RESEARCH SEMINAR IN INTERNATIONAL ECONOMICS

Department of Economics
The University of Michigan
Ann Arbor, Michigan 48109-1220

SEMINAR DISCUSSION PAPER NO. 213

TRADE AND WELFARE EFFECTS OF THE EUROPEAN SCHEMES OF THE GENERALIZED SYSTEM OF PREFERENCES (GSP)*

by

Drusilla K. Brown
Tufts University

November 1987

Trade and Welfare Effects of the European Schemes of
the Generalized System of Preferences (GSP)*

Drusilla K. Brown
Tufts University

I.   Introduction

    Through the last two rounds of multilateral tariff
negotiations, the Kennedy Round and the Tokyo Round, discussions
have been dominated by the interests of the three major trading
blocs, the U.S., the EEC, and Japan. All three groups have sought
to exempt certain domestic industries from the negotiations. The
EEC and Japan have vigorously defended their agricultural sectors,
while the U.S. and other industrialized countries have protected
the domestic textile and clothing industries. Consequently, the
products of greatest immediate interest to the less-developed
countries (LDCs) have not been the object of significant
reductions in tariffs or nontariff barriers (NTBs).

    However, the LDCs have not been excluded completely. Most of
the industrialized countries have substituted a scheme of sub-MFN
(Most Favored Nation) preferential tariffs on industrial imports
from their LDC trade partners under the Generalized System of
Preferences (GSP), sponsored by the United Nations Conference on
Trade and Development (UNCTAD). While most agricultural and
textile products are still excluded, this scheme does provide
needed foreign exchange and may stimulate long run
industrialization of the beneficiaries.

    In this paper, the Generalized System of Preferences (GSP) of
the 9-member European Economic Community[1] (EEC) and that of the
five industrialized members of the European Free Trade
Association[2] (EFTA) will be examined. For this purpose the
import-disaggregated version of the Michigan computational model

of world production and trade will be used to evaluate the trade,

price, and employment effects of the GSP schemes.

The EEC's GSP has been previously studied using both ex ante

and ex post techniques. Baldwin and Murray[3] adopt a partial

equilibrium framework in which tariff preferences are combined

with estimated import demand elasticities to calculate the change

in EEC imports from the beneficiaries. They conclude that in

1971, EEC imports from the beneficiaries increased by $217.3

million, or 25% of imports eligible for GSP treatment. Of this

increase in trade, only $18.1 million, or 8.3%, is the result of

trade diversion.

A difficulty with the Baldwin and Murray result is that a

large fraction of trade within GSP eligible categories does not

receive GSP treatment in practice. Adjusting for this factor,

Langhammer[4] reports that the gross trade creation effect obtained

from the Baldwin-Murray model is closer to 9% of beneficiary

exports of GSP-eligible product categories.

A similar partial equilibrium approach is used by Karsenty

and Laird[5] to estimate the gross trade creation effect of the EEC

and EFTA GSP schemes. In this study, beneficiary exports increase

by $2.6 billion based on trade in 1983, which is 2.4% of total

imports from the beneficiaries.

There are, of course, a number of general equilibrium changes

in goods prices, factor prices, and exchange rates which will tend

to reduce the first-round increase in preferential trade forecast

by the ex ante partial equilibrium models. In order to account

for the general equilibrium effects associated with the GSP,

Sapir[6] uses an ex post cross-section gravity model to test the significance of a binary GSP variable for the period 1967 to 1978. His estimate of gross trade creation for ten of the major beneficiaries is $153 million based on 1971 trade. This is a 24% increase over 1971 EEC imports of GSP eligible products from these countries. For 1976 Sapir estimates a gross trade creation effect of $1.4 billion. However, it should be noted that the GSP variable is statistically significant in 1973 and 1974 only.

Langhammer estimated this model for the period 1978 to 1980 and found the GSP variable to be significantly negative, suggesting that the GSP is reducing beneficiary exports to the EEC. The decline in LDC exports to the EEC may be the result of the exchange of preferences between the EEC and EFTA in 1978 and the diversion of developing country exports toward the U.S. due to the introduction of the U.S. GSP.

Welfare conclusions drawn from these models are based on a comparison of trade creation and trade diversion. However, in the case of the partial equilibrium ex ante models, welfare gains to the donor will be exaggerated to the extent that general equilibrium changes in goods prices and exchange rates diminish the change in trade.

The reduced form empirical models used by Sapir and Langhammer cannot yield unambiguous welfare predictions by comparing trade creation and trade diversion either. If the terms of trade of the donor deteriorate due to the tariff reduction, economic welfare may decline even if, on balance, there are efficiency gains associated with trade creation.

In the present study a general equilibrium computational approach has been adopted which makes it possible to obtain results for the terms of trade and welfare, as well as for trade and employment. As with other studies, we find that the GSP schemes of the EEC and EFTA are trade creating. The results show that total imports from the beneficiaries increase by $129.6 million based on trade in 1976. Of this, $56.8 million is the result of trade diversion. As expected, these trade figures are somewhat smaller than those obtained from the partial equilibrium models.

Nonetheless, welfare, as measured by the equivalent variation, declines for all donor countries in the model. Deterioration in the terms of trade of the donor countries offsets the efficiency gain, resulting in a loss in welfare for all of the members of the EEC and EFTA.

In the next section the GSP schemes of the EEC and EFTA will be discussed and the preferential tariff margins will be presented. The computational model used to obtain these results will then be described and numerical results will be discussed in detail. Summary and conclusions follow.

II. The GSP Schemes of the EEC and EFTA

The EEC's GSP scheme[7] is the largest of all members of the OECD, covering $9.3 billion in 1980 trade.[8] This is nearly twice the volume of U.S. preferential imports in the same year. Nonetheless, among the preferential trading arrangements between the EEC and its developing trade partners, the GSP is the least generous in product coverage. More generous preferential

treatment is offered to some of the member states' former colonies
under the Lomé Convention, making the GSP largely superfluous for
these beneficiaries. The EEC has also pursued a limited exchange
of preferences with some Mediterranean countries such as Greece,
Turkey, Morocco, Tunis, Malta, Cyprus, Spain, Israel, Egypt, and
Lebanon.

