in commodity prices in the late 1970s.

2/  For the sake of symmetry, this argument would require that producers are subsidized when a "windfall" loss occurs.

3/  The international price of a commodity is a random variable. Even though one might attempt to forecast future values, nobody can predict with certainty the price of a commodity at every moment of time. For some commodities there are futures or forward markets which allow producers to reduce the risk involved in the production process, but these markets do not work as efficiently for all types of commodities.

devaluation it should not be automatically implied that exports always be taxed additionally. In fact, the levy of an export tax under such conditions can hamper the achievement of an increase in exports needed to restore the balance of trade equilibrium, which was the primary reason for the devaluation.

3.    Export duties in connection with stabilization schemes

Developing countries can also rationally use export taxes in connection with three kinds of stabilization schemes: (a) the stabilization of the international price of a commodity or group of commodities, especially in support of international commodity agreements; (b) the stabilization of foreign exchange export earnings derived from the exports of one commodity or group of commodities; and (c) the stabilization of the domestic consumer price of a traded or exportable commodity. 1/

The economic efficiency arguments in favor of commodity stabilization efforts are well known. It has been argued that the free market solution does not necessarily allocate resources efficiently because there are no perfect and complete futures and risk markets and there is no perfect information. Hence, market intervention is called for. The first-best solution would be to encourage the development of efficient futures and insurance markets. If this is not feasible, as a second-best, a commodity stabilization scheme can, under certain conditions, improve domestic economic welfare. 2/ Since it is reasonable to assume that economic agents generally, and exporters in particular, are risk averse, a commodity stabilization program that reduces the variability of the permanent income of exporters without reducing the mean 3/ will improve welfare. 4/ Even when the administrative costs of the stabilization scheme are taken into account, exporters could be better off as long

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1/ Stabilization efforts in these areas have been attempted by a number of developing countries mostly through marketing boards, but export taxes have also been used as one of several complementary policy instruments to attain the desired goal. Section IV.3 analyzes the effect of country-specific commodity stabilization schemes on the level and the variability of producer prices.

2/ See Newbery and Stiglitz (1981) for the economic rationale for stabilization.

3/ Helleiner (1964) and (1966a) examined the role of Commodity Marketing Boards in Nigeria in stabilizing prices paid to producers and their incomes.

4/ See Newbery and Stiglitz (1981) for the cases where stabilizing prices is likely to lead to stabilized incomes. Johnson (1977) makes a case where price stabilization around the trend will decrease revenue, since the supply curve of exports is upward sloping. See Behrman (1977) for the generalization of the Johnson result.

as the cost of administration does not exceed the welfare gain from reduced riskiness. Risk averse consumers can also benefit from domestic price stabilization. Finally, from a macroeconomic point of view, the stabilization of foreign exchange earnings can also lead to welfare gains for both producers and domestic consumers. Notice, however, that an efficient export tax used to attain commodity stabilization will not yield tax revenue in net present value terms.

The commodity stabilization schemes can also conceivably 1/ have an adverse effect on the economy in two main respects, namely, the size of the levy on producers and the uses to which the proceeds of the levy are put relative to what the producer would have done with it if he had not been subject to such an impost. With respect to the size of the levy, the point is that a high level of export duty implicit in the stabilization levy may adversely affect the producer's incentive to produce the commodity concerned--the actual impact being dependent on the supply elasticity. Second, with respect to the use of the levy, the adverse impact may stem from the fact that the outlays undertaken by the stabilization scheme are much less productive (in terms of additional output generated) than those which the producer would most probably have undertaken in the absence of the levy.

### III. Methodology to Estimate Country Optimal Export Duties and Their Effects

This section develops a methodology, which is derived from the optimal export duty argument, for estimating the country optimal level of export taxation by commodity. Thus, optimality in this section, and throughout the remainder of the paper, is understood in this limited sense incorporating only the optimal export duty argument (see Section II.1.a). It should be recalled at this stage that the optimal export duty is only optimal from the point of view of the country that imposes it; it is not optimal from the point of view of the world as a whole. By comparing the actual level with the optimal level of export taxation estimated with the help of the methodology developed below (data on the former are given in the Appendix), it is possible to indicate the distortionary effect of export taxation of a given country on the level of its exports and to measure the supply effect of export duties.

1. Country optimal export duties

As mentioned in the previous section, the country optimal export duty ($t_k^{*i}$) on commodity k by country i, which faces a less than perfectly elastic demand curve, is given by the inverse elasticity rule.

$$t_k^{*i} = 1/n_k^i \tag{1}$$

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1/ Helleiner (1966b), Chapter 6 for this line of approach.

In equation (1), $n_k^i$ is the absolute value of the country specific long-run elasticity of demand of commodity k.  Most of the demand elasticities have been estimated in the literature for commodity markets and not for the individual countries.  The following formula, based on partial equilibrium considerations, therefore, transforms the market elasticity of demand of a commodity into the country-specific elasticity of demand for the same commodity. [1]/  As can be seen, the country-specific elasticity of demand is higher in absolute terms than the market demand elasticity.

$$n_k^i = n_k/s_k^i + \varepsilon_k^o (1 - s_k^i)/s_k^i \qquad (2)$$

where $n_k$ is the absolute value of the long-run market elasticity of demand of commodity k, $s_k^i$ is the share (in percent) of country i in world exports of commodity k, and $\varepsilon_k^o$ is the long-run elasticity of supply of all other exporters of k (excluding country i) who are assumed to act independently of each other.  The value of this elasticity of supply is given by

$$\varepsilon_k^o = \sum_{j \neq i} \varepsilon_k^j s_k^j / (1 - s_k^i) \qquad (3)$$

where $\varepsilon_k^j$ is the long-run elasticity of supply of exports of commodity k by country j.  By substituting the estimated value of (2) and (3) into (1), one can calculate the country optimal export tax by commodity that, as can be seen from equation (1), will be higher the larger the share of country i in world exports of commodity k, the lower the absolute value of the market demand elasticity of commodity k, and the lower the elasticity of supply of other exporters of commodity k. [2]/, [3]/

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1/  Formulas (2) and (3) result from the logarithmic changes of exports of commodity k by each exporting country resulting from a given change in the export price.

2/  The country optimal export tax given by formulas (1) to (3) assumes that exporting countries act independently of each other.  Hence, for a given value of the export market demand elasticity and the elasticity of supply of other exporters the optimal export tax of commodity i in country k will be higher the larger the export market share.  An alternative estimate of the optimal export tax would result from the assumption that the exporting countries collude and agree on a common export tax, which, in order to be optimal, should be equal to $1/n_k$.  The collusion agreement is not pursued further in this paper.  See Gately (1984) and Panayotou (1979) who analyze cases of international commodity cartels.

3/  Formulas (1) and (3) also assume that no new producers enter (leave) the market when the price of the commodity increases (falls).  The inclusion of such an effect would, of course, increase the country-specific elasticity of demand for the product.

## 2. Estimate of the effect of export duties on exports

The effect of export taxes, on the level of exports, can be estimated by assuming a constant elasticity of supply of exports. The formula below measures the change in exports of commodity k by country i that would result if the country in question adopted country optimal export taxes, 1/

$$\frac{\Delta X_k^i}{X_k^i} = \epsilon_k^i \left[ \frac{\Delta P_k}{P_k} + \frac{(t_k^i - t_k^{*i})}{1 - t_k^i} \right] \qquad (4)$$

In equation (4), $P_k$ is the price of commodity k that would prevail if country i adopted the country optimal export duty, $\Delta P_k$ is the change in price that would result, and $t_k^i$ is the actual export duty applied by country i.

