1. Introduction

This paper examines the economic effects in the developed countries of their granting tariff preferences on imports from less developed countries (thereafter referred to as DC's and LDC's, respectively). We shall consider the effects of preferences on both aggregate welfare and on the distribution of income in the developed countries.

Many arguments have been advanced for granting tariff preferences to LDC's. One is an equity argument based on the continuing debate over the declining terms of trade of the less developed countries. It is well known that a deterioration in the terms of trade may not imply a welfare loss to the less developed countries if the deterioration is caused by supply factors in the LDC's, namely, productivity increases in the tradeable goods sectors. However, adverse terms of trade movements which are caused by demand developments in foreign markets alone can be cited as reducing welfare in less developed countries. If LDC's specialize in exporting goods whose demand grows more slowly than the average good which they import, then there will be downward pressure on

1. I am indebted to Stephen Thompson for research assistance and to Gayle Baldwin for typing this paper.
their terms of trade.

Because of the differences just noted in the implications for LDC welfare of terms of trade changes (caused by supply versus demand factors), we should not look at the terms of trade alone. An alternative approach would be to examine the import elasticities of demand of less developed countries products relative to the income elasticities for products exported by the developed countries.

Table 1 describes the response of imports to domestic economic activity in thirteen developed country markets in a study done by Taplin (1973). The activity variables used are not gross national products but rather the exogenous components of real income, namely government expenditures, domestic investments, and exports (they were used rather than income or expenditure in order to reduce simultaneous equation bias). Consider the first row for each country. Columns 2 through 5 show the elasticities, $e_{ma}$, of imports for four broad product categories with respect to this activity variable. The second row for each country gives the shares for developed country suppliers to each market in the four product categories, $s_{dc}$, and the third row gives the same share for less developed country suppliers to the market, $s_{ldc}$. The average import activity elasticities for developed country suppliers and less developed suppliers are shown in columns 6 and 7. They are calculated by weighting the component $e_{ma}$ elasticities by the appropriate shares.
Table 1
Import Elasticities of Demand With Respect to Activity (Jsplim)

<table>
<thead>
<tr>
<th>Importing Country</th>
<th>Imports By Commodity</th>
<th>Import Activity Elasticities (weighted)</th>
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<tbody>
<tr>
<td></td>
<td>Food, Rev. and Tobacco (SITC 0+1)</td>
<td>Crude Materials (SITC 2+4)</td>
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*Weighted Total Elasticity*  

1.53  1.30
Notes to Table 1

Cols (2)-(5) For activity elasticities see [19, p.188]. The \( s_{dc} \)'s are the proportion of total imports from all developed countries accounted for by each of the four SITC category groups. The \( s_{ldc} \)'s are the proportion of total imports from all less developed countries accounted for by each of the four groups. See [17, pp. 21-125].

Col (6) Column (6) is a weighted average of the \( e_{ma} \)'s using the \( s_{dc} \)'s as weights.

Col (7) Column (7) is a weighted average of the \( e_{ma} \)'s using the \( s_{ldc} \)'s as weights.

The weighted total elasticities are a weighted average of columns (6) and (7) using each country's share of total world imports from developed countries and less developed countries as weights, respectively.
Notice that for every country in the table except for Japan, imports from the developed countries are more responsive to domestic activity in the importing country than are imports from less developed countries. For example, a 1 percent increase in domestic activity in the United States results in a 2.10 percent increase in imports from developed countries but only a 1.49 percent increase in imports from the less developed countries. The reason for this asymmetry is the high income elasticity of demand for manufactured imports and the large share of imports from developed countries which are in this product category. For Japan, the elasticities are about the same since 41 percent of developed country exports to Japan are in manufacturers, with an activity elasticity of 1.77 while 42 percent of less developed country exports to Japan are mineral fuels which have an elasticity of 1.84. When we take a weighted average of the total elasticities in columns 6 and 7 we find that for all countries considered, a 1 percent increase in activity in the thirteen markets results in an 1.53 percent increase in imports from other developed countries but only a 1.30 percent increase in imports from less developed countries.

