1.8 Although large potential gains for producers in aggregate as a result of supply controls can be demonstrated for some primary products, international agreement has proved extremely difficult. This has been mainly because of objections to such schemes by some major consuming countries, although there have been problems of sharing the benefits and costs of such controls among producing countries. For example, a sticking point in the negotiations for an international agreement on tea has been the distribution of export quotas between producing countries. One possible alternative means of raising primary product prices is the imposition of export taxes by the producing countries at uniform ad valorem rates[16]. But an export tax will tend to lower the supply price of a taxed commodity. Consequently, the producers with high price elasticities of supply might experience a shrinkage in their export shares. One way of avoiding this is to pay compensation to those producers on the basis of initial (pre-tax year) shares in world exports. The theoretical factors which are conducive to following such a course of action are discussed in Chapter II. The subsequent chapter is concerned with the developing country experience in this area. Chapter IV assesses those commodities which appear suitable for the imposition of export taxes while the final chapter gives the conclusions that can be drawn.

II. THEORETICAL FRAMEWORK

2.1 A case for an export tax policy can be made using the concept of optimum tariff and this is shown in section (a) below. It can also be argued that for activities which generate economic rent (as described in paragraph 2.9 below) because of market imperfections and differential resource endowments, a larger share of these rents can be retained in the producing countries through the levy of export taxes. The latter approach is discussed in section (b). It is followed, in section (c), by a brief review of the literature.

(a) Export Taxes as a Form of Optimum Tariff

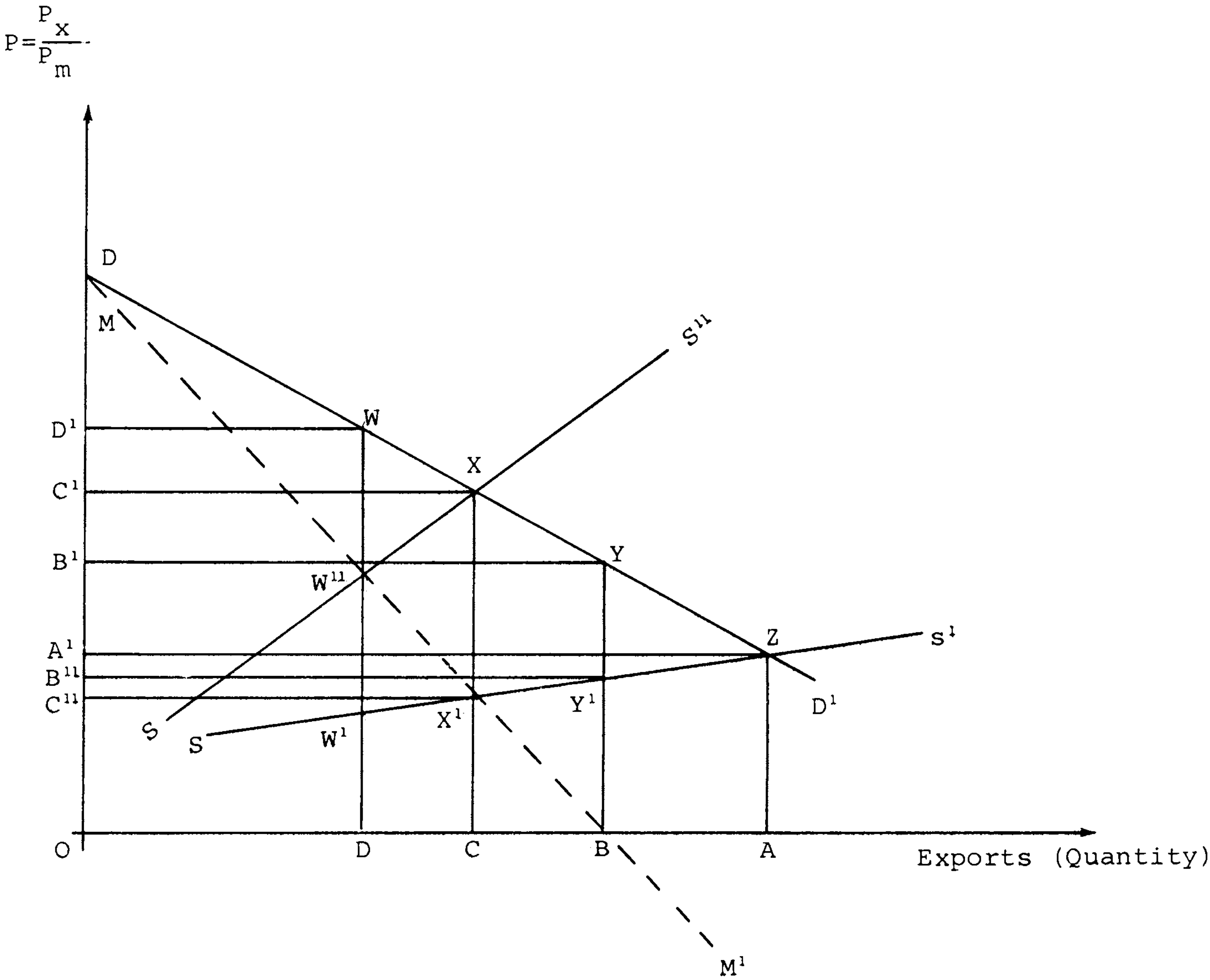
2.2 The argument that there is some optimum rate of tax on trade (either on imports or exports, but considered as an export tax for the purpose of this study), at which the marginal gain from improved terms of trade equals the marginal loss from reduced specialization on the basis of comparative advantage, is well established theoretically[17]. It has also been argued that an 'optimum' export tax can be levied which raises world welfare if it represents a 'second best' solution in a world in which there is government intervention with export supply of a less 'efficient' kind. However, we shall, here, be concerned with the case of a tax from the export's or exporter's standpoint alone.