An estimate of the effect of export taxes on the market price $(\Delta P_k / P_k)$ can be obtained, likewise, assuming a constant price elasticity of demand function for exports. Namely,

$$\left( \frac{\Delta X_k}{X_k} \right)_d = - \eta_k \frac{\Delta P_k}{P_k} \qquad (5)$$

where $(\Delta X_k / X_k)_d$ measures the change in the market demand of world

exports of commodity k that would result from country i adopting country optimal export taxes. Combining (4) and (5), using the market clearing condition that the total change in supply of exports equals the sum of the changes in each exporting country:

$$\left( \frac{\Delta X_k}{X_k} \right)_s = \sum_j S_k^j \frac{\Delta X_k^j}{X_k^j} = \sum_{j \neq i} S_k^j \epsilon_k^j \frac{\Delta P_k}{P_k} + S_k^i \epsilon_k^i \left[ \frac{\Delta P_k}{P_k} + \frac{t_k^i - t_k^{*i}}{(1 - t_k^i)} \right] \qquad (6)$$

and solving for $\frac{\Delta P_k}{P_k}$ gives the effect of the export duties on the international price of the commodity:

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1/ Equation (4) measures that change in exports that would result if the country in question adopted country optimal export taxes and is derived from the definition of the elasticity of supply and the fact that exporters receive a price net of export duties equal to $P_k (1-t_k)$.

$$\frac{\Delta P_k}{P_k} = - \left[ \frac{\varepsilon_k^i S_k^i}{\eta_k + \Sigma S_k^i \varepsilon_k^i} \right] \frac{(t_k^i - \hat{t}_k^i)}{(1 - t_k^i)} \tag{7}$$

The effect of export taxes on the level of exports of commodity k by country i can then be estimated by substituting equation (7) into equation (4). The effect on foreign exchange earnings is estimated adding equations (7) and (4).

Equation (7) is derived under the assumption that other exporting countries do not react to the tax change introduced by country i. This assumption, which could be reasonable in the case of small countries, is not likely to hold when the country that changes its tax policy is an important exporter. That is because other affected exporters would tend to react so as to maintain their relative market shares by simultaneously adjusting their present levels of export taxation. One can, of course, attempt to formulate a complex behavioral model to incorporate the impact of simultaneous reactions of the numerous exporting countries. The available data, however, which permit analysis of the impact of changes in the existing tax rates but only on an illustrative basis, do not facilitate the more complex assessment involving alternative interdependent behavioral and closure rules. The scope of the analysis in this paper, therefore, has been restricted to a situation in which all other countries keep their present tax levels unchanged; it nonetheless takes into account the impact of the adoption of the optimal tax by any one country i on the market shares of all major exporters of the taxed commodity.

The methodology developed above can be generalized further by including the effect that the export duty would have on the price of substitutes and complements in both demand and production. However, this adjustment has also not been made in the empirical application of this methodology that follows, since it is assumed for the purpose of the illustration that the prices of all other commodities remain constant. Furthermore, it should be stressed that the methodology derived here assumes that there are no other relevant distortions, whether in this market or in other markets, that are affected by the imposition of the export duty. 1/

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1/ It is easy to transform the optimal export duty formula to take into account the above-mentioned distortions. It can be shown that if the factors of production released by the taxed activity have a social return which is a fraction $\alpha$ of the social return obtained in the taxed activity then the optimal export duty formula becomes

$$t_k^i = \frac{1}{\alpha} \left[ \alpha - 1 + \frac{1}{\eta_k^i} \right]$$

## IV. Appraisal of the Impact of Existing Export Taxes

This section evaluates the impact of existing export taxes on the supply of commodity exports and foreign exchange earnings for a group of selected developing countries within the analytical framework and the methodology formulated in the preceding section. In doing this, the paper uses the readily available estimates of demand and supply elasticities without making any judgment on their reliability. Were these estimates to be accepted, the main conclusion of the exercise would be that the observed level of export taxation applied by the majority of developing countries exceeds the country optimal level. Hence, export taxes as currently applied are in most cases distortionary and thereby discourage exports.

### 1. Estimation of country optimal export taxes

Most of the export tax revenue in developing countries is derived from a select group of commodities that have relatively inelastic demand and supply elasticities (Table 1). Furthermore, for some of these commodities, a small number of developing countries seem to have a large share of the world market. This suggests that the country optimal export taxation of these commodities could be different from zero, at least for such countries.

Table 1 shows ranges of long-run supply elasticities estimated according to the methodology developed by Nerlove (Askari and Cummings (1975)), and demand elasticities for a group of selected commodities by country given in Askari and Cummings (1975), Lubys and Hunkeler (1974), Adams and Behrman (1974), Baldwin (1983), and Valles (1968) (see footnotes in Table 1 for details). The supply elasticities are, in all cases, positive and different from zero, indicating that suppliers do respond to price incentives. The demand elasticities are in all cases negative, as expected, and generally larger than minus one. The exports of the selected commodities are also concentrated in a handful of developing countries.

Table 1 also shows estimates of actual average export duty rates by commodity and by country. In the cases where information was available, the actual export duty rates incorporate both explicit and implicit export duties (see Tables 1 and 8 for details); in other cases only explicit export duties were considered. Hence, tax rates shown in column 4 are not fully comparable across commodities and countries.

The last column of Table 1 shows the authors' estimates of country optimal export taxes, by country, for commonly taxed export commodities, based on the methodology derived in Section III. 1/

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1/ For a similar approach to estimating optimal export taxes see Tolley, Thomas, and others (1982) who estimate optimal export taxes for Thailand's rice and Repetto (1972) who studies the taxation of jute in Bangladesh.

Table 1. Estimates of Country Optimal Export Duties for Selected Commodities

(In percent)

| | Supply Elasticity for the Country (1) | Share in World Market 1979-81 (2) | Actual Export Duty Rate 1979-81 (3) | Estimated Country Optimal Export Duty Rate | |
|---|---|---|---|---|---|
| | | | | High (4) | Low (5) |
| **Coffee** | | | | | |
| Demand elasticity 1/ (-0.2, -0.6) | | | | | |
| Supply elasticity for others 1/ (0.3) | | | | | |
| Brazil | 0.6 2/ | 17.90 | 59.00 3/ | 47.57 | 30.85 |
| Burundi | 0.6 4/ | 0.70 | 21.00 3/ | 1.55 | 0.89 |
| Colombia | 0.6 5/ | 17.60 | 13.00 3/ | 37.59 | 20.47 |
| Costa Rica | 0.5 6/ | 2.50 | 10.00 3/ | 4.91 | 2.82 |
| Côte d'Ivoire | 0.3 4/ | 5.80 | 64.00 7/ | 18.14 | 11.14 |
| El Salvador | 0.5 6/ | 5.20 | 47.00 7/ | 14.61 | 8.71 |
| *Ethiopia* | 0.6 4/ | 2.40 | 37.00 3/ | 6.41 | 3.77 |
| Guatemala | 0.5 6/ | 3.50 | 24.00 3/ | 7.59 | 4.38 |
| Haiti | 0.5 6/ | 0.50 | 25.00 3/ | 1.10 | 0.63 |
| Honduras | 0.5 6/ | 1.50 | 32.00 7/ | 3.56 | 2.06 |
| Rwanda | 0.6 4/ | 0.60 | 35.00 3/ | 1.34 | 0.77 |
| Sierra Leone | 0.6 4/ | 0.20 | 34.00 3/ | 0.53 | 0.61 |
| Tanzania | 0.6 4/ | 1.30 | 41.00 7/ | 3.88 | 2.28 |
| Uganda | 0.6 4/ | 2.70 | 28.00 3/ | 6.31 | 3.67 |
| Togo | 0.3 1/ | 0.20 | 77.00 7/ | 4.82 | 3.58 |
| Total | ... | 62.60 | ... | ... | ... |
| **Cocoa** | | | | | |
| Demand elasticity 1/ (-0.3, -0.4) | | | | | |
| Supply elasticity for others 1/ (0.3) | | | | | |
| Côte d'Ivoire | 0.8 8/ | 23.40 | 62.00 7/ | 46.73 | 43.24 |
| Ghana | 0.9 9/ | 20.50 | 60.00 7/ | 43.12 | 39.82 |
| Grenada | 0.3 10/ | 1.00 | 18.00 3/ | 1.27 | 1.14 |
| Sierra Leone | 0.3 10/ | 0.70 | 24.00 3/ | 0.92 | 0.82 |
| Togo | 0.3 10/ | 1.20 | 77.00 7/ | 9.16 | 8.55 |
| Total | ... | 46.80 | ... | ... | ... |
| **Tea** | | | | | |
| Demand elasticity 1/ (-0.1, -0.4) | | | | | |
| Supply elasticity for others 1/ (0.3) | | | | | |
| India | 0.6 11/ | 26.70 | ... | 54.07 | 28.78 |
| Sri Lanka | 0.7 12/ | 18.70 | 46.00 3/ | 44.73 | 33.12 |
| Total | ... | 45.40 | ... | ... | ... |
| **Rubber** | | | | | |
| Demand elasticity 1/ (-0.5, -0.8) | | | | | |
| Supply elasticity for others 1/ (0.4) | | | | | |
| Malaysia | 0.2 13/ | 49.10 | 21.00 3/ | 66.67 | 47.89 |
| Sri Lanka | 0.4 14/ | 3.90 | 53.00 3/ | 8.02 | 5.92 |
| Thailand | 0.2 13/ | 14.50 | 40.00 7/ | 20.60 | 14.97 |
| Indonesia | 0.4 13/ | 25.00 | 10.00 3/ | 34.05 | 24.36 |
| Total | ... | 92.50 | ... | ... | ... |
| **Bananas** | | | | | |
| Demand elasticity 1/ (-0.5) | | | | | |
| Supply elasticity for others 1/ (0.1) | | | | | |
| Costa Rica | 0.1 15/ | 17.30 | 12.00 3/ | 29.20 | 17.51 |
| Honduras | 0.1 15/ | 17.00 | 29.00 7/ | 29.15 | 17.53 |
| Total | ... | 34.30 | ... | ... | ... |