The EEC's GSP tends primarily to benefit members of the Group
of 77 not covered by other trade agreements. These are some of
the colonies excluded from the Lomé Convention (Hong Kong, India,
and Singapore), the Newly Industrialized Countries (NICs) of Latin
America and Asia, and Yugoslavia.[9]

The GSP schemes of the EFTA members, while not as large as
the that of the EEC, resulted in $1.5 billion in preferential
imports in 1980. The EFTA members had fewer pre-GSP preferential
arrangements to preserve and so were less restrictive in the
choice of beneficiaries. Of the 16 LDCs in the present study,
only Portugal was excluded by all members of the EFTA. The
developing countries included in this study which are excluded
from various European schemes are listed in Table 1.

TABLE 1

DEVELOPING COUNTRY	EXCLUDED BY
Greece	EEC, Finland, Norway, Sweden
Hong Kong	Finland, Norway
Israel	EEC
Portugal	EEC, EFTA
Singapore	Norway
Spain	EEC, Finland, Norway, Sweden
Taiwan	EEC, Finland, Norway, Sweden, Switzerland
Turkey	EEC, Norway, Sweden

The preferential tariff margins for 22 comprehensive product categories are presented in Table 2 for the 15 major beneficiaries included in this study. Ad valorem equivalent tariff rates are aggregated from the line-item level to the BTN (Brussels Tariff Nomenclature), weighted by total country imports, and then from the BTN to the product categorization used in this study, weighted by donor bilateral imports, yielding a separate set of tariffs for each beneficiary. The GSP margins presented in Table 2 are the difference between the average MFN and GSP ad valorem rates. The margins may vary across goods and countries depending on the level of the initial tariff concessions and the volume of bilateral trade in preferred products. Tariff rate averages are based on the MFN and GSP rates for 1976.

Under the GSP schemes of both the EEC and EFTA, duties are suspended primarily on industrial products. Industrial raw materials are excluded by the EEC to preserve the special preferences granted to the African associated countries. Preferential treatment of agricultural products is limited to small tariff reductions on selected products to preserve preferences granted to the tropical zone beneficiaries under the Lomé Convention and the Mediterranean countries.[10]

As a result, preferential margins are largest in the manufactured and semi-manufactured categories, ranging up to six percentage points in some cases. The generally excluded products, agriculture, food, metal products, iron and steel, and nonferrous metals, have preferential margins which are less than one percentage point. Raw materials, such as petroleum products, have

small preferential margins because MFN rates are already close to zero.

Though industrial products are broadly covered, eligibility under the EEC's GSP is limited by quotas.[11] Imports exceeding the quota are subject to the MFN tariff rate. In addition, 'individual country amounts' limit preferential imports from a single beneficiary. Depending on the product category, a single beneficiary may not supply more than 10% to 50% of the Community quota. Restrictive 'rules of origin' also apply.

Consequently, a large volume of trade within the eligible product categories does not actually receive preferential treatment if quota limitations are binding, preferential treatment is not requested, when rules of origin are not satisfied, or when other administrative restrictions are limiting preferential treatment. In calculating the GSP tariff rate averages, imports within an eligible category which do not actually receive preferential treatment are assumed to be subject to the MFN rate. The GSP rate, then, is a weighted average of the GSP and MFN tariffs where the weight is the fraction of trade within a product category subject to each rate. Where information on individual products was not available, product group averages were used.[12]

Across countries, the preferential margins are largest for India and the Latin American beneficiaries (Argentina, Brazil, Mexico, Chile, and Colombia), ranging up to six percentage points. Smaller margins are available to Yugoslavia and to the Asian NICs, Hong Kong, South Korea, and Singapore. The preferential margins for these countries are generally less than three percentage

points. Margins are smallest for Greece, Israel, Spain, and Taiwan.

The larger margins available to the Latin American LDCs can be misleading. Although some tariff margins are comparatively large, they do not apply to the important export categories of these countries. For example, 95% of Chile's exports and 89% of Colombia's exports are in product categories in which the tariff margin is less than one percentage point. This pattern results from the virtual exclusion of raw materials from the eligible products list and the limited coverage of agricultural products. Less agricultural and raw material-dependent countries, such as Argentina and Brazil, still have 75-80% of trade in the low margin categories. Only Mexico, with 65% in low margin categories, enjoys substantial preferential treatment.

Opportunities are greater for the remaining beneficiaries outside the western hemisphere. The share of exports in low margin categories is comparatively small for India (34%), South Korea (43%), Singapore (69%), Yugoslavia (34%), and Hong Kong (67%).

III. The Computational Model

The computational model employed in this study is the import-disaggregated version of the Michigan Model of world production and trade, which covers trade among eighteen OECD countries and sixteen of the major developing countries. (The rest of the world constitutes an abbreviated 35th country.) Product categories are aggregated into 29 industries, of which 22 are tradable and 7 are non-tradable.

The Michigan Model has been presented in detail elsewhere[13], so only a brief description is offered here. The implications of some of the modeling choices for the simulation of the GSP are more fully discussed in the following section.

III.1 Model Structure

The model consists of three blocks of equations. At the country level there is a system of intermediate and final demand equations for domestically produced tradable goods, imports, and non-tradable goods. This block also contains the supply equations, primary factor demands, and the determination of personal income. The second block consists of the equilibrium conditions in the world market which determine world prices expressed in the numeraire currency, exchange rates, and trade by the ROW. The third block of equations relates world prices and exchange rates determined in the world system to domestic prices in the country system. World prices are related to the domestic price system by adjusting for changes in exchange rates, tariffs, and other border controls. The three blocks are structured in the following manner:

1. Final goods demands in the country system are derived by maximizing an explicit utility function for a representative individual. Intermediate demand is derived by maximizing profits for a representative firm in each of the 29 industries based on an explicit production function, which depends on employment of the 29 intermediate inputs and two primary inputs: capital and labor. Intermediate and final demand equations are then aggregated to determine total demand for each good in each country in the model.