2.3 It has been shown that under partial equilibrium (neo-classical) conditions, a government imposing an export tax on a particular commodity drives a wedge between export and domestic prices[18]: the export price rises to the extent to which the exporter(s) is (are) not (a) price taker(s), while the domestic producer and consumer price fall. Because of lower domestic prices, production falls, but domestic consumption rises, hence the volume of exports falls. As long as the foreign demand for the commodity is not perfectly elastic, there is an export tax which would maximize the real incomes of producing countries at the expense of foreign consumers. The analysis below assumes that either there is one dominant exporter or that exporters act in concert. Clearly, one small supplier among many would be a price taker rather than a price setter, and a tax unilaterally imposed by a price taker would have no impact on the selling price and lead to no gains by its exporter.

2.4 The optimum export tax argument is demonstrated in figure 1, which shows the supply and demand relationships of exports and imports. Balance-of-payments equilibrium and an unchanged exchange rate are assumed; the terms of trade are shown on the vertical axis and exports on the horizontal axis. In the figure, export demand and domestic supply are shown by DD^1 and SS^1 respectively. Under perfect competition, the terms of trade will be OA^1 and exports will be OA. The exporters, acting in concert, can maximize export revenue by restricting exports with an export tax of YY^1/YB, since for exports OB and price OB^1, marginal revenue will be zero at B where the marginal revenue curve MM^1 intersects the horizontal axis. Further restriction of exports with a tax of XX^1/XX will yield the optimum export tax from a welfare point of view, since for exports OC, marginal revenue is equal to the average supply price at X^1. An export tax of WW^1/WD will yield the optimal export tax (fiscal) revenue, since at W^{11}, marginal revenue will equal marginal costs.

2.5 In the estimation of the model, DD^1 and SS^1 were considered to be the relevant export demand and domestic supply schedules which are independent of all other schedules for each commodity. In effect, the import price (P_m, see model in Annex II) was considered to be fixed in domestic and foreign currency, so that the export price (P_x) is the world price in domestic or foreign currency. If the commodity concerned only constitutes a small proportion of the imports of all importers, the effect of the export tax on the balance-of-payments of the importing country will tend to be small but unfavourable. Thus, 'ceteris paribus', the balance-of-payments adjustment will tend to shift the demand curve DD^1 downwards in terms of foreign exchange; failure to take this into account will lead to an overstatement of the estimated export tax revenue. Balance-of-payments effects in the exporting country will vary according to the importance of the commodity; certainly up to the optimum rate of export tax, the balance-of-payments will improve. The resulting appreciation of the currency will shift the supply curve upwards in terms of foreign exchange, leading to an overestimation of the optimal export tax rate. The latter, however, will counter the overstatement of the optimal export tax revenue. Furthermore, it is likely that in the commodities under consideration, these effects will not be too important on the demand side; but they may be important on the supply side - an overstatement of the optimal export revenue tax rate.