Table 1 (concluded). Estimates of Country Optimal Export Duties for Selected Commodities

(In percent)

| | Supply Elasticity for the Country (1) | Share in World Market 1979-81 (2) | Actual Export Duty Rate 1979-81 (3) | Estimated Country Optimal Export Duty Rate | |
|---|---|---|---|---|---|
| | | | | High (4) | Low (5) |
| Cotton | | | | | |
| Demand elasticity 1/ (-0.2, -0.4) | | | | | |
| Supply elasticity for others 1/ (0.8) | | | | | |
| Chad | 0.1 16/ | 0.50 | 7.00 3/ | 0.51 | 0.42 |
| Sudan | 0.5 17/ | 3.20 | 40.00 7/ | 4.66 | 2.89 |
| Togo | 0.1 16/ | 0.10 | 12.00 3/ | 0.10 | 0.09 |
| Total | ... | 3.80 | ... | ... | ... |
| Sugar | | | | | |
| Demand elasticity 1/ (-0.2, -1.9) | | | | | |
| Supply elasticity for others 1/ (0.4) | | | | | |
| Dominican Republic | 0.8 18/ | 2.60 | 13.00 3/ | 4.71 | 1.26 |
| Mauritius | 0.8 18/ | 1.90 | 17.00 3/ | 3.61 | 0.97 |
| Total | ... | 4.50 | ... | ... | ... |
| Rice | | | | | |
| Demand elasticity 1/ (-0.4, -0.8) | | | | | |
| Supply elasticity for others 1/ (0.6) | | | | | |
| Thailand | 0.3 19/ | 19.60 | 40.00 7/ | 24.05 | 17.04 |
| Brazil | 0.3 20/ | 0.10 | 40.00 7/ | 0.13 | 0.09 |
| Total | ... | 19.70 | ... | ... | ... |
| Bauxite | | | | | |
| Demand elasticity 1/ (-1.3) | | | | | |
| Supply elasticity for others 1/ (0.4) | | | | | |
| Jamaica | 0.4 21/ | 6.90 | 28.00 3/ | 4.70 | 4.70 |
| Tin | | | | | |
| Demand elasticity 1/ (-0.2, -0.5) | | | | | |
| Supply elasticity for others 1/ (1.2) | | | | | |
| Malaysia | 0.7 22/ | 33.40 | 20.00 3/ | 30.42 | 4.29 |

Sources: International Monetary Fund, International Financial Statistics, Government Finance Statistics; World Bank, Trade and Price Trends, 1983-84; and Behrman (1977). Estimates are based on equation (2) of Section III.

1/ All demand elasticities and supply elasticities for other countries are from Behrman (1977). Estimates of demand elasticities generally have a low and a high figure.
2/ Simple average for the country as reported in Askari and Cummings (1977).
3/ Includes explicit and implicit export taxes. The first one calculated as the ratio of export tax revenue to the value of exports of a given commodity, the second one derived from World Bank (1981).
4/ Estimated for Africa in op. cit.
5/ Average in op. cit.
6/ Estimate for Latin America (excluding Colombia and Brazil) in op. cit.
7/ Incorporates only explicit export taxes calculated as the ratio of export tax revenue to the value of exports of a given commodity.
8/ Estimate for Côte d'Ivoire reported in Askari and Cummings (1977).
9/ Average for Ghana in op. cit.
10/ Estimate for developing countries in Behrman (1977).
11/ Reported in Lubys and Hunkeler (1974).
12/ Reported in Lubys and Hunkeler (1974).
13/ As reported for the respective country in Askari and Cummings (1977).
14/ Reported for developing countries in Behrman (1977).
15/ See Valles (1968).
16/ Reported for developing countries in Behrman (1977).
17/ Reported for Sudan in Askari and Cummings (1977).
18/ Reported in Behrman (1977) for developing countries.
19/ Average reported in Askari and Cummings (1977).
20/ Behrman (1977) for developing countries.
21/ Behrman (1977).
22/ Reported in Baldwin (1983).

The values of supply, demand elasticities, and market shares are combined through equations (1), (2), and (3) to estimate country optimal export duty for each commodity. Since the changes in tax rates simulated in this section give rise to changes in market shares, an iterative procedure is used to reflect these changes. Hence, country optimal export duties are first calculated for each country using historical data on the observed market shares. The export tax is adjusted to the level that is country optimal, giving rise to a change in price and exports that is reflected in the market shares. The new shares are then used to recalculate the country optimal export taxes again; this procedure is repeated over and over. The results are shown as high and low estimates, using the high and low values for the elasticity of demand that appear in the first column of Table 1. It goes without saying that the estimated optimal tax rates given in Table 1 should be interpreted with extreme caution, as the reliability of the elasticity estimates compiled in that table has not been checked. The estimated optimal tax rates should at best be considered illustrative of the way the methodology developed in this paper can be used; this point cannot be overemphasized. Determining the specific optimal tax rates for any export commodity, by country, requires that accurate and country specific elasticity estimates be made and more detailed study conducted, neither of which the authors have done.

Subject to this qualification, the main results derived from analyzing the estimated optimal tax rates, given in Table 1, are as follows.

First, as far as the levels of export taxation in developing countries are concerned, the country optimal export tax rates for selected export commodities, which include coffee, cocoa, rubber, tea, bananas, and tin, are greater than zero for several countries. These commodities frequently have relatively inelastic demand and supply schedules. As is apparent from Table 1, the production of a few export commodities is concentrated heavily in a handful of developing countries; consequently, the estimated country optimal tax rates are high for a few countries, which are the main producers. If the illustrative estimates given in Table 1 are to be relied upon, Colombia and Brazil could tax coffee at a marginal rate between 20 and 48 percent; Ghana and Côte d'Ivoire could tax cocoa at a rate between 40 and 45 percent; Malaysia could tax rubber exports and India could tax tea exports at a rate of about 50 percent. The rates for the smaller producers, however, are considerably lower than those calculated for the main producers. For instance, for 22 of the 37 cases analyzed in Table 1, the country optimal export duty rates estimated under the high assumption are below 10 percent, and for 17 of the cases, the country optimal export duty rates estimated under the high assumption are below 5 percent.

Second, the information given in the third column of Table 1 and the Appendix shows that developing countries generally tax the exports of those commodities that could be taxed according to the country optimal criteria. However, the levels of taxation adopted by individual countries, do not seem to correspond to the estimated country optimal tax levels. Most developing countries seem to overtax exports as a result of high "explicit" and "implicit" export taxes (cf., Table 1). 1/ There are 31 cases, out of a total of 37 in Table 1, in which export taxes exceed the estimated country optimal level of taxation.

The empirical evidence, therefore, shows that the majority of developing countries sampled are overtaxing exports. And that in general, the observed level of export taxation cannot be justified on the basis of the country optimal export duty criterion. The reliability of this conclusion, of course, hinges on the reliability of the elasticity estimates used above as well as the methodology used in this study for estimating the country optimal export duty rates.