Goods demands are disaggregated by place of production by the Armington[14] method. The utility and production functions are each composed of two levels. At the first level, utility and production are functions of the 29 goods, undistinguished by place of production. At this level the utility function is Cobb-Douglas and the production function uses inputs in fixed proportion. At the second stage each of the 22 tradable goods is itself an aggregate of the products supplied by the 34 countries and the ROW. The aggregation function at this stage is CES.

The implication of the Armington demand structure is that the variety of a good produced by each country is imperfectly substitutable for the varieties produced by all other countries in the model. Consequently, with 22 tradable goods produced by 35 country blocs and 7 non-tradable goods, for each country there are 29 demand equations for the domestically produced goods and 748 import demand equations.

Supply conditions are determined by assuming that goods markets are perfectly competitive. Thus, each individual firm's supply price must equal marginal and average cost. The supply of exports is given by the difference between production and local demand for the domestically produced good.

The factors markets reflect the short-run nature of the model. The wage paid to labor is held fixed and capital is assumed to be sector specific. Equilibrium in the labor market is determined by macroeconomic policy. After-tax personal income is adjusted to generate sufficient final demand to maintain national employment at the base level.

2. Equilibrium goods prices are determined in world markets which equate export supply and import demand for each of the 22 tradable goods from each of the 34 included countries and the ROW, yielding 770 individual markets and prices.

Exchange rates for most industrialized countries fluctuate to maintain the nominal trade balance at the base level. Normally, the exchange rate would not have a role in a real trade model. However, the nominal wage is held fixed so that fluctuations in the exchange rate alter the real wage.

Some countries, such as Australia and the EFTA countries (excluding Austria), peg their exchange rates to a basket of currencies. Among the LDCs, Hong Kong, Israel, Yugoslavia, and Mexico allow their currencies to float, but Singapore fixes its exchange rate to a basket of currencies.

The remaining LDCs, along with New Zealand, peg their currencies, but also impose the condition that expenditure on imports not exceed the available foreign exchange earned through exports. This is accomplished with an endogenously determined tariff equivalent of the foreign exchange premium which constrains the value of import demand to be equal to the revenue earned through exports.

3. World prices are related to domestic prices in each country by adjusting world prices for exchange rates, tariffs, and nontariff barriers (NTBs). The NTBs may take the form of a quota or target price and are represented by their endogenously determined tariff equivalents. The tariff equivalent is found by

solving for the tariff rate which will hold imports or the import price to the specified level.

The target price mechanism is included for the purpose of modeling the variable levy on imports of agricultural products by the EEC. All other NTBs are represented by the quota facility.

Due to aggregation, several border policies may apply to a single product category. Therefore, the tariff rate which applies to each product category is a weighted average of nominal tariffs and the tariff equivalent of each of the applicable NTBs, where the weight is the fraction of the sector subject to the relevant policy.[15]

The trade effects of the GSP are calculated by exogenously raising the GSP inclusive tariff averages to the MFN rates. The model is too large to be solved using nonlinear techniques. Therefore, the equations are log differentiated, yielding a linear system which relates changes in exogenous variables to changes in endogenous variables.

The base year for data on production, employment, trade, and tariffs for each of the 34 countries is 1976. Input-output coefficients for the production function were derived from the U.S. input-output table for 1972, and the 1970 tables for each of the members of the EEC, Japan, and Brazil. The elasticity of substitution in the CES function used to aggregate products from different sources was derived from import demand elasticities reported in Stern.[16] The elasticity of substitution between capital and labor in the production function was obtained from Zarembka and Chernicoff.[17]

III.2 Modeling Preferential Trading

It is useful to consider how the modeling choices affect the outcome of the computations. First, use of the Armington assumptions underlying the demand structure implies that products are nationally differentiated. The Armington method was adopted because the more familiar assumption of product homogeneity is difficult to implement empirically. To see the problem, consider a three-country two-good model in which both goods can and are produced in all three countries. A characteristic of this model is that two of the country groups are net exporters of the same good, and hence do not trade with one other. However, even in finely disaggregated trade data, three-way trade tends to occur.

Consequently, studies of preferential trading (e.g., Baldwin and Murray, Sapir, Karsenty and Laird, and Langhammer) have more commonly assumed that varieties of a good imported from separate sources are imperfectly substitutable. In such a model, three-way trade exists both before and after the preferential tariff reduction.

In a general equilibrium context, the assumption of national product differentiation has some unusual terms-of-trade and welfare implications. First, the preferential tariff reduction will be trade diverting, inducing substitution away from the non-preferred import toward the preferred import in the donor countries. This will result in excess demand for the beneficiary's export and excess supply for the excluded country's export on the world market. To restore equilibrium, the world price of the beneficiary's export should rise and the price of the

non-beneficiary's export should fall. Thus, trade diversion raises welfare for the beneficiary, while lowering welfare for the non-beneficiary.

However, the preferential tariff will also have a trade creating aspect, resulting in substitution away from the good produced by the donor. Trade creation will tend to lower the price of the donor's export on the world market. The deterioration in the terms of trade of the donor will offset some of the efficiency gains of the tariff reduction, so that the donor may be worse off as a result of the preferential tariff.

In addition, the fall in the price of the donor country's export on the world market will be beneficial to countries which import from the donor. As a result, if trade creation is large and trade diversion is small, some of the non-beneficiaries may actually experience an improvement in the terms of trade and a rise in welfare.

Third, the import pattern by the beneficiaries will also play a role in determining the effect of a preferential tariff. The beneficiaries will earn additional export revenue as a result of the preferential tariff. Due to the assumption that the trade balance is held constant, the newly earned foreign exchange will be re-spent. A country which typically exports to the beneficiaries will enjoy increased demand for its export and an improvement in the terms of trade.

On balance, trade diversion, trade creation, and beneficiary re-spending will have an ambiguous effect on the terms of trade and welfare of the donor and the non-beneficiary. On the other

hand, both trade creation and trade diversion improve the terms of trade of the beneficiary, leading to an increase in welfare.