Fig: 1 MECHANISM OF EXPORT TAXES



Source: Adapted from W.M.Corden, *Trade Policy and Economic Welfare*, Oxford: Oxford University Press, 1974, Chapter 7.

2.6 The benefit accruing from imposing an export tax depends on the domestic and foreign elasticities of supply and demand, for they determine the relative burden borne by foreign consumers and domestic producers. It also depends on the length of time considered, because the increase in export revenue and welfare would be lower if foreign elasticities increase in the long run. Elasticity estimates suggest that world demand is inelastic for most primary products (Annex Table 2), hence export earnings would increase following the imposition of an export tax.

2.7 To examine the ability of primary producing countries to shift the export tax to foreign consumers, estimates based on alternative export tax rates and elasticities (domestic supply and foreign demand) are presented in Table 1. It is assumed, as above, that producing countries are acting in concert. The estimates given in columns 3 to 7 indicate the proportion of tax that can be passed on to foreign consumers. For instance, in the extreme case where there are no substitutes, the price elasticity of foreign demand will be zero and the tax can be fully passed on to foreign consumers (column 3). However, for most primary commodities the price elasticity of foreign demand is greater than zero, but less than unity. On the other hand, domestic supply elasticities for most primary products generally range between 0.2 and 2.0. This implies that a substantial proportion of the export tax can be passed on to foreign consumers. Within the above range of elasticities, the proportion of tax that can be shifted to foreigners is given in the boxed section in Table 1. Considering the elasticities and the tax rates used, the burden of the tax borne by the foreign consumers ranges between 17 per cent and 83 per cent.

2.8 It should be said in conclusion that the above arguments apply in principle to supply controls in general. However, as mentioned earlier, agreement on distributing the production or supply quotas under ICAs or producer agreements can be very difficult. This is particularly the case when world market shares are changing sharply (Annex Table 3) as a result of temporary fluctuations in national supplies and long-term changes in the structure of world production. An export tax agreement avoids this problem, and since it does not artificially 'freeze' current global patterns of production, it should result in a more generally acceptable - and efficient - post-agreement situation.

(b) Economic Rent: A Case for Export Taxes

2.9 The concept of economic rent is used in this context to refer to payments to factors of production (e.g. labour, capital) over and above the minimum necessary to induce the employment or utilisation of those factors. In the contemporary world there are several different categories of economic rent, including rent from land ('resource rent'), rent from the short-run fixity of factors of production ('quasi-rent'), rent accruing to enterprises exploiting market power ('monopoly rent'), and rent resulting from entrepreneurial ability. This study is concerned principally with resource rent and monopoly rent. The former remains very important in the exploitation of mineral resources. There are substantial variations in the location, ease of mining and quality of mineral deposits, and the corresponding costs of discovering, exploiting and processing them vary considerably. Conceptually, the amount of economic rent accruing to a given-intra-marginal-deposit should equal the difference between the cost of production from the deposit and that from a marginal deposit. Commodity markets also have considerable imperfections which give rise to monopolistic or oligopolistic rents. Problems of ascertaining the level of arms-length 'competitive' market prices make it very difficult to measure such rents, which may be captured by the operating enterprise rather than accrue to the resource owner (usually the government); and there are also conceptual problems of ascertaining normal profits in high risk activities. Yet for mineral exporting countries, and particularly for the developing countries among them these rents could be used as an input into economic development. Some economists have suggested the imposition of export taxes as a means of mitigating this situation. These issues are discussed below.

2.10 The use of export taxes to help realise economic rent is two-fold. The first application is for specific, intra-marginal producers. Clearly, under competitive world market conditions intra-marginal producers operating at low production costs but

TABLE 1

Export Tax Incidence on Foreigners
Under Various Assumptions

Elasticity of Export Supply	Rate of Export Tax (per cent)	Elasticity of Foreign Demand				
		0	-0.5	-1.0	-2.0	-5.0
-0.5	5	100	100	0	0	0
	15	100	100	0	0	0
0.2	5	100	32	19	11	5
	15	100	30	17	10	4
0.4	5	100	49	22	19	9
	15	100	46	20	17	8
2.0	5	100	83	70	54	32
	15	100	81	68	51	30
5.0	5	100	92	86	75	54
	15	100	91	84	73	51