This section also estimates, with the help of the methodology developed in Section III, the effect of high export taxes (relative to country optimal levels) on the supply of exports and foreign exchange earnings of developing countries. 2/ The country optimal tax rates estimated above are plugged into equation (7) to estimate the effect on the price of the commodity, and this value is used to estimate the effect of the tax change on exports through equation (4). It should be mentioned at this point that the methodology measures the net impact on the total volume of exports of the country only if the factors of

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1/ Notice that strictly speaking the country optimal export duty should be compared against the marginal tax rates on exports. No information is available on the latter. However, it is generally safe to assume that the marginal export tax rate is higher than the average, so that the comparison in Table 1 underestimates the extent of the over-taxation of exports.

2/ A word of caution is needed here. The effect of the export duty on the supply of exports and on the supply of foreign exchange should not be taken as a measure of the effect of the tax on economic welfare. A more appropriate measure of the effect of the tax on economic welfare is derived from the consumer and producer surpluses and would be given by

$$- \int_{t_k^i}^{*t_k^i} (MC_k^i - MR_k^i) dX_k^i$$

where $MC_k^i$ is the marginal social cost of producing commodity k, $MR_k^i$ is the marginal social revenue, derived from exporting k, and $dX_k^i$ is the change in output induced by the export duty relative to the level that would prevail in the country optimal situation.

production released by the taxed export activity are employed by non-export activities. Table 2 shows the estimated effect of explicit and implicit export taxes on commodity exports by country, taking as a point of reference the levels of exports that would result if the high and low values of the country optimal export taxes, estimated in Table 1, were applied. The main conclusion that can be derived from the exercise in Table 2 is that the overtaxation of exports by most of the selected developing countries has a significant depressing effect on the volume of output of the taxed commodities.

The estimated reduction in output for the generally overtaxed commodities, such as coffee, cocoa, cotton, rice, and bauxite, is quite high, especially if the low estimated values of the country optimal tax rates are used as point of reference. 1/ It would appear that for many of the individual countries the lowering of export tax rates would significantly increase the output of the taxed commodity, if the elasticity estimates are to be trusted. For instance, coffee exports from El Salvador, Ethiopia, Côte d'Ivoire, Sierra Leone, Tanzania, and Togo; cocoa exports from Togo; rubber exports from Sri Lanka; and cotton exports from Sudan could increase more than 40 percent if these countries lowered their export duties to the country optimal level. Furthermore, exports of coffee from Honduras, Rwanda, and Uganda; exports of cocoa from Ghana and Côte d'Ivoire; and rice exports from Brazil could increase from 20 to 40 percent if these countries lowered their export duties. Other countries, like Guatemala, Haiti, Mauritius, Thailand, and Jamaica would have more modest, but still significant, increases in their volume of exports of the taxed commodities if they lowered their export taxes. Very few countries with large world market shares, such as Colombia for coffee and Malaysia for rubber, would decrease the volume of exports of the indicated commodity if country optimal export duties were adopted.

High export taxation also has a depressing effect on the average foreign exchange earnings by commodity. In most cases, the impact on foreign exchange earnings is similar to, though somewhat smaller than, the effect on output. Those countries that are overtaxing the export commodities could increase foreign exchange earnings if they lowered the level of export tax rates (on coffee, for example, see Togo, Côte d'Ivoire, and Tanzania; on cocoa, see Togo; on rubber, see Sri Lanka; and see Sudan on cotton).

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1/ Other circumstantial evidence supporting the above conclusion is substantial. For instance, Ghana has overtaxed exports of cocoa to such an extent that its ranking among producer countries has slipped from first to third place (after Côte d'Ivoire and Brazil). Haiti has also suffered a decline in coffee exports from three fourths to one half of total output over the last 25 years. Production has remained stagnant and consumption has increased substantially. The export duty was reduced to 25 percent in 1983 from a high of 40 percent, but no effect has been felt in production yet. See Tanzi (1976), who deals with Haiti; and Okonkwo (1978), who studies cocoa in West Africa.

Table 2. Partial Effects of Adopting Country Optimal Export
Duties on Exports and Foreign Exchange

(Percentage change)

| | Effect on Exports | | Effect on Foreign Exchange | |
|---|---|---|---|---|
| | High 1/ | Low 2/ | High 1/ | Low 2/ |
| Coffee | | | | |
| Brazil | 14.80 | 48.67 | 6.74 | 17.02 |
| Burundi | 17.38 | 18.06 | 15.73 | 16.34 |
| Colombia | −14.45 | −7.70 | 128.07 | 68.51 |
| Costa Rica | 2.84 | 4.09 | 0.67 | 0.99 |
| El Salvador | 39.71 | 51.84 | 29.37 | 37.56 |
| Ethiopia | 38.92 | 44.69 | 32.08 | 36.63 |
| Guatemala | 11.61 | 14.45 | 7.10 | 8.77 |
| Haiti | 18.83 | 19.32 | 17.81 | 18.27 |
| Honduras | 25.85 | 27.89 | 22.69 | 24.40 |
| Côte d'Ivoire | 56.50 | 73.27 | 47.55 | 60.65 |
| Rwanda | 20.11 | 20.83 | 18.62 | 19.29 |
| Sierra Leone | 43.53 | 44.03 | 42.80 | 43.29 |
| Tanzania | 58.34 | 63.37 | 53.08 | 57.53 |
| Uganda | 21.08 | 24.72 | 15.54 | 18.13 |
| Togo | 1,197.54 | 1,581.41 | 1,169.84 | 1,534.17 |
| Cocoa | | | | |
| Ghana | 35.53 | 46.03 | 18.09 | 22.20 |
| Grenada | 6.48 | 6.55 | 5.86 | 5.92 |
| Côte d'Ivoire | 28.59 | 38.54 | 14.99 | 18.96 |
| Sierra Leone | 9.99 | 10.04 | 9.52 | 9.57 |
| Togo | 528.05 | 559.25 | 505.14 | 533.83 |
| Tea | | | | |
| India | −17.48 | −6.44 | 50.24 | 18.69 |
| Sri Lanka | 1.27 | 10.87 | 0.44 | 4.84 |
| Rubber | | | | |
| Malaysia | −9.54 | −5.97 | 63.08 | 39.67 |
| Sri Lanka | 57.59 | 62.64 | 29.41 | 31.79 |
| Thailand | 6.58 | 8.74 | 0.66 | 0.80 |
| Indonesia | −8.73 | −5.55 | 78.69 | 50.03 |
| Bananas | | | | |
| Costa Rica | −1.87 | −0.61 | 24.26 | 7.96 |
| Honduras | −0.05 | 1.58 | 0.16 | −5.52 |
| Cotton | | | | |
| Chad | 0.70 | 0.71 | 0.63 | 0.64 |
| Sudan | 40.26 | 41.61 | 36.64 | 37.85 |
| Togo | 1.37 | 1.37 | 1.36 | 1.36 |
| Sugar | | | | |
| Dominican Republic | 7.94 | 11.69 | 3.93 | 5.63 |
| Mauritius | 14.33 | 17.75 | 10.36 | 12.71 |
| Rice | | | | |
| Thailand | 7.98 | 12.06 | 2.83 | 4.14 |
| Brazil | 24.88 | 24.91 | 24.79 | 24.83 |
| Bauxite | | | | |
| Jamaica | 14.43 | 14.43 | 6.69 | 6.69 |
| Tin | | | | |
| Malaysia | −7.00 | 12.48 | 3.77 | 7.47 |

Sources: International Monetary Fund, International Financial Statistics,
Government Finance Statistics; World Bank, Trade and Price Trends, 1983-84; and
Behrman (1977). See Section III for methodology employed.

1/ The high estimate corresponds to the high value of the elasticity of demand
employed and measures the effect on output and foreign exchange relative to the
level that would prevail if optimal export duties were adopted.
2/ The low estimate corresponds to the low value of the elasticity of demand.