A second novelty of the Michigan Model is the use of import licensing in some countries, rather than the exchange rate, to maintain balanced trade.[18] A preferential tariff reduction by the donor country will generate new foreign exchange for the beneficiary. If the beneficiary imposes import licensing, the foreign exchange premium falls. The change in the premium lowers the tariff equivalent of the import license, and thus functions like a tariff reduction. The internal price of imports falls relative to the price of the domestically produced good, causing consumers to substitute toward imports. On the world market, the price of the good produced by the licensing country will tend to fall and the price of the imported good will rise. Thus, the fall in the foreign exchange premium, like any tariff reduction, could have adverse terms-of-trade implications for licensing countries.

A currency appreciation, on the other hand, lowers the price of both the import and the domestically produced good, at constant world prices. Substitution toward the imported good will not occur unless there is a fall in the world price of imported goods and a rise in the world price of the domestic good. As a result, changes in the terms of trade are not expected to accompany an adjustment in the exchange rate. We expect, then, that the terms-of-trade improvement for a licensing country from a preferential tariff reduction by the EEC and EFTA is smaller than for a country which has a floating exchange rate.

IV. <u>Computational Results</u>

The computational results with respect to trade, terms of trade, and welfare (as measured by the equivalent variation[19]) due to the GSP are summarized in Table 3. The increase in total imports and exports by country are reported in columns (1) and (2), respectively, while the increase in imports from and exports to the EEC and EFTA are reported in columns (3) and (4). The percent change in the terms of trade, the change in welfare, and the change in welfare as a percent of GDP are reported in columns (5), (6), and (7).

IV.1 <u>Trade</u>

The estimated gross trade creation from the GSP schemes of the EEC and EFTA is $129.6 million based on 1976 trade, which is 2.3 times the $56.8 million of trade diversion.[20] Trade diversion primarily affects Europe's major trading partners, the U.S., whose exports to the EEC/EFTA fall by $34.6 million, and Japan, whose exports to the EEC/EFTA fall by $15.8 million. However, these are very small amounts, less than 0.03% of the total exports of these two countries.

The trade creation effect reported here is substantially smaller than that obtained using partial equilibrium techniques by Baldwin and Murray, Karsenty and Laird, or Langhammer. The first round increase in the volume of imports by the donor countries, captured in partial equilibrium analysis, appears to be largely dissipated by subsequent changes in relative prices and exchange rates. Preferential treatment stimulates demand for developing country exports, requiring an increase in price to restore

equilibrium. Partial equilibrium models, which assume perfectly elastic export supply, do not account for relative price changes and thus overstate the trade creation effect of the tariff reductions.

Balance of payments considerations further diminish the trade impact of the GSP. Preferential tariff reductions tend to generate a trade imbalance for the donor country. To restore the trade balance, an offsetting currency depreciation is necessary.

Thus, it appears that general equilibrium effects materially alter the trade impact of a preferential tariff. Given the small trade creation reported here, it is not surprising that Sapir and Langhammer did not consistently obtain a statistically significant positive coefficient on the GSP variable from a gravity equation.

IV.2 Terms of Trade

Trade creation and diversion have terms-of-trade[21] implications for all countries of the model. The increase in demand for developing country exports and the subsequent increase in price will improve the terms of trade of the beneficiaries. On the other hand, trade creation implies that the demand for goods produced in the EEC and EFTA fall, reducing the price of donor country exports. Similarly, trade diversion lowers the demand for the exports of the non-beneficiaries, causing a fall in price and a possible deterioration in the terms of trade.

Among the beneficiaries, the terms-of-trade gains are largest for Yugoslavia (0.60%), Hong Kong (0.14%), Singapore (0.13%), and Mexico (0.10%). In spite of the small preferential margins on imports from the Asian NICs, Hong Kong and Singapore are among the

countries with the largest terms-of-trade improvement. The
structure of preferences targets the manufacturing sectors and
thus tends to increase demand and raise the prices of the goods
produced by the more advanced of the developing countries.

In contrast, the terms of trade for most of the Latin
American LDCs decline even though these are the countries which
received the largest preferential margin. Although the tariff
changes are relatively large, the concessions do not apply to the
most important export categories for these countries, agriculture,
food, and raw materials. This is particularly the case for Chile
and Colombia.

However, Mexico is a notable exception. With only 25% of its
exports in agriculture, as compared to 68% for Argentina, Mexico
enjoys a terms-of-trade gain of 0.10%.

In addition to the difference in export orientation between
Mexico and the other Latin American developing countries, the
exchange rate regime plays an important role in determining the
terms-of-trade effects. A small terms-of-trade improvement is at
least partially the result of the import licensing scheme that we
assume is used by all the Latin American LDCs, except Mexico. The
licensing mechanism responds to a rise in export earnings by
reducing the tariff equivalent of the license on imports, thereby
stimulating imports in response to newly available foreign
exchange. Any increase in exports by the beneficiary is
automatically offset by a substitution of imports for the
domestically produced good by domestic consumers. As a result,
there is little or no increase in overall demand for domestically

produced goods and correspondingly little increase in price. The licensing mechanism, then, short circuits the normal channels through which a preferential tariff would raise export prices of the beneficiary. Consequently, the expected terms-of-trade improvement does not emerge.

Mexico, on the other hand, is assumed to maintain its trade balance with a floating exchange rate. Increased foreign demand for exports creates excess demand for Mexican produced goods. The excess demand is partially relieved by currency appreciation and partially by increased Mexican prices, thus improving Mexico's terms of trade.

Turning now to the industrialized countries, all the members of the EEC and EFTA sustain a deterioration in their terms of trade. This is most notably the case for Germany, for which the terms of trade decline by 0.04%. While preferential treatment increases demand for goods produced by the beneficiaries, it reduces world demand for goods produced by the donor, thus lowering the prices of the donor country's exports on world markets.

The fall in export prices of the donor countries has important implications for the non-beneficiaries. Trade diversion would normally be expected to reduce the export prices of countries such as the U.S. and Japan. But the fall in export prices may be offset by a fall in the price of imports from Europe. This appears to be the case in particular for Australia, Japan, and the U.S. which experience an improvement in the terms of trade.