The upshot of this discussion is that less developed countries possess comparative advantages in products which are less responsive to economic activity in developed countries than products exported by the developed countries. This does not provide enough evidence to sustain a definitive hypothesis about trends in the terms of trade of the less developed countries, however, since we have not presented evidence on
the income elasticities of demand for developed country products into the LDC's. However, it does provide some indication that at least in developed country markets, the LDC's are at disadvantage. The reader is warned, however, that the link between differential import income elasticities and improvements or deteriorations in the terms of trade may be complex. For example, if a country specializes in exporting high income elasticity items and importing low income elasticity items, this does not necessarily imply that it will experience an improvement in its terms of trade. Assume no change in the price of imports. If suppliers inaccurately over estimate the income elasticity of demand for exportable goods, then entry may be too rapid into the export industries and the terms of trade can actually fall if the growth on the supply side exceeds the growth in the demand for the industry's products. However, in the cases in which suppliers correctly predict market demand, we should see relative increases in the prices of high income elasticity products (some increase will be necessary since a price change is necessary to lure resources out of other industries).

Given this background on the potential welfare problems of producers in the less developed countries (and one normative argument for preferences), we turn to an examination of the effects of preferential tariff treatment of LDC exports to the developed countries.

Section 7 of the paper discusses the frequently cited optimum tariff argument for trade restrictions and the potential problems of this
argument for analyzing the LDC preference question. Section 3 illustrates, using U.S. data, the advantages of simultaneous tariff reductions both in developed countries and in less developed countries. Section 4 considers the welfare effects on the developed and less developed countries of granting of preferences. Section 5 provides estimates of the effects on the levels of trade of implementing full preferences on LDC exports in the developed countries: the trade creation and trade diversion effects of preferences are estimated. Section 6 of the paper discusses the dilemma which faces international blue-collar labor: expansion of trade between two regions between which factory prices are not equalized implies that the high wage countries (the DC's) must experience a decrease in real wage income while the low wage countries (the LDC's) will experience an increase in real wage income. A solution to the problem of declining wages in the developed countries is proposed in section 6. Appendix A provides detailed calculations of the trade creation and trade diversion effects of preferences discussed in section 5, while Appendix B develops the theoretical arguments behind the strategy discussed in section 6 for increasing real wage income in both the less developed countries and in the developed countries (a combination of trade expansion and selective unionization).
2. The Optimum Tariff Argument for Trade Restrictions

Before we can decide whether the granting of trade preferences on LDC imports into the developed countries will benefit either the developed countries or the less developed countries, we must assess the reasons for existing trade restrictions. A number of motivations for trade restrictions have been enumerated in the literature: they are used to affect the distribution of domestic income, they have short run effects on aggregate employment, they affect the trade balance and the balance of payments, they provide protection for infant industries, they provide attainment of social goals (such as protecting the health and/or safety of domestic consumers and the environment), and they are used to redistribute world income toward the country levying the tariff. Since the last reason deals explicitly with the question of each country's welfare, we shall examine it at some length.

The levying of a tariff by one country to benefit itself at the expense of other countries is called the "optimum tariff" strategy. By levying a tax on imports, the country depresses the world prices of the products it imports and causes foreign suppliers, in effect, to pay part of the tax. The economic effect of this move is to redistribute income which formerly went to foreign suppliers to the government of the taxing country. The success of the optimum tariff approach depends on several factors: the most important is the absence of retaliation by foreign suppliers (in levying tariffs on the goods of the first country).
The amount of the welfare gain from an optimum tariff is smaller
(1) the smaller the share of imports in an economy and (2) the more
elastic the supply of the foreign offer curve which faces the country.
On the first point, if trade is a very small part of GNP, then the gains
will be small (obviously, in the limiting case in which nothing is
imported, then there is no gain from a tax on imports). On the second
point, if the willingness of the rest of the world to trade with the
economy in question is such that the world price of the country's exports
is not affected by the amounts it exports and if the supply of imports
to the country in question is unaffected by the amounts demanded in
the country, then the offer curve is said to be perfectly elastic.
In this case, levying a tax on imports has no affect on the world price
of either the imported goods or the exported goods. The only effect is
that the price of imports into the country in question rises by the
full amount of the tariff. In this case, there is no welfare gain to
levying a tariff, since foreigners cannot be induced to pay part of the
tax. In fact, there is a loss in income in the tariff levying country
since the tax distorts production and consumption decisions by en-
couraging increased production of import competing goods (in which the
country does not have a comparative advantage) and reducing production
of exportables (in which the country has a comparative advantage). The
reason for this shift is the increase in the domestic price of import-
able goods which lures capital and labor out of the export sector.

Harry G. Johnson (1960) has provided estimates of the gains in
welfare which are obtainable by a country which attempts to levy an
optimum tariff. In the case of the United States, we can assume that the elasticity of the foreign offer curve is approximately 2.0 and that the import share, if free trade existed, would be around 10 percent. In this situation, the tariff which would yield the greatest increase in real income in the United States would be a staggering 100 percent! But even this high a tariff would yield only a 1.4 percent increase in real income in the United States.