To conclude, in the majority of cases analyzed the observed levels of export taxation seem high and are detrimental to both the level of exports and foreign exchange earnings. Hence, the supply-side prescription of reducing export taxes, in most cases, would not only increase the volume and the value of exports but could also enhance welfare. Furthermore, a number of countries could lower export taxes to the country optimal level and increase tax revenue, by transforming the nonrevenue-yielding implicit export taxes into revenue-yielding export taxes. The last result is particularly relevant for those countries that have a relatively large share in the world market and that are currently overtaxing exports by way of nonrevenue-yielding implicit taxes. 1/

2. Qualifying the interpretation of country optimal export duties

The preceding generalizations need to be qualified. First, certain imperfections in the commodity markets could preclude some developing countries from benefiting, in the short run, from lowering export taxes. As was noted before, the commodity agreements and certain import restrictions imposed by industrial countries predetermine, in the short run at least, the feasible level of exports. Any small country that wants to increase output, by lowering export taxes, may have to sell its output in nonquota markets, at a discount. This qualification applies especially to commodities such as coffee, cocoa, tin, rubber, sugar, cotton, tobacco, etc.

Second, the methodology developed throughout this paper assumes that there are no other relevant distortions in the economy. For the actual application of the above methodology as a tool for policymaking, this assumption should be checked. In most developing countries, it is likely that other agricultural producer prices are also distorted. The increase (decrease) in production of the taxed commodity would lead to a reduction (increase) in the production of other agricultural products and could generate positive or negative external effects that should be taken into consideration.

Third, the country optimal export duty should, in general, be estimated taking into account the effect of the export duty on the price of close substitutes and complements in demand and in production. The adjustment is particularly relevant for such commodities as coffee, tea, and cocoa that are close substitutes in demand, but it should also be

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1/ Multiple exchange rate practices, for instance, are an implicit form of export taxation that does not yield revenue. In many instances it might be feasible to eliminate multiple currency practices keeping the explicit ad valorem level of taxation constant; this would certainly increase the yield of the export tax.

Table 3.  Selected Indicators of the Impact of Stabilization Schemes
on Producer Prices in Selected Developing Countries

(In percent)

| Crop/Country | Period Covered | Coefficient of Variation | | Ratio of Producer to Export Price |
| --- | --- | --- | --- | --- |
| | | Producer price | Export price | |
| Coffee | | | | |
| Côte d'Ivoire | 1972-81 | 34 | 51 | 40 |
| Haiti | 1970-84 | 52 | 49 | 51 |
| Papua New Guinea | 1979-83 | 13 | 21 | 171 |
| Rwanda | 1974-84 | 15 | 19 | 57 |
| Sierra Leone | 1972-83 | 66 | 59 | 57 |
| Cocoa | | | | |
| Côte d'Ivoire | 1972-81 | 35 | 40 | 55 |
| Ghana | 1971-83 | 126 | 131 | 52 |
| Nigeria | 1972-81 | 51 | 41 | 68 |
| Papua New Guinea | 1979-83 | 16 | 27 | 128 |
| Sierra Leone | 1972-83 | 52 | 39 | 58 |
| Palm kernel | | | | |
| Nigeria | 1972-81 | 28 | 37 | 92 |
| Sierra Leone | 1972-83 | 53 | 76 | 59 |
| Groundnuts | | | | |
| Senegal | 1976-84 | 25 | 35 | 33 |
| Gambia, The | 1975-83 | 11 | 33 | |
| Copra | | | | |
| Papua New Guinea | 1979-83 | 23 | 39 | 103 |
| Rice | | | | |
| Thailand | 1970-82 | 35 | 42 | 43 |
| Cotton | | | | |
| Chad | 1974-84 | 22 | 20 | 45 |

Sources:  Publications of marketing organizations, central banks, statistical bureaus, and other official agencies, various editions.

and overall macroeconomic impact of the schemes. 1/ While the data in respect of producers' incomes and export earnings are available only on a fragmentary basis for some countries (only for three commodities exported from three countries), no statistics whatsoever are available on other factors. The available data have provided the basis of computing the coefficients of variations in producers' incomes and export earnings, set out in Table 4, which suggest that out of six observations, only in two cases, namely, palm kernel exports from Nigeria and Sierra Leone, did the producers' incomes vary to a smaller extent than export earnings. In contrast, in two other cases, namely, cocoa exports from Ghana and Sierra Leone, the activities of the marketing agencies destabilized producers' incomes. In the remaining two cases, stabilization schemes seemed to have no impact.

The stabilization of producers' prices for these commodities was financed by means of formal export duties accruing to the marketing agencies in some of these countries and, more important, by way of implicit export taxes in the form of the differential between export prices received by these agencies and the amount paid to growers. Table 3 sets out such differentials with respect to these commodities exported in the form of the ratio of average producer prices to export prices realized over extended periods of time. Although the ratios incorporate the same distribution costs incurred by these agencies, one can still infer from them that the agencies absorb an inordinately large proportion of export receipts, ranging from 8 percent on palm kernels exported from Nigeria to 67 percent of groundnuts exported from Senegal. Insofar as not all of the revenues collected by the marketing agency are distributed to producers over time, they represent the tax implicit in the administration of the scheme. The figures in Table 3 also suggest that in Papua New Guinea the producers of coffee, cocoa, and copra have been subsidized by the Government.

## V. Conclusions

Two major conclusions can be derived. First, most of the developing countries used as illustration in the paper seem to be overtaxing exports of the selected commodities. This result is especially brought out when the high implicit export taxes prevalent in so many countries are also taken into account. The overtaxation of exports is also suggested by the operation of commodity stabilization schemes that, as indicated above, markedly reduce the present value of revenue to producers without similarly reducing riskiness. Hence, the observed levels of export taxation cannot, in general, be justified on grounds of the country optimal

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1/ It does not take into account the impact of the STABEX, the scheme to stabilize export earnings between the European Community and 46 African, Caribbean, and Pacific (ACP) countries because the compensation under the scheme, which is in the form of grants for most of the countries covered here, accrues directly to the budget and not to the stabilization fund nor to producers.

Table 4.  Coefficients of Variations in Producers' Incomes
and Export Earnings in Selected Developing Countries

| Crop/Country | Period Covered | Coefficient of Variation in | |
| --- | --- | --- | --- |
| | | Producers' income | Export earnings |
| Cocoa | | | |
| Ghana | 1971-83 | 102 | 95 |
| Nigeria | 1972-81 | 32 | 31 |
| Sierra Leone | 1972-83 | 62 | 49 |
| Coffee | | | |
| Sierra Leone | 1972-83 | 59 | 59 |
| Palm kernels | | | |
| Nigeria | 1972-81 | 30 | 53 |
| Sierra Leone | 1972-83 | 45 | 59 |

Sources:  Publications of marketing organizations, central banks, statistical bureaus, and other official agencies, various editions.

export duty argument or based on commodity stabilization. Second, the estimates made here show that the overtaxation of exports of certain commodities may have reduced substantially the level of exports of these commodities for the majority of the countries under study. It also seems to have reduced the level of foreign exchange earnings in most of the cases analyzed.

The main policy recommendation that emerges is that lowering the explicit and implicit levels of export taxation would be advisable not only from a supply-side perspective, but also from the point of view of economic efficiency. Over the short and medium runs, however, the existence of market imperfections, introduced by both commodity agreements and protectionism imposed by industrial countries, could well preclude exporting countries from benefiting from the supply-side effects of lowering export taxes and expanding their exports; 1/ at the same time government revenues would be lowered.

The ensuing loss of government revenue, in most cases, may turn out to be a major obstacle in lowering export taxes. Many of the developing countries have few alternative sources of revenue, given the difficulties that could be encountered in the administration of more sophisticated, but less distortive, tax systems. It should be mentioned that many of the sample countries could reduce effective levels of taxation and promote exports without losing revenue (and in a few cases even gaining revenue), if the implicit (nonrevenue yielding) export duties were transformed into formal (revenue yielding) export taxes. Furthermore, in many instances the reduction of export duties could be accompanied alongside the devaluation of the exchange rate, in which case the impact of lowering the tax rates on tax revenue would be reduced and could even lead to an increase in government revenue.

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1/ See Golub and Finger (1979) who discuss the impact of protectionism and taxation on the world commodity market.