The importance of the price-lowering effect of trade creation in the donor country is significant enough that its effect sometimes exceeds that of preferential treatment of the beneficiary. For example, Israel was largely excluded from the GSP schemes of the European countries but still enjoys a terms-of-trade gain of 0.05%. India, on the other hand, benefits from comparatively deep tariff concessions. However, the import licensing scheme largely neutralizes the preferential effect on domestic producers so that India's terms of trade improve by only 0.01%.

Changes in the terms of trade are reflected in the total trade figures reported in columns (1) and (2). For those countries which enjoy a terms-of-trade gain, imports increase by as much or more than exports valued at base level prices. This can be seen by comparing columns (1) and (2).[22]

The LDCs (except Singapore) and most of the industrialized countries included in the model are assumed to maintain the current account at the base level, either through the import licensing mechanism or a fluctuating exchange rate. A country which enjoys a rise in the price it receives for its exports will be able to afford increased imports, while still satisfying the balance of payments condition. Thus, the increase in the quantity of imports must exceed the increase in exports for these countries. As net imports (measured by quantity, not value) rise total consumption and hence welfare also increase.

IV.3 <u>Welfare</u>

The deterioration in the terms of trade for the donor countries has important implications for the welfare effect of the GSP. Forming welfare conclusions for the EEC and EFTA based on a comparison of trade creation and trade diversion, as is done in the partial equilibrium studies, is invalid if the terms of trade also change.

Trade creation is more than two times greater than trade diversion, yet welfare, measured by the equivalent variation, declines for all of the donor countries. Germany's estimated welfare loss is larger than for any other donor in absolute terms at $45.2 million, which is 0.01% of 1976 GDP. Several other donor countries also show losses -- the Netherlands (-$13.7 million), France (-$13.3 million), the U.K. (-$9.7 million), Italy (-$8.6 million), Switzerland (-$5.4 million), and Belgium-Luxembourg (-$5.2 million). On the other hand, the terms-of-trade gains for the U.S. and Japan result in a welfare improvement. U.S. welfare rises by an estimated $10.1 million and Japan's welfare rises by $13.9 million.

Among the beneficiaries, the welfare gains are largest for Yugoslavia ($27.7 million), Hong Kong ($15.5 million), and Singapore ($6.3 million). Welfare declines for several of the Latin American LDCs which suffer a deterioration in the terms of trade, such as Brazil (-$5.8 million), and for the developing countries which receive minimal preferences under the GSP such as Spain (-$2.8 million).

Benefits under the EEC/EFTA GSP are distributed across all beneficiaries which received significant tariff cuts in their important export categories. This result contrasts sharply with the analysis of the U.S. and Japanese GSP schemes by Brown[23] and Sapir and Lundberg[24] in which the GSP preferences appear overwhelmingly to benefit the Asian NICs. This difference in results occurs for two reasons. First, as discussed above, tariff concessions for the more developed of the developing countries are limited through the use of the 'maximum country amounts'. Consequently, the tariff margins for the Asian NICs are typically smaller than for India, Yugoslavia, and the Latin American LDCs. Second, the Community has a history, through colonial ties and other trading arrangements, of pursuing trade with the developing countries of the world. The U.S. and Japan, on the other hand, trade to a much greater degree with the Asian NICs, resulting in benefits concentrated on these partners.

IV.4 Employment

The employment effects of any trade policy are an important component of the domestic debate. In Table 4, change in employment by sector in each of the European donor countries is reported. These results are most notable for their small size. In no product category does employment fall by more than 1,000 workers. In fact, employment tends to rise in the product categories in which the tariff concessions are greatest, semi-manufacturing and manufacturing, while falling in agriculture, textiles, and non-tradables. This is a result of the terms-of-trade deterioration experienced by the donor countries. Terms-of-

trade deterioration tends to stimulate exports to finance more expensive imports. Consequently, production and employment increase in the major export industries.

V. Conclusions

In this paper we have presented estimates of the trade, price, welfare and employment effects of the GSP schemes of the members of the EEC and EFTA, based on calculations using a general equilibrium computational model of world production and trade. The major results are as follows:

1. The developing countries included in the model increase exports by $129.6 million to the members of the EEC and EFTA as a result of the GSP. Of this, only $56.7 million is diverted from the EEC and EFTA's industrialized country trade partners. The results reported here are substantially smaller than those obtained with partial equilibrium analysis by Baldwin and Murray, Karsenty and Laird, and Langhammer. General equilibrium changes in exchange rates and prices were found to offset a substantial portion of the impact effect of the GSP on trade.

2. In spite of the positive net trade creation, welfare, as measured by the equivalent variation, declined in all of the donor countries. The reason is that the tariff reductions worsen the terms of trade of these countries, with the result that the efficiency gains are offset and welfare declines.

3. Among the LDCs, welfare gains were largest for Yugoslavia, Singapore, and Hong Kong. Gains for the Latin American LDCs were small or negative despite the comparatively large preferential margin afforded them by the GSP. The reason is

that agriculture and food dominate the exports of these countries, which diminishes the potential of preferential treatment to expand exports. In addition, the import licensing mechanism partially insulates domestic producers from the stimulative effects of trade preferences. India was similarly affected.

4. The adverse effects of trade diversion on the industrialized countries are relatively small. The U.S. and Japan enjoy improvement in both the terms of trade and welfare as a result of the GSP. This result emerges due to the fall in the price of exports from the EEC and EFTA.

Notes

[1]Members of the EEC included are Belgium, Denmark, France, Germany, Ireland, Italy, Luxembourg, the Netherlands, and the United Kingdom.

[2]EFTA countries studied are Austria, Finland, Norway, Sweden, and Switzerland. Portugal has been an associated member but does not have a GSP scheme.

[3]R.E. Baldwin and T. Murray, "MFN Tariff Reductions and Developing Country Trade Benefits under the GSP," Economic Journal 87 (March 1977): 30-46.