Thus, as a practical matter the optimum tariff carries very little weight. The amount of the tariff needed by the United States or any country in order to increase its income significantly is absurdly high. Furthermore such tariffs would not be acceptable to the rest of the world and they would surely retaliate. In fact, retaliation to tariff protection is such a pervasive phenomenon that average tariffs in the major industrial countries have moved together closely over the past half century. No country is willing to reduce its tariff rates without bilateral or multilateral agreements with its major trading partners. As a result, we do not see some countries with very high rates of protection and others with almost none. Each country realizes that it loses if tariffs rise on its exports and stay constant on its imports.

If the optimum tariff redistributes income from the rest of the world to the country levying the tariff, what happens when all the countries in the world levy, say, a 10 percent tariff on their imports? The result is that all countries are worse off, compared to the situation
in which trade is free, as a result of the trade restrictions.
Hence, the motivation for multilateral reductions in trade barriers.
Tariffs are analogous to armaments: if all countries agree to dis-
arm by an appropriate amount, there is little change in relative
power of any country and yet all countries gain by having to commit
fewer economic resources to national defense. The same argument applies
to tariffs in that if all countries eliminate trade restrictions,
income could expand in all countries as both production and consump-
tion decisions became less distorted. Each country would be allowed
to specialize in the products in which it has a comparative advantage
and all sides would gain. Tariffs can be reduced in such a way
that the terms of trade of the countries involved do not change.
Thus, each country's income increases by the elimination of the "dead-
weight loss" imposed on production and consumption decisions. The
present author (see Magee (1972)) estimated the social gains to the
United States of simultaneous elimination of trade restrictions on
U.S. imports and foreign trade restriction on United States exports.
I assumed in that paper that the removal of trade restriction would
have no effect on the U.S. terms of trade so that the increment to
U.S. income could be easily quantified through the use of standard
welfare analysis. We turn now to a summary of the results of that
exercise.
J. An Illustration of the Welfare Effects of Eliminating Restrictions on United States Trade

The most important matter to keep in mind in evaluating the social cost of trade restriction is that the social costs (the dead-weight losses) increase with the square of the tariff rate. This means that increasing the tariff rate from 5 to 10 percent on both exports and imports quadruples the social cost (i.e., the decline in real income of the taxing countries). The second point is that when trade restrictions have ad valorem equivalent tariff rates which are fairly low, i.e., between 0 and 15 percent, the social costs are small. For example, on the $12.1 billion dollars in United States imports in 1971 which were directly competitive with United States production, the social cost of the tariff on United States imports was less than $300 million. The reason is that the ad valorem tariff rate on these imports averages only about 8 percent. The tariff rates on other imports in the United States which did not compete as directly with U.S. production (the value of these imports was roughly $24 billion) was only 6.2 percent. Again, these restrictions result in a small annual social cost of around $202 million dollars. The major welfare loss to the U.S. was on U.S. imports subject to quotas. Quotas and other quantitative restrictions on trade are frequently equivalent to high tariff rates. For example, in 1971, the tariff rate equivalent of the oil quotas was estimated at around 60 percent, and the voluntary export restraints by steel shippers to the United States resulted in restrictions
equivalent to tariff rates of between 17 and 35 percent. Because of
these large ad valorem equivalent tariff rates, the social costs are
high.

In the present case, we are dealing here with a question of
preferential treatment of LDC imports into the DC's. If existing
tariff rates on these items are already small, then the social costs
of unilaterally reducing these tariff rates, even without reciprocity on
the part of the LDC's probably has insignificant welfare losses in
income in the DC's (although there will be redistribution effects among the
factors of production in the DC's).

There is another calculation which must be done in any measure-
ment of the social costs of eliminating a tariff. Thus far, we have
noted that a unilateral reduction in tariffs by a country results
in a gain to it since production and consumption decisions are no
longer distorted, but it results in trade loss since the
country is no longer taxing foreigners for a portion of what it purchases.
Since the latter effect always dominates the two efficiency effects
for price makers on world markets, then there has to be a social cost to
the United States and other developed countries of unilaterally
eliminating tariffs on imports of products from the less developed
countries.