<u>Levels and Structure of Export Duties
in Developing Countries</u>

Export taxes exist in 67 developing countries, as shown in Table 5, and are levied on a wide range of primary commodities. In 26 developing countries, export tax revenue constitutes more than 1 percent of GDP and, with some minor exceptions, over 10 percent of the total tax revenue (Table 6). This Appendix will, therefore, focus on the levels and structure of export taxes in these 26 developing countries only. In most cases, the export tax revenue is derived from one or two commodities that feature prominently in the exports of these countries. Coffee is the most widely taxed commodity and is the most important source of export tax revenue in 13 of the 26 countries listed in Table 6. Furthermore, beverage crops, which comprise coffee, tea, and cocoa, are the most important source of tax revenue in 17 of the 26 countries under review. Other export commodities commonly taxed are rice, sugar, copra, bananas, groundnuts, palm kernels, cotton, rubber, wood, bauxite, tin, phosphates, copper, and petroleum.

## 1.   <u>Levels and structure of export taxation</u>

To analyze the level of export taxes and to make comparisons across countries, the section looks at three different indicators.

First, Table 6 shows the ratio of export tax revenue to total exports for the 26 countries under analysis. The ratio goes from a high of 33 percent, for Rwanda, to a low of 4.6 percent, for Togo, and has an average level of 13 percent for the whole sample. Most of the countries (17) are below the average level and only six countries have a ratio exceeding 20 percent.

Second, export taxes are not necessarily payable on all exports, or at a uniform rate on all commodities. Even though the statutory rates can take the form of an ad valorem rate, specific rate, or a composite rate, the composite (or sliding scale) rates are by far the most prominent form of duty. Such composite tax rates take the form of a fixed amount of tax (i.e., basic tax) on up to a specified export price (i.e., floor price) and a progressively rising (sliding) rate of tax on successive increments in export price. With some minor exceptions, the sliding rate applies to the incremental value of export. 1/ A specific rate is the least common form of export duties as it applies in only 5 of the 26 countries under review (Burundi, Cameroon, Central African Republic, Honduras, and Pakistan). To maintain their comparability with ad valorem and sliding scale tax rates, such specific rates are expressed in Table 7 in terms of an ad valorem equivalent derived

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1/ A major exception is Ethiopia, where the sliding rate applies to the volume of export. Mauritius and Senegal apply a dual rate (a variant of sliding rate) under which the lower rate applies to small-scale producers in the former and small shipments in the latter.

Table 5. Significance of Export Taxes in 67 Developing Countries
(various periods)

| Country | GNP Per Capita Around 1980 | Period 1/ | Total tax to GDP | Export duties to GDP | Export duties to total tax | Export duties to total exports |
|---|---|---|---|---|---|---|
| | (In U.S. dollars) | | | (In percent) | | |
| Gabon | (3,420) | 1974-1976 | 20.69 | 0.99 | 5.34 | 1.49 |
| Bahamas | (2,770) | 1977-1979 | 16.36 | 0.32 | 1.95 | ... |
| Uruguay | (2,620) | 1980-1982 | 20.98 | -- | 0.01 | 0.02 |
| Argentina | (2,590) | 1979-1981 | 14.11 | 0.17 | 1.25 | 2.62 |
| Brazil | (2,160) | 1979-1981 | 17.10 | 0.32 | 1.84 | 4.35 |
| Mexico | (1,980) | 1979-1981 | 14.29 | 2.56 2/ | 17.71 2/ | 32.01 |
| Panama | (1,730) | 1979-1981 | 21.03 | 0.40 | 1.88 | 4.07 |
| Fiji | (1,650) | 1979-1981 | 18.77 | 0.44 | 2.34 | 2.22 |
| Seychelles | (1,580) | 1975-1977 | 19.22 | 0.14 | 0.72 | ... |
| Malaysia | (1,580) | 1979-1981 | 22.82 | 4.40 | 19.32 | 8.43 |
| Syrian Arab Republic | (1,480) | 1979-1981 | 9.96 | 0.28 | 2.76 | 1.84 |
| Paraguay | (1,410) | 1979-1981 | 10.10 | 0.07 | 0.66 | 0.45 |
| Costa Rica | (1,390) | 1979-1981 | 16.95 | 2.04 | 12.07 | ... |
| Tunisia | (1,260) | 1979-1981 | 24.66 | 0.28 | 1.12 | 1.02 |
| Colombia | (1,260) | 1977-1979 | 10.96 | 1.47 | 13.30 | 12.01 |
| Côte d'Ivoire | (1,110) | 1980-1980 | 20.65 | 2.30 | 11.15 | 7.69 |
| Ecuador | (1,100) | 1979-1981 | 10.49 | 0.40 | 3.95 | 1.84 |
| Jamaica | (1,090) | 1975-1977 | 23.09 | 6.79 3/ | 29.27 3/ | 0.82 |
| Peru | (1,080) | 1980-1982 | 17.19 | 1.66 | 9.44 | 8.65 |
| Mauritius | (1,080) | 1979-1981 | 19.21 | 2.85 | 14.78 | 9.00 |
| Guatemala | (1,080) | 1979-1981 | 9.42 | 1.50 | 15.85 | ... |
| Congo | (880) | 1980-1980 | 26.87 | 0.07 | 0.27 | 0.13 |
| Nigeria | (870) | 1976-1978 | 19.78 | 0.01 | 0.04 | ... |
| Morocco | (830) | 1979-1981 | 21.57 | 0.28 | 1.31 | 2.00 |
| Papua New Guinea | (780) | 1979-1981 | 17.78 | 0.45 | 2.62 | 1.30 |
| Nicaragua | (760) | 1978-1980 | 14.75 | 0.56 | 3.29 | ... |
| Cameroon | (730) | 1980-1982 | 21.50 | 1.59 | 8.75 | 7.48 |
| Philippines | (710) | 1979-1981 | 11.18 | 0.20 | 1.75 | 1.30 |
| El Salvador | (670) | 1980-1982 | 11.18 | 2.69 | 24.06 | ... |
| Thailand | (670) | 1980-1982 | 12.71 | 0.38 | 3.00 | 1.92 |
| Grenada | (650) | 1975-1977 | 19.68 | 3.29 | 17.00 | ... |
| Swaziland | (650) | 1978-1980 | 26.07 | 2.02 | 7.76 | ... |
| Bolivia | (570) | 1980-1982 | 6.24 | 0.04 | 0.62 | 0.24 |
| Honduras | (560) | 1979-1981 | 13.50 | 2.42 | 17.94 | 0.82 |
| Egypt | (550) | 1977-1979 | 27.80 | 0.34 | 1.11 | ... |
| Liberia | (500) | 1979-1981 | 22.70 | 0.14 | 0.63 | 0.23 |
| Lesotho | (470) | 1975-1977 | 19.92 | 0.16 | 0.82 | 2.12 |
| Indonesia | (450) | 1979-1981 | 20.18 | 0.66 | 3.39 | ... |
| Yemen Arab Republic | (430) | 1979-1981 | 18.02 | -- | 0.01 | 0.33 |
| Senegal | (420) | 1978-1980 | 20.56 | 0.69 | 3.41 | 1.87 |
| Mauritania | (400) | 1977-1979 | 16.64 | 0.11 | 0.67 | 0.47 |
| Ghana | (390) | 1980-1982 | 6.04 | 1.01 | 13.49 | 11.21 |
| Kenya | (390) | 1979-1981 | 20.63 | 0.18 | 0.85 | 0.88 |
| Sudan | (360) | 1978-1980 | 11.40 | 0.38 | 3.21 | 5.23 |
| Togo | (350) | 1978-1980 | 26.70 | 1.27 | 4.71 | 4.65 |
| Madagascar | (350) | 1972-1973 | 15.52 | 0.93 | 6.01 | ... |
| Pakistan | (310) | 1979-1981 | 12.96 | 0.19 | 1.49 | 1.13 |
| Central African Republic | (310) | 1981-1981 | 14.97 | 1.57 | 10.45 | 13.86 |
| Sierra Leone | (300) | 1979-1981 | 15.18 | 1.65 | 10.93 | 10.21 |
| Niger | (300) | 1978-1980 | 11.72 | 0.55 | 4.70 | 2.70 |
| Benin | (290) | 1977-1979 | 16.33 | 0.29 | 1.77 | ... |
| Haiti | (280) | 1980-1982 | 10.16 | 0.95 | 9.53 | ... |
| Tanzania | (270) | 1979-1981 | 17.78 | 1.00 | 5.73 | 8.87 |
| Sri Lanka | (270) | 1979-1981 | 19.27 | 6.25 | 31.99 | 23.05 |
| Somalia | (260) | 1976-1978 | 19.65 | 0.38 | 1.96 | 2.62 |
| India | (230) | 1979-1981 | 10.75 | 0.09 | 0.79 | 1.55 |
| Rwanda | (220) | 1978-1980 | 11.13 | 2.88 | 25.42 | 33.03 |
| Gambia, The | (220) | 1976-1978 | 14.64 | 1.50 | 10.36 | ... |
| Burundi | (210) | 1979-1981 | 11.94 | 1.41 | 11.19 | 15.94 |
| Zaire | (200) | 1979-1981 | 17.95 | 3.22 | 17.88 | 15.26 |
| Burkina Faso | (200) | 1978-1980 | 13.29 | 0.43 | 3.26 | ... |
| Uganda | (200) | 1980-1982 | 2.09 | 0.67 | 28.24 | 68.53 |
| Mali | (190) | 1979-1981 | 12.61 | 0.58 | 4.59 | ... |
| Nepal | (140) | 1979-1981 | 6.75 | 0.25 | 3.72 | ... |
| Bangladesh | ((30)) | 1976-1978 | 7.54 | 0.13 | 1.72 | ... |
| Ethiopia | (130) | 1976-1978 | 12.07 | 2.91 | 23.44 | 31.04 |
| Chad | (110) | 1974-1976 | 9.33 | 0.77 | 8.37 | 0.13 |