[4]R. Langhammer, "Ten Years of the EEC's Generalized System of Preferences for Developing Countries: Success or Failure?" (Working Paper no. 183, Universitat Kiel, Institut fur Weltwirtschaft, 1983).

[5]G. Karsenty and S. Laird, "The GSP, Policy Options and the New Round," Weltwirtschaftliches Archiv 123 (1987): 262-296.

[6]A. Sapir, "Trade Benefits under the EEC Generalized System of Preferences," European Economic Review 15 (February 1981): 339-355.

[7]For a comprehensive historical background of the GSP see T. Murray, Trade Preferences for Developing Countries (New York: Wiley, 1977) and A. Weston, V. Cable, and A. Hewitt, The EEC's

Generalized System of Preferences (London: The Overseas

Development Institute, 1980).

[8]UNCTAD, "Seventh General Report on the Implementation of

the Generalized System of Preferences" (Document TD/B/C.5/81,

UNCTAD, 1982).

[9]Murray, 120-123.

[10]The exclusion of raw materials and agricultural products is

typical of all the GSP schemes of the industrialized countries.

One of the original motivations for the GSP was to use tariff

preferences on industrial products to help LDCs diversify their

economies away from unprocessed products.

[11]Within the EFTA, Sweden, Finland, and Norway grant duty-

free access to beneficiary imports without quantitative

restrictions. However, many agricultural and textile products are

excluded. Austria's preferential rates are much larger and range

from 50% to 70% of the MFN rate, depending on the degree of

development of the beneficiary and degree of threat that the

beneficiary poses to domestic producers. Among Austria's

beneficiaries, preferences for Hong Kong are the most restricted,

followed by Greece, Spain, Portugal, and Turkey. The Swiss

preferential rates range from 10% to 70% of the MFN rate, again

depending on the level of development of the beneficiary.

Preferences are most limited for Spain and Greece, followed by

Yugoslavia, South Korea, Hong Kong, and Turkey.

[12]Preferential treatment of product categories which are

bound by quantitative restrictions is infra-marginal, and thus

will not stimulate trade. In these cases, all trade within the

product category is assumed to be subject to the MFN rate for the
purpose of calculating GSP tariff rate averages.

[13]For a detailed description of the model and its
implementation see D. Brown, "Tariffs, the Terms of Trade and
National Product Differentiation," Journal of Policy Modeling 9
(Fall 1987). The structure of this model is similar to that
developed by A. Deardorff and R. Stern, The Michigan Model of
World Production and Trade (Cambridge MA: The MIT Press, 1986).
However, Deardorff and Stern do not differentiate imports by place
of production, making their model inappropriate for analysis of
preferential tariffs. In addition, the import-disaggregated
version of the Michigan model allows for a wider variety of non-
tariff barriers, such as a bilateral quota or variable levy.

[14]P. Armington, "A Theory of Demand for Products
Distinguished by Place of Production," International Monetary Fund
Staff Papers 16 (March 1969): 159-176.

[15]The fraction of a good which is subject to the tariff
equivalent of an NTB was adapted from data in T. Murray and
I. Walter, "Special and Differential Liberalization of
Quantitative Restrictions on Imports from Developing Countries,"
Trade Policies Toward Developing Countries: The Multilateral Trade
Negotiations, ed. L. Perez (Washington: Agency for International
Development, 1978). Trade in 1973, subject to some form of NTB,
by country and SITC (Standard Industrial Trade Classification)
product category, was identified based on documents prepared by
the U.S. Department of State and UNCTAD. These data were first
updated to include NTBs introduced between 1973 and 1976 and then

were aggregated and concorded to the ISIC classification used in the Michigan model.

[16]R.M. Stern, J.F. Francis, and B.F. Schumacher, Price Elasticities in International Trade: An Annotated Bibliography (London: Macmillan Press, 1976).

[17]P. Zarembka and H.B. Chernicoff, "Further Results on the Empirical Relevance of the CES Production Function," Review of Economics and Statistics 53 (February 1971): 106-110.

[18]Import licensing was originally introduced into the Michigan model to eliminate apparent exchange rate instability. For a complete discussion of the problem see Deardorff and Stern, 216-230.

[19]The equivalent variation is the income change at base period prices which yields the same welfare change as the tariff reductions. The welfare calculation has two components. First, ex ante and ex post utility are calculated for each country using the explicit utility function, and then converted to the equivalent variation. This is done using the method described in J.B. Shoven and J. Whalley, "Applied General-Equilibrium Models of Taxation and International Trade: An Introduction and Survey," The Journal of Economic Literature 22, (September 1984): 1007-1051, esp. 1014. Second, changes in real international debt are calculated by deflating the nominal trade balance by the change in the price level.

[20]Gross trade creation is the total increase in beneficiary exports to the EEC and EFTA. Trade diversion is the decline in exports by the non-beneficiaries to the EEC and EFTA

TABLE 2

EEC AND EFTA GSP PREFERENTIAL TARIFF MARGINS
(Percentage Points)