In addition to the net loss in real income and hence welfare,
we must add the cost of economic relocation caused by the change in
the relative prices of importables. As the price of imports falls when a tariff is removed resources must move out of import competing industries and into other sectors of the economy. There is a social cost involved in this transition, these social costs can be measured as follows. First estimates must be made of the change in the output of import competing industries as a result of the elimination of the tariff. Second the number of jobs which are eliminated by this decline in output in import competing industries must be calculated. Some estimate of the value of wages must be obtained for the period of time that the people released from import competing industries are without work. The average wages lost per person times the number of people unemployed times the amount of time each is unemployed while seeking a new job yields the social costs of the transition process (at least for labor; the computations for capital are more complex). For example, in an earlier paper (Magee (1972)), I calculated that elimination of all tariffs on goods which competed directly with U.S. production would result in an annual decline in output in import competing industries of $8.2 billion. Over the five year adjustment period in which labor was assumed to move out of the import competing industries, I estimated that 475,600 individuals would change jobs because of the relative decline in the delivered price of imports. At an annual wage of $6140 and an expected .31 years of unemployment, this yields $181 million dollars a year in lost wages as a result of the change in relative prices. Over the five
year period, at a 7 percent discount rate (net of growth), this relocation results in a total present social cost to the U.S. of $793 million.

The point of this discussion is that any relative price change, whether it is an increase in a tariff or a decrease in a tariff, will result in a cost to society of output foregone while the individuals involved adjust to the new situation. The figures presented are illustrative of these social costs. Whether these costs should be borne by individuals or by society as a whole is a normative question. There is a presumption that some of it should be paid out of general tax revenues since all of society benefits from a more rational reallocation of resources when tariffs are eliminated (ignoring terms of trade gains from tariffs). However, if the tariff was initiated by pork barrel politicking by import competing industries in an attempt to redistribute income in their favor through the tariff, then the case for the social payment of adjustment assistance is weakened (see Brock and Magee, 1975).

On the other hand, the cost of rearranging the factors of production cannot be used as an argument against trade liberalization in cases in which it appears that the annual adjustment costs in the early years outweighs the annual social gain by the elimination of inefficient production. The transition costs of labor and capital and other factors into other industries are borne only in the first few years after
trade restrictions are removed while the social gains may continue indefinitely. Thus, the appropriate economic measure of the gains to freer trade is the present discounted value of the permanent increase in real output less the short-run transition costs of factor movements. For example, in the case of imports which compete directly with domestic production, elimination of the average 7.9 percent tariff rate results in an increase in the present value of GNP of $2.4 billion in the first five years after the tariff elimination, $2.6 billion in years six to ten, $1.8 billion eleven to fifteen years out, and $4.7 billion fifteen years and after. Thus, the total present value of the tariff elimination is $11.5 billion less the present value of the job changes in the first five years; but the latter is only $8.8 billion. The result is a net social gain of $10.7 billion. Note that this number assumes no change in the terms of trade of the United States; it was calculated with a simultaneous foreign tariff reduction on U.S. exports which was assumed to neutralize any terms of trade effects.
4. Can the Developed Countries Gain by Granting Preferences to the Less Developed Countries?

We noted in the previous section that elimination of trade barriers is beneficial to a country if it has no effect on the country's terms of trade. This can occur either if the country is small enough so that it cannot affect world prices or if there are simultaneous reductions in restrictions on the country's exports so that the terms of trade do not change. We turn now to the question of the potential gain to welfare in the developed countries if they grant preferences to less developed countries (while maintaining tariffs on imports from other developed countries and not receiving any reduction in the restrictions on DC exports into the LDC's).

This problem is analogous to the case of a monopsonist (a single buyer) who faces several suppliers. The most favored nation clause in the GATT constrains countries to levy the same tariff on a given product on all suppliers of that product (with the exception of customs unions). Clearly, if we permitted the developed countries to act as discriminating monopsonists, then they would tend to charge higher tariffs on countries supplying a given product inelastically and lower tariffs on sources whose supply curves were more elastic. This deviation from a uniform tariff by product could increase the welfare of the developed country involved in certain situations. If the DC's could levy optimum tariffs as monopsonists, then their welfare
would clearly increase over a system in which they had to levy uniform tariffs. Whether they would end up levying higher tariffs on imports from the developed countries than from the less developed countries depends on the elasticities of the supply curves involved. In the absence of GATT and with unrestrained price discrimination through tariffs we would see a natural set of preferences for imports into the developed countries from less developed countries if the elasticity of supply of exports from the less developed countries was more elastic than the supply from other developed countries.