Source: Computed by the author.

trading at 'world' market prices will obtain an economic rent. A national government may, however, wish to ensure that this surplus accrues to itself or to the national exchequer rather than to a foreign-owned producer. The second application is where there is imperfect competition in the market - oligopoly, for example - with distorted transfer prices so that 'rents' are being earned. Katarak (1980) has demonstrated that (where the transfer price is equal to or less than the marginal revenue for host country exports) an export tax may be the most appropriate policy for an exporting country even if it is small and the tax is imposed by that country alone (so the country is a price taker). Some evidence of market imperfections is given below.

2.11 Since the Second World War, the most striking feature of the evolution of international trade has been its phenomenal growth (at a pace almost twice that of world output). Much of the expanded output and trade has been accomplished under the auspices and control of transnational corporations. The overall magnitude of this intra-firm trade is still not fully documented but much is known. A recent study has stated that in trade among OECD members intra-firm trade accounts for 25 to 50 per cent of the total, depending on the definition used[19]. If intra-firm trade accounts for a large share of any one market, prices for items moving internationally within affiliated firms may be set on the basis of the firm's own tax and other requirements rather than solely by the market - distorting resource allocation and the ensuing division of benefits. By implication, those transactions which are open and competitive will be more volatile than they otherwise would be[20].

2.12 In some commodities, the influence of large firms appears considerable (Table 2), questioning the validity of the usual theoretical assumption of effective competition among many sellers and buyers. For instance, the world bauxite industry is an oligopoly dominated by six multinational firms of which three are domiciled in the United States. These multinationals are fully integrated and occupy strategic positions in the industry, from raw material production to marketing semi-fabricated products. It appears that through a variety of consortia arrangements, they are associated with practically all new projects of international significance within the industry outside the USSR[21]. They greatly influence prices of aluminium entering into world trade, and the official quotations for aluminium ingots show a high degree of correspondence and stability. There exists in addition a 'thin' market on the London Metal Exchange (LME) in which aluminium from the USSR and minor sources is traded. Prices in this market generally fluctuate in consonance with those on LME for other non-ferrous metals, particularly copper.

2.13 There is also a high degree of concentration in the market structure for iron ore. The eight largest firms control over three-fifths of world iron ore mining, although there are a large number of small producers in the developing countries. On the demand side, iron ore purchasing appears to be even more concentrated. In Belgium, Japan, and the UK, all purchases are handled by a single entity[22]. In France and Germany (West) two companies purchase

TABLE 2

Concentration in International Supply of Selected Primary Products

Commodity	Number of Leading Firms	Market Share per cent	Observation Level	Date
1. Bauxite	4 8	48.6 68.6	Mining	1977
2. Copper	4 8	37.6 55.4	Mining	1977
3. Iron Ore	4 8	37.3 62.1	Mining	1976
4. Lead	4 8	27.7 48.2	Primary Lead refining	1976
5. Nickel	4 8	72.3 91.1	Ferro-Nickel Capacity	1976
6. Tin	4 8	68.5 88.9	Smelting	1976
7. Zinc	4 8	23.1 50.5	Mining	1976
8. Sisal	5	54.6	World trade	1980
9. Bananas	3	63.8	World trade	1980

Sources: Items (1) to (7) from United Nations Industrial Development Organisation, "Mineral Processing in Developing Countries", New York: United Nations, 1980; item (8) from United Nations Conference on Trade and Development, "The Marketing of Hard Fibres (Sisal and Henequen): Areas for International Co-operation" TD/B/C.1/Psc/21, 1981, Table 17, p.30; item (9) from Food and Agriculture Organization, "Review of the Economic Aspects of Production, Trade and Distribution of Bananas", CCP:BA 82/4, March 1982.

practically all iron ore imports, and in Italy and the Netherlands a single company performs similar operations[23]. Considered this way, there appear to be strong oligopsonistic elements.