Sources: International Monetary Fund, **Government Finance Statistics Yearbook**, and **International Financial Statistics**.

1/ Tax data given in this table pertain to these years.
2/ Export taxes were recently abolished and corresponding revenue is now raised through the transfer of profits by Petróleos Mexicanos (PEMEX).
3/ Includes production tax on bauxite.

Table 6.  Significance of Export Taxes in 26 Selected
Developing Countries

| | Ratio of Export Duties to GDP | Ratio of Export Duties to Total Taxes | Ratio of Export Tax Revenue to Exports | Main Taxable Commodities (Proportion of Total Exports) 1/ |
|---|---|---|---|---|
| | | | | (In percent) |
| Burundi | 1.4 | 11.2 | 15.9 | Coffee (88) |
| Cameroon | 1.6 | 8.7 | 7.5 | Coffee (16) |
| Central African Republic | 1.6 | 10.4 | 13.9 | Coffee (31) |
| Colombia | 1.5 | 13.3 | 12.0 | Coffee (50) |
| Costa Rica | 2.0 | 12.1 | 8.9 | Coffee (27) |
| El Salvador | 2.7 | 24.1 | 11.1 | Coffee (57) |
| Ethiopia | 2.9 | 23.4 | 31.0 | Coffee (66) |
| Gambia, The | 1.5 | 10.4 | 5.5 | Groundnuts (54) |
| Ghana | 1.0 | 13.5 | 11.2 | Cocoa (71) |
| Grenada | 3.3 | 17.0 | 7.6 | Cocoa (41) |
| Guatemala | 1.5 | 15.8 | 8.5 | Coffee (30) |
| Haiti | 1.0 | 9.5 | 9.9 | Coffee (56) |
| Honduras | 2.4 | 17.9 | 7.6 | Coffee (24) |
| Côte d'Ivoire | 2.3 | 11.1 | 7.7 | Cocoa (29) |
| Jamaica | 6.8 | 29.3 | 21.7 | Bauxite-Alumina (74) |
| Malaysia | 4.4 | 19.3 | 8.4 | Rubber (16) |
| Mauritius | 2.8 | 14.8 | 9.0 | Sugar (60) |
| Mexico | 2.6 | 17.7 | 32.0 | Petroleum (61) |
| Peru | 1.7 | 9.4 | 8.6 | Minerals (40) |
| Rwanda | 2.9 | 25.4 | 33.0 | Coffee (66) |
| Sierra Leone | 1.6 | 10.9 | 10.2 | Coffee (...) |
| Sri Lanka | 6.2 | 32.0 | 23.0 | Tea (34) |
| Swaziland | 2.0 | 7.8 | ... | Sugar (...) |
| Tanzania 2/ | 1.0 | 5.7 | 8.9 | Various |
| Togo | 1.3 | 4.7 | 4.6 | Phosphates (29) |
| Zaire | 3.2 | 17.9 | 15.3 | Copper (47) |

Sources:  Table 5; International Monetary Fund, International Financial Statistics:  Supplement on Trade Statistics (Washington, D.C.:  1982); and respective countries' tax summaries.

1/  Represent an average of statistics available for three most recent years or part thereof, as shown in Table 5.
2/  Export duties on coffee, cotton, and sisal were abolished in early 1981.

Table 7. Structure of Formal Taxes on Specific Commodities
in Selected Developing Countries

| Commodity/Country | Type of Tax | Tax Base | Tax Rate (Ad Valorem or Equivalent) |
|---|---|---|---|
| | | | (In percent) |
| **Coffee** | | | |
| Burundi | Specific | Unit volume | 8.0 1/ |
| Cameroon | Specific | Unit volume | 7.7 |
| Central African Republic | A.v. | Standard value (valuer mercuriale) | 13.8 2/ |
| | Specific | Unit volume | 1.1 2/ |
| Colombia | A.v. | Turnover value | 9 |
| Costa Rica | Composite: 3/ | | |
| | Basic, a.v. | F.o.b. floor price | 4 |
| | Marginal, a.v. | F.o.b. floor price | 2.5-24.0 |
| El Salvador | A.v. | F.o.b. value | 10-30 |
| Ethiopia | Composite: | | |
| | Basic: specific | Reference (or floor) price | 2.9 4/ |
| | Marginal: " | Excess over floor price | 9.2-34.9 4/ |
| Guatemala | Composite: | | |
| | Basic: a.v. | F.o.b. floor price | 0 |
| | Marginal: a.v. | Excess over floor price | 20 |
| Haiti | Composite: | | |
| | Basic: specific | F.o.b. floor price | 0 |
| | Marginal: a.v. | Excess over floor price | 1-15 |
| Honduras | Composite: | | |
| | Basic: a.v. | F.o.b. floor price | 10 |
| | Marginal: a.v. | Excess over floor price | 5-10 |
| Côte d'Ivoire | A.v. | Standard value | 23 |
| Kenya | Composite: | | |
| | Basic | F.o.b. floor price | 0 |
| | Marginal: a.v. | Excess of realized over floor price | 10-25 |
| Papua New Guinea | A.v. | .... | 1.5-7.5 |
| Rwanda | Customs: a.v. | .... | 0-30 |
| | Fiscal: a.v. | | 0-100 |
| Uganda | Composite: | | |
| | Basic | F.o.b. floor price | 0 |
| | Marginal: a.v. | Excess over floor price | 100 |
| **Cocoa** | | | |
| Cameroon | Specific | Unit volume | 9.9 |
| Ghana | Basic: a.v. | F.o.b. floor price | 0 |
| | Marginal | Excess over floor price | 100 |
| Grenada | Composite: | | |
| | Basic: specific | F.o.b. floor price | 7.1 |
| | Marginal: a.v. | Excess over floor price | 20 |
| Côte d'Ivoire | A.v. | Standard value (valuer mercuriale) | 23 |
| Papua New Guinea | A.v. | .... | 1.5-7.5 |
| **Tea** | | | |
| Kenya | Composite: | | |
| | Basic | F.o.b. floor price | 0 |
| | Marginal: a.v. | Excess of realized over floor price | 10-25 |
| Sri Lanka | Composite: | | |
| | Basic: specific | F.o.b. floor price | 24.3 |
| | Marginal: a.v. | Excess of realized over floor price | 35 |
| **Sugar** | | | |
| Mauritius | Composite: | | |
| | Basic | Up to specified output of producer | 0 5/ |
| | Additional: a.v. | Excess over it | 12.3-23.6 5/ |
| Swaziland | Composite: | | |
| | Basic | Up to specified price paid to millers | 0 |
| | Marginal: a.v. | Excess over it | 50 |
| **Bananas** | | | |
| Costa Rica | A.v. | F.o.b. value | 1 |
| Honduras | Specific | Unit volume | 9.8 |
| **Rice** | | | |
| Pakistan   Basmati | Specific | F.o.b. price | 8.0 |
| Other | A.v. | F.o.b. price | 30 |
| Thailand   Tax | A.v. | Posted price of paddy | 5 |
| Premium | Specific | F.o.b. price | 5.4 |
| **Nutmeg** | | | |
| Grenada | Composite: | | |
| | Basic: specific | Floor price | 12.3 |
| | Marginal: a.v. | Excess over it | 20 |
| **Groundnuts** | | | |
| Gambia, The | Unshelled--a.v. | Sales contract price | 8 |
| | Shelled--a.v. | Sales contract price | 10 |