When we consider the problem at hand, however, it is not likely that any of the large developed countries could gain in welfare by granting tariff preferences. If the supply of exports to the DC's from both the other developed countries and from less developed countries has a non-infinite elasticity and if the existing uniform tariff rates on imports from both sources are below the optimum tariff level for either supplier, then the reduction of the tariff on imports from less developed countries implies an income loss in the country granting the preference. The only situation in which the developed country could gain by granting a preference would be if the existing tariff on imports into the country from LDC's were already above the optimum tariff on trade from that region. However, since the average tariff rates on imports from less-developed countries into the developed countries are so low, it is unlikely that the latter situation would apply, except possibly to the very smallest DC's. Thus, we conclude
that there would be some transfer of world income from the
developed countries to the less developed countries by a grant-
ing of preferences. Because of the low tariff rates, however, the
transfer is likely to be small. Also, the percentage gap between buyer
and seller prices will not be narrowed by the full amount of the
tariff change because of preference-induced depreciation of DC cur-
rencies. However, the welfare effects on the LDC's of this deprecia-
tion can be ignored since they will be small compared to the direct effects
of the preferences (they involve a small positive transfer of resources
to the LDC's through the real balance effect and a terms of trade effect which
can go either way).

The last welfare question to be considered concerns world welfare.
Elimination of one distortion (such as tariffs) in a world in which no
other distortions exist always increases world welfare. Elimination of
tariffs in DC's on imports from LDC's will increase world welfare except
when "second-best" considerations override. The theoretical model and
parameter estimates required to resolve this question are far beyond
the scope of this paper. My own judgment is that even if there is a
world welfare loss, it will be small.
5. Estimates of the Trade Effects of Preferences

We consider in this section the likely effects on imports into the developed countries of blanket elimination on all tariffs on goods imported from the less developed countries. The form of the preferential scheme would be a violation of the traditional GATT most-favored-nation principle whereby for a given product, the tariff rate on alternative world sources is identical. Under the scheme considered here, I shall assume that the tariff rate on a product coming from the LDC's is cut to zero while the tariff rate on the same product from a developed country retains the existing tariff rate.

The analysis of the effects on trade of moving to such a system has been developed by Harry Johnson and others in the theory of customs unions (see Clague, 1971). Granting of preferences to one of several sources of supply has several effects. The lowering of tariffs on imports from LDC's will expand total imports into the developed countries. The less developed countries benefit by an expansion of their exports for two reasons: first, there is "trade creation" through the total expansion of imports into the developed countries, and there is "trade diversion" of purchases by each DC importer away from traditional DC suppliers to LDC suppliers.

Table 2 provides the data used to calculate these two effects. Column 5 presents an average of empirically estimated price elasticities for total imports into thirteen developed country markets. The
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</table>
Notes to Table 2

Cols (2)-(4)  See [4, p.113], [12, p.8], [19, p. 189]

Col (5)  Column (5) is a simple average of columns (2), (3), and (4). Where column (2) is not available, column (5) is a simple average of columns (3) and (4).

Col (6)  Column (6) is a weighted average of tariff rates on raw materials, semi-manufactures and finished manufactures. The weights used are the shares of raw materials, semi-manufactures and finished manufactures in the total imports of a given country. In the case of W. Germany, Italy, Netherlands, Belgium and France, each of the tariff rates was first multiplied by the fraction of imports from non-EEC member countries. For calculations with OECD data, raw materials include categories 00-43, semi-manufactures categories 51-69, and finished manufactures categories 71-96. For tariff rates see [23, pp.2-4]; for weights see [23, pp.2-4] and [17, pp.21-125].

Col (7)  Column (7) is a weighted average of tariff rates on raw materials, semi-manufactures and finished manufactures. The weights used are the shares of raw materials, semi-manufactures and finished manufactures in the total imports of a given country. For OECD data, raw materials include categories 00-43, semi-manufactures categories 51-69, and finished manufactures categories 71-96. For tariff rates see [23, pp.2-4]; for weights see [23, pp. 2-4] and [17, pp. 21-125].

Cols (8),(9)  Columns (8) and (9) are the proportion of a given country's total imports coming from developed countries and less developed countries, respectively. See [17, p.21].

Col (10)  Column (10) is the negative of the product of columns (7) and (9).

Col (11)  Column (11) is calculated using equation (6.2) from Appendix A. The value of $e_2$ is assumed to be 2. The value of $(\gamma_1^*/P_2)$ is given by the negative of column (7). The second term of equation (6.2) is the product of columns (5) and (10).

Col (12)  Column (12) is calculated using equation (6.1) from Appendix A. The value of $e_1$ is assumed to be -2. The
Notes to Table 2

Col (12) (continued) value of \((P_1/P_2)\) is given by the negative of column (7). The second term of equation (6.1) is the product of columns (5) and (6).

Col (13) Column (13) is the sum of columns (11) and (12).