2.14 In the case of copper, supply is also considered to possess oligopolistic features. The eight largest multinational firms still control over half the world's copper mining capacity, although their share has fallen over the years as state agencies in developing countries have increased their control by nationalisation and expansion[24]. One recent development has been the entry of major oil companies, which now control about a fifth of the market economy countries' copper mining capacity[25]. In so far as developing countries' refining capacity is concerned, the seven largest firms account for about half the total[26]. The smaller (independent) producers depend on the large integrated corporations for raw material supplies or marketing outlets or both[27]. On the demand side, concentration appears to be less.

2.15 The tin market is both oligopolisitc (few-sellers) and oligopsonistic (few buyers) (see Table 2). With a large measure of nationalisation of the tin mining industry in several major producing countries (e.g. Malaysia, Bolivia and Indonesia), the role of the multinationals appears to be limited on the supply side. State-owned producers currently account for most of the tin mined in Indonesia and Bolivia and hold a substantial stake in Malaysia and Nigeria. In Zaire and Rwanda, foreign interests are still responsible for a large share of mine production. On the demand side (smelting), the importance of multinationals appears still to be high despite the trend towards state ownership.

2.16 In nickel, there is a high degree of corporate concentration in mining and refining. The International Nickel Company (INCO) still controls about a third of world output. It operates a large number of mines and smelters in Canada and a refinery in Britain. A French company, Societe Metallurgique Le Nickel (SLN), accounts for about an eighth of world output, with mines and smelters in New Caledonia and a refinery in France. In lead, concentration is relatively less, yet twelve companies account for over three-fifths of the market economies' refining capacity, giving rise to oligopolistic elements. In zinc, eight companies control more than half the world's mine capacity, through direct ownership, subsidiaries and equity sharing.

2.17 Generally, mineral markets are considered to be imperfect, with oligopolistic characteristics. Complex patterns of horizontal and vertical integration exist, and transactions between different stages of mining and processing may not take place at arm's length. These conditions give rise to oligopolistic rents, whose very existence indicates the scope for fruitful bargaining by the producing countries in order to obtaining a share of that rent through export taxation[28].

2.18 In several agricultural commodities, para-statal organisations control supplies to varying degrees while demand also tends to have oligopolistic features. In cocoa, for instance, all beans in Ghana, Nigeria and the Ivory Coast are purchased by the state marketing boards while the processing part of the industry appears to be controlled by a handful of multinational companies [29].

2.19 In 1980, three multinationals controlled nearly two-thirds of world trade in bananas [30]. One of them, the United Fruit Company, remains the largest single banana producer and exporter in Central America, and in 1980 its share in world banana trade amounted to over a third. Moreover, all three multinationals are vertically integrated, with the result that trade does not take place at arm's length but contains the possibility of transfer pricing.

2.20 In commodities such as tea and tobacco, on the other hand, most trading takes place under an auction system. This may give the semblance of free competition, but auction prices can still be influenced by the actions of a small number of large-scale buyers. Partly for that reason, the governments of tea producing countries appear distrustful of auctions [31], and there has been a tendency to move to sales through forward contracts directly with importers. A recent UNCTAD study has shown that eight British companies account for a large proportion of world tea trade, and the corporate concentration may be even higher when interlocking shareholdings and directorates are considered [32]. In the case of tobacco, there seems to be a tendency towards vertical integration, whereby a few firms or their subsidiaries perform many functions, including leaf buying, marketing, shipping and storage, and product manufacture, marketing and distribution. Leaf production is the only area into which they have not expanded. The oligopolistic structure of the tobacco market is characterised by several factors including inter-changeable trademarks, which allow companies to produce each other's brands in specific markets. Such an industry structure facilitates the use of administered prices.

2.21 Another marketing development for some commodities has been the emergence of 'futures' trading. Trading on futures markets, though usually considered competitive, often reflects speculative activity which becomes pronounced during periods of world economic instability when large amounts of mobile capital surge into and out of commodity markets as the values of alternative assets ebb and flow. This speculation affects the process by which expectations of future prices are formed in the commodity markets.

(c) Recent Literature on Export Tax Policy

2.22 Several authors have argued strongly in favour of export taxes as a means of improving the terms on which primary commodities are traded.

2.23 The possibility of using a combined measure of export quotas and export taxes was first shown by Kaldor (1963). He argued that export taxes could be used to modify efficiently the relative size of national export quotas imposed under an international agreement.