PRODUCT	ARG	BRZ	CHL	COL	GRC	HK	IND	ISR	SK	MEX	SNG	SP	TWN	TRK	YUG
Agriculture	0.2	0.1	0.0	0.0	0.0	0.3	6.3	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1
Food	0.1	0.5	0.0	0.2	0.0	0.3	2.9	0.1	0.7	0.6	0.0	0.0	0.0	0.0	0.2
Textiles	0.1	0.3	0.1	0.2	0.0	0.0	1.0	0.1	1.3	0.6	1.9	0.0	0.0	0.0	1.6
Clothing	4.9	1.6	0.4	4.0	0.0	0.1	0.4	0.1	0.3	6.3	1.9	0.0	0.2	0.0	3.6
Leather Prod.	0.9	1.3	0.9	0.8	0.0	1.5	1.0	0.5	1.1	0.8	0.2	0.1	0.0	0.4	1.9
Footwear	4.5	2.3	2.8	2.2	0.0	0.8	3.9	0.1	1.1	5.2	2.6	0.0	0.0	0.1	2.1
Wood Prod.	3.7	0.8	0.0	0.3	0.0	0.9	1.5	0.0	0.4	1.9	0.1	0.1	0.0	0.2	0.6
Furniture, Fixtures	3.4	4.6	2.7	3.4	2.6	2.2	3.8	0.1	2.2	3.7	2.3	0.2	0.0	2.0	1.5
Paper Prod.	5.7	1.2	0.0	0.4	0.0	3.4	5.2	0.1	3.8	0.4	2.8	0.1	0.0	0.4	1.3
Printing, Publishing	0.1	3.1	0.0	0.4	0.0	0.1	0.9	0.0	0.9	0.9	0.1	0.0	0.0	0.0	0.7
Chemicals	3.1	3.8	1.9	1.9	0.0	2.1	3.5	0.1	2.5	4.6	2.0	0.0	0.0	0.0	2.5
Petrol. Prod.	0.1	3.3	0.0	0.1	0.0	0.2	0.1	0.0	0.0	0.1	0.0	0.0	0.2	0.0	0.7
Rubber Prod.	2.9	1.1	3.1	3.9	1.3	1.8	1.5	0.3	2.2	3.1	0.1	0.1	0.0	0.0	1.1
Nonmetal Mineral Prod.	0.5	1.1	4.2	1.5	0.0	2.5	0.7	0.2	1.0	0.6	2.3	0.0	0.0	0.0	1.2
Glass Prod.	6.0	3.5	0.0	1.1	0.2	2.0	4.2	0.0	3.0	6.0	3.2	0.1	0.0	0.0	2.6
Iron, Steel	1.5	0.1	0.1	0.0	0.0	0.6	0.8	0.0	0.5	0.7	0.1	0.0	0.0	0.0	0.5
Nonferrous Metals	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.2	0.2	0.0	0.1	0.0	0.0	0.0	0.9
Metal Prod.	4.6	4.5	2.2	2.2	0.0	1.5	3.1	0.2	1.3	3.9	1.1	0.0	0.1	0.1	2.8
Nonelectrical Machinery	3.5	3.8	2.1	1.8	0.0	2.0	2.6	0.1	1.4	3.6	0.9	0.0	0.1	0.0	2.4
Electric Machinery	3.7	4.0	1.1	1.4	0.0	0.6	1.8	2.9	1.4	3.1	1.5	0.0	0.0	0.0	2.1
Transport Equipment	2.7	5.7	2.2	3.4	0.0	1.0	2.9	0.0	1.8	5.4	0.3	0.0	0.0	0.0	2.8
Misc. Mfrs.	1.4	1.7	0.6	0.4	0.0	1.1	0.2	0.0	1.8	0.4	1.8	0.1	0.0	0.1	1.4

Source: Based on data supplied by the Office of the U.S. Trade Representative and various UNCTAD

documents.

TABLE 3

CHANGE IN COUNTRY IMPORTS, EXPORTS, EEC & EFTA BILATERAL TRADE AND
TERMS OF TRADE DUE TO THE INTRODUCTION OF THE EEC & EFTA GSP
(Trade in Millions of U.S. Dollars)

COUNTRY	TOTAL		WITH EEC/EFTA		TERMS OF TRADE % CHANGE**	WELFARE	
	IMPORTS*	EXPORTS*	IMPORTS*	EXPORTS*		Mill. $	% GDP
INDUSTRIALIZED COUNTRIES:							
Australia	0.8	0.7	4.0	-1.7	0.01	-0.4	-0.000
Canada	0.1	-0.0	5.6	-4.3	0.00	-0.2	-0.000
Japan	8.4	-5.0	6.7	-15.8	0.02	13.9	0.002
New Zealand	0.4	0.3	0.9	-0.3	-0.00	-0.3	-0.002
Portugal	1.1	0.4	1.2	-0.1	-0.02	-0.6	-0.004
United States	22.4	-14.7	34.4	-34.6	0.01	10.1	0.001
EFTA:							
Austria	4.8	5.9	-4.0	1.8	-0.03	-2.6	-0.006
Finland	-0.3	0.5	0.8	-0.6	-0.01	-1.0	-0.003
Norway	1.1	1.0	1.8	-0.7	-0.01	-0.7	-0.002
Sweden	5.4	4.7	-0.8	-1.0	-0.01	-3.0	-0.004
Switzerland	-1.3	9.7	-2.1	1.5	-0.03	-5.4	-0.010
TOTAL EFTA	9.7	21.8	-4.3	1.0			
EEC:							
Belgium-Luxembourg	-1.1	3.5	1.6	-3.0	-0.01	-5.2	-0.007
Denmark	1.8	0.5	1.5	-1.4	-0.00	-0.4	-0.001
France	2.1	14.1	1.9	-4.7	-0.02	-13.3	-0.004
Germany	2.3	59.9	-16.5	11.0	-0.04	-45.2	-0.010
Ireland	0.1	0.4	-0.1	-0.3	-0.01	-0.6	-0.008
Italy	1.9	9.8	4.4	-9.8	-0.02	-8.6	-0.005
Netherlands	-6.0	12.0	-5.3	3.5	-0.04	-13.7	-0.015
United Kingdom	7.8	14.2	6.3	-7.1	-0.02	-9.7	-0.004
TOTAL EEC	8.9	114.4	-6.2	-11.8			
TOTAL INDUSTRIALIZED	51.8	117.9	42.3	-67.6			
BENEFICIARIES:							
Argentina	7.7	8.4	3.2	6.3	-0.01	0.1	0.000
Brazil	26.2	26.0	9.6	21.9	-0.01	-5.8	-0.004
Chile	1.6	2.5	0.7	0.9	-0.03	-0.1	-0.001
Colombia	1.6	1.9	1.0	1.3	-0.01	-0.7	-0.005
Greece	1.7	0.9	2.8	0.1	-0.01	-0.7	-0.003
Hong Kong	11.6	1.1	3.9	12.4	0.14	15.5	0.167
India	14.7	14.0	3.9	13.0	0.01	2.9	0.003
Israel	3.0	1.0	2.6	0.8	0.05	1.3	0.010
South Korea	16.1	13.0	2.4	17.7	0.04	-1.4	-0.005
Mexico	10.2	5.0	3.2	11.3	0.10	3.2	0.004
Singapore	-4.6	2.7	0.6	8.5	0.13	6.3	0.107
Spain	5.2	3.9	5.2	0.9	-0.02	-2.8	-0.003
Taiwan	1.3	0.4	1.2	-0.3	0.01	0.8	0.005
Turkey	2.0	1.0	2.3	0.4	-0.01	-0.7	-0.002
Yugoslavia	61.0	27.8	32.3	34.4	0.60	27.7	0.085
TOTAL BENEFICIARIES	159.3	109.6	74.9	129.6			
ALL COUNTRIES	211.1	227.5	117.2	62.0			