Col (14) Column (14) is total imports in 1974, C.I.F.. See [5, p. 39].
number for the United States, \( -0.87 \), indicates that for every 1 percent increase in the dollar price for U.S. imports, there is a decline in the quantity imported of 0.87 percent. Columns 6 and 7 give the (1970) tariff rates on imports from both developed and less developed countries into the thirteen markets while columns 8 and 9 give the share of imports into each market from the two sources. Note that the average tariff rates on LDC exports into the developed countries are already lower than tariff rates on trade from developed countries. (With the exception of Belgium, which was probably dominated by the importance of intra-EEC trade). Notice also that the share of LDC trade in total imports into these countries is relatively small. The major exception is Japan while the United States, the U.K., Italy and France are minor exceptions. Column 10 indicates the effect on total import prices in the developed countries of eliminating tariffs on imports from less developed countries. Columns 11, 12 and 13 present the calculations for the effect of the preference scheme on the quantities of imports into each market, assuming that the elasticities of supply from both developed countries and less developed countries into each market are high. Notice that trade creation, indicated in column 13, is relatively small for each market. The reason that total imports expand very little is that aggregate import prices do not fall very much with elimination of tariffs on LDC goods and the product of this price effect times the import price elasticities in column 5 yield relatively small numbers. However, our assumption that every 1 percent change in the relative
price of LDC goods relative to DC goods yields a 2 percent decline in the ratio of developed country to less developed country imports into each market yields sizeable trade diversion effects. This is the number used most frequently in this type of calculation (see Appendix A). The percentage decrease in imports from the developed countries is shown in column 11 (a negative number indicates a decrease in imports from the DC's) and the percentage increase in LDC imports is shown in column 12. Note that only for the United States and Japan is there an expansion in LDC exports by more than 10 percent.

While a many of the numbers in the table are based on 1971 and earlier trade and tariff data, I have shown the total value of imports in 1974 in column 14 as a reference point. The breakdown of this trade between developed country and less developed country suppliers was not immediately available. However, the 1971 share of imports from each source are shown in columns 8 and 9. These can be used as proxies, although the shake-up in world oil prices in the last two years will cause the LDC component to be underestimated.

We conclude this section by noting that the granting of preferences by the thirteen countries in Table 2 will yield an increase in LDC exports to these markets of approximately 6.46 percent. This number is the average of the percentage changes in column 12 weighted by the shares of these markets in LDC exports to the thirteen countries.
6. A Program for Increasing World Wage Income

What will be the effect on wage income in the United States of granting preferences to the less developed countries? The quick answer is that the wages of production workers, unskilled, semi-skilled and blue-collar workers in the United States will decline. Wages of labor in the less developed countries will increase since there has been an expansion in the world demand for their products. The factory workers in Detroit, shoe manufacturers and craftsmen in the north east, and textile workers in the south must all lose in real income since their industries now face stiffer competition from abroad. The obvious reason why trade expansion cannot benefit labor worldwide is that trade induces a leveling effect in wages which pushes down wages in high wage countries and raises them in low wage countries. There is a certain amount of this factor price equalization taking place already (e.g. Mundell, 1957) as multinational corporations move capital from high wage countries to low wage countries. What evidence do we have on wages factor intensities?