2.24 The use of export taxes as a means of achieving higher export prices for tropical foods and beverages was first raised at international level at UNCTAD III (1972). UNCTAD (1974) argued, with reference to tea, that if an export tax were levied on an ad valorem basis it would not affect the relative competitive position of the different exporting countries in the world market; therefore, the imposition by all exporting coutries of an ad valorem tax on exports of tea could be envisaged as a possible policy measure to achieve an immediate improvement in tea prices while avoiding the negotiating problems which would inevitably arise in the elaboration of an export regulation agreement.

2.25 Henderson and Lall (1976) made a strong case in favour of export taxes as a means of improving the terms on which primary products are traded. They based their case on the fact that export taxes might lead to a gradual shift in production and exports to countries which have a comparative advantage in the product in question.

2.26 Maizels (1976) argued in favour of export taxes on primary products (satisfying elasticity conditions) on the ground that they are a simple technique which would, at least overtly, avoid the market-sharing problem.

2.27 Lewis (1977) noted that commodity producers could avoid the problems of supply control (in commodities with an inelastic demand) if they all agreed to levy an export tax, thus gaining more revenue without giving an incentive to farmers/firms to increase output.

2.28 Wong (1978) argued that in the international rice market, Thailand faced a downward sloping demand curve. He calculated the static welfare effect of the export tax imposed by Thailand and found it to be substantial.

2.29 In addition, there are several commodity studies which have empirically estimated the gains from price-raising action by producers. Pincus (1965) considered the possibility of increasing export earnings through international commodity agreements on sugar, coffee, tea, cocoa, and bananas. He estimated that monopoly pricing of these commodities would have raised earnings in 1961 by 16 per cent to US $5 billion. Johnson (1967) modified Pincus' estimating procedure in deriving monopoly profits that could have been extracted by international commodity agreements with respect to the same commodities. His results indicated that producers could have extracted US $2.6 billion in monopoly profits.

2.30 The implications of charging a monopolistic price in the world cocoa market were examined by Behrman (1968) for 1964. He calculated total revenue changes for the cocoa exporting countries under different price and quantity scenarios. The revenue increase was found to be marginal and Behrman suggested that the costs of implementing such an arrangement could possibly outweigh the benefits.

2.31 Eckbo (1975) reviewed the operation of fifty-one cartels and found that nineteen of them were 'successful' in raising prices 200 per cent above costs of production and distribution. He noticed the following common characteristics among the 'efficient' cartels: concentration of production (over 50 per cent), inelastic demand, few short-term substitutes, operating cost advantages (one or two producers with lower cost than others), and the presence of only a few outside suppliers.

2.32 Pindyck (1978) empirically estimated the gains to producers from cartelization of three exhaustible resources: bauxite, copper and petroleum. To serve as a base from which to measure the potential cartel gains, he drew on a model on exhaustible resource pricing. He pointed out that given elasticity estimates, a simple static computation of potential monopoly profits might be quite realistic and sufficient for markets where supply and demand can adjust quickly to price and where resource exhaustion is not a problem.

2.33 More recently, Schmitz et al.(1981) have estimated the economic effects of the formation of a producers' wheat cartel and the consequent imposition of an optimal export tax. They concluded that producers, as a group, would have gained approximately US $6.9 billion in 1980.

2.34 Emmanuel (1972) suggested the imposition of an export tax to compensate for the adverse terms of trade of developing countries[33]. The unequal exchange implied in his proposition can be stated succinctly as a situation of unequal wages between the centre and the periphery, with the former commanding higher values. The wage differential, as estimated by Emmanuel, is roughly equivalent to 15:1, and the implied annual transfer of resources from the developing to the developed countries, according to Evans, amounts to US $240 billion[34].

2.35 Gibson (1980) found that under the condition of equal efficiency wages there would be a 40 per cent improvement for Peru in its terms of trade with the United States. When translated to nominal dollars this would amount to an annual transfer of US$16 billion, which dwarfs the US$6 billion requested in the original version of the Common Fund.

III. DEVELOPING COUNTRY EXPERIENCE

3.1 We now turn to practical experience. Most export taxes have been based implicitly on one or other of the arguments set out above. There are, however, other reasons which apply in particular to individual countries acting in isolation.

3.2 The first is the use of export taxes as a revenue raising device. As we have already seen, governments can, in principle, tax the 'producer surplus' of intra-marginal producers' exports without distorting patterns of production. Further, export taxes are a