Table 7 (concluded). Structure of Export Taxes on Specific
Commodities in Selected Developing Countries

| Commodity/Country | Type of Tax | Tax Base | Tax Rate (Ad Valorem or Equivalent) |
|---|---|---|---|
| | | | (In percent) |
| **Groundnut oil** | | | |
| Gambia, The | A.v. | Sales contract price | 9 |
| Senegal | .... | .... | 0 6/ |
| | | | |
| **Palm oil** | (Unprocessed composite) | | |
| Malaysia | Basic | Gazetted floor price | 0 |
| | Marginal: a.v. | Excess over it | 30-50 |
| | | | |
| **Copra** | | | |
| Papua New Guinea | A.v. | F.o.b. value | 1.5-7.5 |
| Philippines | A.v. | F.o.b. value | 7.5 |
| Tanzania | A.v. | F.o.b. value | 5 |
| | | | |
| **Rubber** | | | |
| Malaysia | Composite: | | |
| | Basic | Gazetted price | 0 |
| | Marginal: a.v. | Gazetted price | 20-50 7/ |
| | | | |
| **Cotton** | | | |
| | Fiscal duty:a.v. | Valeur mercuriale | 8 |
| | Statistical tax: a.v. | F.o.b. value plus fiscal duty | 6 |
| Pakistan | A.v. | F.o.b. value of raw cotton | 10 |
| Sudan | A.v. | F.o.b. value of cottonseed | 0 8/ |
| Syria Arab Rep. | A.v. | F.o.b value of cotton | 15 |
| Tanzania | Composite: | | |
| | Basic | Unit price of lint | 10 9/ |
| | Marginal: a.v. | Excess of unit price of lint | 0-30 9/ |
| | | | |
| **Wood** | | | |
| Gabon | A.v. | Reference price | |
| Philippines | A.v. | F.o.b. value | 20 |
| Tanzania | A.v. | F.o.b. value | 5 |
| | | | |
| **Copper** | | | |
| Zaire | Export tax,a.v. | Sales value (net) 10/ | 40 |
| | Surtax, a.v. | Excess over floor sales value | 10 |
| | Statistical tax | F.o.b. export value net of export duties | 1-10 |
| | Turnover tax | Bank deposits of export proceeds | 7 |
| **Bauxite** | Composite: | | |
| Jamaica | Basic: a.v. | Average realized floor price | 6 |
| | Marginal: a.v. | Excess over it | 3.6 |
| | | | |
| **Tin** (ore and concentrates) | | | |
| Malaysia | Basic | Gazetted floor price | 0 |
| | Marginal: a.v. | Excess over it | 20-50 |
| | | | |
| **Phosphates** | | | |
| Senegal | A.v. | Size of shipment | 2.5-5 |
| Togo | A.v. | Administered price over f.o.b. price | 17.1 |
| | | | |
| **Diamonds** | | | |
| Sierra Leone | A.v. | F.o.b. value | 3 |

Note: a.v. = ad valorem.

Source: Respective countries' tax summaries most current versions.

1/ Comprises separate levies for ordinary budget, extraordinary budget, and for development projects.
2/ Export taxes consist of regular export duty and turnover and quality control taxes which apply at ad valorem rates and a special levy which applies at a specific rate.
3/ Comprises taxes collected on the net income of sales to the coffee processing plant and on exports but not some nominal taxes collected for the Coffee Institute.
4/ Basic tax consists of turnover tax at the rate of 2 percent, ad valorem equivalent of the specific rate of coffee cess (at reference prices prevailing in 1982/83) of 1.9 percent and surtax at zero rate on specified reference (floor) prices. Marginal rates are ad valorem equivalents of specific rates of duty (again based on 1982/83 prices).
5/ A flat rate of 10 percent on molasses.
6/ No formal export taxes but a separate price stabilization levy applies.
7/ Additional replanting and research cess are payable.
8/ Suspended since the 1979/80 crop season.
9/ Abolished since 1981.
10/ Net of marketing costs, export tax, and statistical tax.

on the basis of prevailing price levels of export commodities to which
they apply. The table indicates that the statutory rates vary from a
low of 1 percent on bananas in Costa Rica to a high marginal rate of
100 percent on coffee in Rwanda and Uganda.

Third, Table 8 (column 1) shows the effective rate of export tax
for each commodity. This is measured as a ratio of tax revenue to
total export value (f.o.b.) of that commodity. There is substantial
variability by country and by type of commodity. Coffee, for instance,
is taxed, on the average, at 17 percent; however, actual rates may
range between a high of 25 percent, in Tanzania, to a low of 1 percent,
in Brazil. Cocoa is taxed at an average rate higher than that of
coffee (20 percent); the actual rate, however, reaches 23 percent in
Côte d'Ivoire. The average export tax rate for all commodities and
all countries included in the first column of Table 8 is around 17 per-
cent--somewhat higher than the ratio of export tax revenue to total
exports shown in Table 6, since most countries tend to tax only the
exports of selected commodities.

## 2.    Implicit taxes on exports

The second column in Table 8 shows the estimated implicit tax for
some of the commodities. It is based on the estimation of the nominal
protection coefficients (NPCs) of selected export commodities made by
the World Bank (1981) and (1982), which takes into account "tariffs,
quotas, and nontariff barriers that protect farmers as well as the
impact of export taxes on restrictions that penalize farmers." To the
extent that protection is also a function of the country's exchange
rate, it is also included in the computation of NPCs. 1/  Implicit tax
data incorporate the effect of both formal export taxes and implicit
export taxes. Even though information is incomplete, it is clear that
implicit export taxes can substantially raise the total effective burden
of export taxation, such that the average implicit rate on export is
more than doubled when implicit export taxes are incorporated.

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1/  NPCs do not, however, incorporate the impact of subsidies on inputs,
such as fertilizers, seeds, insecticides, water, fuel, transport, storage,
farm machinery, etc., which are extended to producers in various forms,
including the exemption from relevant taxes (import and excise duties,
sales tax, etc.), fixed prices which do not fully reflect the cost and
preferential interest rates on loans to producers.

Table 8.    Estimated Implicit Export Tax Levels by Commodity in
Selected Developing Countries

(In percent)

| | Formal Export Tax 1/<br>1979-81 | Total Implicit and<br>Formal Export Tax 2/<br>1980-81 |
|---|---|---|
| **Coffee** | | |
| Brazil | 1 | 59 |
| El Salvador | 16 | 47 |
| Honduras | 15 | 32 |
| Côte d'Ivoire | 23 | 64 |
| Tanzania | 25 | 41 |
| Togo | 20 | 77 |
| **Cocoa** | | |
| Ghana | 18 | 60 |
| Côte d'Ivoire | 23 | 62 |
| Togo | 16 | 77 |
| **Rubber** | | |
| Thailand | 10 | 40 |
| **Bananas** | | |
| Honduras | 11 | 29 |
| **Cotton** | | |
| Sudan | 15 | 40 |
| **Rice** | | |
| Brazil | ... | 40 |
| Thailand | 23 | 40 |

Sources:   International Monetary Fund, Government Finance Statistics,
various years and International Financial Statistics, various years; World
Bank, Accelerated Development in Sub-Saharan Africa, 1981, and World
Development Report, 1982.

1/   Ratio of export tax to value of exports of the taxable commodity.
This is called the formal export tax.
2/   Estimated in World Development Report. Sources of the estimation
of rates of formal and implicit export taxes are different. The two
columns may not be comparable. Estimated implicit tax is inclusive of
the formal tax as indicated in the estimates of total export taxation
made by the World Bank (1981) and (1982).

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