The wages in U.S. industries in 1967-69 which competed with U.S. imports from Asia were $2.67 per hour, they were $2.93 for imports from Latin America, (see Tables 3 and 4) while they were $3.04 for all U.S. manufacturing. Also, production worker payrolls as a percent of value added were relatively higher for goods competing with imports from these regions; 34 percent for Asia, 33 percent from Latin America and only 30.5 percent for all U.S. manufacturing. Thus, LDC imports compete with lower wage labor and more labor intensive industries.
<table>
<thead>
<tr>
<th>Schedule A</th>
<th>Commodity</th>
<th>SIC</th>
<th>1971 Value of U.S. Imports (Millions of $) for Schedule A</th>
<th>Average Wage Rate 1967-69 for SIC Category</th>
<th>Production Worker Payroll (Millions of $) for SIC Category</th>
<th>Value Added (1957-69 for SIC Category)</th>
<th>Production Worker Payroll/Value Added</th>
</tr>
</thead>
<tbody>
<tr>
<td>651.2</td>
<td>Plywood</td>
<td>2452</td>
<td>122.8</td>
<td>2.61</td>
<td>364.3</td>
<td>837.0</td>
<td>.46</td>
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<tr>
<td>652.1</td>
<td>Cotton Fabric--Woven, Unbleached</td>
<td>2211</td>
<td>64.1</td>
<td>2.35</td>
<td>323.9</td>
<td>172.3</td>
<td>.52</td>
</tr>
<tr>
<td>653.4</td>
<td>Woven Fabric of Jute</td>
<td>22952</td>
<td>153.8</td>
<td>2.07</td>
<td>62.8</td>
<td>15.8</td>
<td>.39</td>
</tr>
<tr>
<td>659.9</td>
<td>Made Up Articles of Textile Materials</td>
<td>2392</td>
<td>81.1</td>
<td>1.70</td>
<td>243.7</td>
<td>396.9</td>
<td>.41</td>
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<tr>
<td>667.2</td>
<td>Diamonds, Excluding Industrial</td>
<td>1913</td>
<td>80.3</td>
<td>2.90</td>
<td>8.0</td>
<td>30.6</td>
<td>.26</td>
</tr>
<tr>
<td>674.4</td>
<td>Iron or Steel Sheets--Uncoated</td>
<td>3312</td>
<td>22.8</td>
<td>1.28</td>
<td>363.3</td>
<td>932.4</td>
<td>.39</td>
</tr>
<tr>
<td>687.1</td>
<td>Tin and Tin Alloys</td>
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<td>152.6</td>
<td>3.32</td>
<td>62.1</td>
<td>153.8</td>
<td>.37</td>
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<tr>
<td>724.9</td>
<td>Office Machines</td>
<td>3273</td>
<td>29.6</td>
<td>2.06</td>
<td>406.1</td>
<td>376.7</td>
<td>.22</td>
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<tr>
<td>728.1</td>
<td>Television Receivers</td>
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<td>2.65</td>
<td>662.3</td>
<td>250.1</td>
<td>.30</td>
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<tr>
<td>728.2</td>
<td>Radio Receivers</td>
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<td>1.28</td>
<td>334.3</td>
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<td>Electron Tubes</td>
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<td>2.10</td>
<td>301.8</td>
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<td>.37</td>
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<td>797.0</td>
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<tr>
<td>831.0</td>
<td>Travel Goods</td>
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<td>91.7</td>
<td>152.4</td>
<td>.38</td>
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<td>2.23</td>
<td>962.6</td>
<td>1175.9</td>
<td>.43</td>
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<td>2.23</td>
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<td>2.23</td>
<td>962.6</td>
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<td>841.4</td>
<td>Clothing, Accessories--Knit or Crocheted</td>
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<td>2.23</td>
<td>962.6</td>
<td>1175.9</td>
<td>.43</td>
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<td>1670.3</td>
<td>.44</td>
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<tr>
<td>893.1</td>
<td>Rubber and Plastic Manufactures</td>
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<td>67.1</td>
<td>2.52</td>
<td>213.6</td>
<td>7135.1</td>
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<td>Children's Toys, Christmas Decorations</td>
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<td>112.5</td>
<td>2.23</td>
<td>198.4</td>
<td>706.6</td>
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<td>Other Manufactures</td>
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<td>140.5</td>
<td>2.47</td>
<td>1664.9</td>
<td>4933.8</td>
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**OVERALL AVERAGE**

<p>| 2.67 | .78 |</p>
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<th>Schedule A (SIC)</th>
<th>Commodity</th>
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<th>1971 Value of U.S. Imports (Millions of $)</th>
<th>Wage Rate ($/hour)</th>
<th>Production Worker Payroll (Millions of $)</th>
<th>Value Added (Millions of $)</th>
<th>Production Worker Payroll/Value Added</th>
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<td>Oils and Rosinoids</td>
<td>2899</td>
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<td>66.8</td>
<td>57.4</td>
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<td>2611</td>
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<td>155.7</td>
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<td>Wood, shaped or worked</td>
<td>2421</td>
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<td>2.15</td>
<td>124.5</td>
<td>279.5</td>
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<td>691.0</td>
<td>Yarns and threads of</td>
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<td>2.92</td>
<td>145.7</td>
<td>298.0</td>
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<td>Cotton fabrics--woven,</td>
<td>2213</td>
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<td>2.47</td>
<td>34.3</td>
<td>1.75</td>
<td>.32</td>
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<tr>
<td>693.6</td>
<td>Yarns, cordage, nets, etc.</td>
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<td>14.9</td>
<td>2.28</td>
<td>36.2</td>
<td>26.7</td>
<td>.37</td>
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<td>86.0</td>
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<td>3.31</td>
<td>51.8</td>
<td>76.7</td>
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<tr>
<td>683.1</td>
<td>Lead and lead alloys--</td>
<td>3316</td>
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<td>3.13</td>
<td>44.6</td>
<td>1,433.8</td>
<td>.32</td>
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<td>711.3</td>
<td>Engine--internal combustion</td>
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<td>31.8</td>
<td>3.78</td>
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<td>1,115.4</td>
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<td>3.53</td>
<td>85.1</td>
<td>1,748.7</td>
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<td>8.4</td>
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<td>11,768.9</td>
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</tr>
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<td>39.4</td>
<td>2.13</td>
<td>5,009.6</td>
<td>11,768.9</td>
<td>.43</td>
</tr>
<tr>
<td>851.0</td>
<td>Footwear</td>
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<td>2.12</td>
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<td>23.8</td>
<td>2.21</td>
<td>198.4</td>
<td>708.6</td>
<td>.26</td>
</tr>
</tbody>
</table>