*Dollar value of change in trade volume
**(+) indicates gain

TABLE 4
ESTIMATED EMPLOYMENT EFFECTS OF THE GSP SCHEMES OF THE EEC AND EFTA

PRODUCT	CHANGE IN EMPLOYMENT (Person years)												
	ATA	BLX	DEN	FIN	FR	GFR	IRE	IT	NL	NOR	SWD	SWZ	UK
TRADABLES													
Agriculture	23.6	3.2	33.8	16.6	25.9	-159.9	10.6	-20.1	25.9	32.6	15.9	-35.8	-2.4
Food	-6.9	-2.9	6.1	-2.7	-3.4	-105.4	-1.2	-6.6	-4.6	-2.0	-3.5	-18.3	7.4
Textiles	11.4	13.5	-1.8	-3.6	-3.3	80.7	0.5	22.5	12.5	-1.1	-3.0	21.3	-14.9
Clothing	-20.2	-45.4	-3.8	16.	-90.2	-287.4	-1.4	-194.4	-19.1	1.4	12.5	14.2	-55.6
Leather Prod.	-18.3	-3.5	-3.8	-4.	-9.5	-35.6	-2.4	-32.6	1.2	-0.3	-2.6	-5.9	-42.0
Footwear	-4.1	-1.1	-5.3	1.9	-18.2	-19.4	-0.3	-31.3	1.0	3.2	3.4	21.6	-42.0
Wood Prod.	15.5	3.7	-1.1	-0.5	19.7	41.3	-1.7	47.9	13.5	-11.8	-5.7	-19.8	-4.7
Furniture Fixtures	-16.4	-3.4	-2.6	-10.1	-6.2	4.4	0.8	-39.7	2.9	-2.9	-11.3	-11.1	-5.2
Paper Prod.	10.9	3.2	-1.8	6.6	5.5	72.7	0.3	15.5	10.9	-0.5	3.1	5.9	14.4
Printing Publishing	-0.8	0.4	0.0	-0.3	3.1	9.9	0.3	0.2	5.0	-0.5	0.4	4.8	21.6
Chemicals	26.4	43.0	-0.8	1.1	68.6	466.7	1.1	33.2	56.7	0.6	5.2	87.9	10.0
Petrol. Prod.	3.8	26.0	4.0	2.0	11.5	60.0	3.6	120.4	25.0	3.0	1.5	1.8	41.8
Rubber Prod.	3.2	4.9	-0.8	0.2	52.0	129.5	0.7	54.6	16.4	-0.6	-2.4	4.2	12.3
Nonmetal Mineral Prod.	4.4	0.1	-3.4	-0.6	-1.2	42.9	2.1	5.8	7.5	-1.0	-2.8	0.0	4.6
Glass Prod.	-0.2	3.3	-1.5	-1.6	3.5	17.3	1.0	-5.1	3.2	-0.5	-2.8	0.8	-0.5
Iron, Steel	27.5	28.5	-1.0	-0.2	31.8	231.9	-0.9	40.3	17.3	0.1	11.3	8.8	24.1
Nonferrous Metals	5.3	20.5	-0.1	0.8	13.4	57.8	0.3	30.3	9.3	1.8	3.5	9.8	14.2
Metal Prod.	-14.6	6.0	-10.3	-3.9	-10.6	75.9	0.3	-2.2	12.7	-8.3	-27.1	13.2	-75.7
Nonelectrical Machinery	30.7	20.4	6.5	4.1	88.9	449.9	0.4	86.0	30.9	1.6	31.1	59.1	97.7
Electrical Machinery	5.6	2.3	-2.5	-1.9	14.3	99.7	1.1	8.7	19.2	-1.7	13.5	29.1	11.1
Transport Equipment	10.7	5.0	5.1	3.3	73.3	338.8	0.2	99.2	24.0	8.4	36.3	3.1	124.0
Misc. Mfrs.	20.1	26.3	-13.7	-7.3	36.1	237.4	2.2	24.4	44.1	-10.2	9.5	117.5	66.2
NONTRADABLES													
Mining, Quarrying	12.9	8.8	-0.1	13.8	13.7	128.0	0.2	48.0	18.5	6.2	5.9	31.2	27.9
Utilities	-2.6	-0.5	-0.8	-1.3	-0.0	-1.4	-0.6	5.1	-7.8	-0.7	-2.7	-14.4	-3.1
Construction	-16.8	-31.2	5.9	-3.9	-63.7	-406.0	-0.2	-87.6	-82.2	2.5	2.7	-45.2	-28.8
Wholesale Trade	-43.5	-65.9	-2.2	-8.6	-104.4	-512.3	-7.5	-148.8	-93.8	-6.8	-22.5	-80.0	-68.3
Transportation	-4.7	-10.4	-2.0	-1.4	-10.4	-110.4	-2.0	-9.7	-28.1	-1.8	-6.9	-25.4	-7.0
Financial Services	-13.7	-13.1	-0.1	-3.4	-32.7	-240.2	-1.3	-31.1	-24.2	-0.6	-13.5	-68.4	-21.6
Personal Services	-49.4	-41.9	-1.8	-11.3	-107.7	-666.7	-6.2	-32.8	-97.9	-10.1	-49.1	-110.1	-105.4

DATE DUE

Oct 23			