**Overall Average**: 2.93 | .33
Notes to Tables 3 and 4

Cols (1)-(3) Forming an exact correspondence between Schedule A codes and SIC numbers is not possible. SIC numbers were chosen as proxies for Schedule A codes based on the similarity of industry descriptions, magnitude of imports for that particular SIC category and availability of data. For cross-classifications see [22, pp. 1-4 to 1-92].

Col (4) Import data was obtained from [21, pp. 27-96].

Cols (5)-(7) U.S. employment and production data by SIC category was obtained from [20].

Col (8) Column (8) is a column (6) divided by column (7).

The 20 Latin American Republics include the 5 members of the Central American Common Market, the 11 members of the Latin American Free Trade Association plus Panama, Cuba, Haiti and the Dominican Republic. The Asian countries include 12 Middle Eastern countries, 5 in South Asia, 7 in Malay Peninsula region, Indonesia, the Philippines, Korea, Taiwan, Hong Kong, Japan, and 3 others. See [21, pp. vii and viii] for detailed listings.
Is there any solution to the problem posed by trade expansion for labor in the developed countries? We shall not deal here with the short-run impact of monetary and fiscal policy on employment over the business cycle. This will be covered in the other studies. The focus here, rather, is on long-term strategies which could raise real wages in both the developed countries and the less developed countries. The basis of this analysis is the general equilibrium approach to income distribution which has been used extensively in the theory of international trade and factor market distortions (see Magee (1973 and 1976) for a survey of this literature).

We start first with a discussion of the standard theorem which applies to income distribution in the presence of expansion or contraction of international trade. The Stolper-Samuelson theorem states that trade expansion will benefit the abundant factors in a country and hurt the scarce factors. The reason is that expansion of trade permits a country to better exploit its comparative advantage. The presumption is that the developed countries have their greatest relative abundance of skilled labor and perhaps capital while a comparative disadvantage in unskilled labor and in some raw materials. The less developed countries, on the other hand, are the mirror image of this ranking; they have the greatest comparative advantage in certain raw materials and in unskilled labor while they are relatively capital and skilled labor scarce. Let us ignore raw materials and
consider only labor and capital. An important distinction in discussions of comparative advantage over the past fifteen years is between white-collar and blue-collar workers. There is probably a greater distinction between these two factors of production than between either type of labor and capital itself. Thus, for the purposes of this paper, I shall lump capital and skilled labor together as a single factor of production and talk only about blue-collar workers versus the other factors of production (some combination of capital and skilled labor). This will facilitate the discussion since the developed countries have the greatest abundance of skilled labor while the less developed countries have a relative abundance of unskilled labor. Since developed countries export skilled labor intensive products and less developed countries export unskilled labor intensive products, then from the Stolper-Samuelson theorem, we know that granting of preferences by the developed countries to the less developed countries will benefit unskilled labor in the less developed countries but reduce the real wages of unskilled labor in the developed countries.

We turn now to the problem of how the harm to blue-collar workers in the developed countries caused by the granting of preferences might be offset. Thus far, we have considered the use of only one policy tool, namely a reduction in the tariff rate on DC imports from the less developed countries. We need, however, another policy tool to offset the wage reduction in the developed countries. One such policy tool
might be taxation of the factors used in certain industries within an economy or simply outright subsidies of blue-collar workers in the economy as a whole. Adjustment assistance will generally be inadequate to handle this redistribution question since payments are made only to workers who are directly laid off as a result of trade expansion. Workers who have reductions in their real wages indirectly (as a result of the expansion of trade) are not eligible for adjustment assistance benefits. In a reasonably efficient labor market, all workers in the United States whose skills are similar to those in import competing industries will be affected by the expansion of trade.

For the purposes of this analysis, let us assume, not unrealistically, that the two policy variables over which organized labor has some control in the developed countries are (reductions in) tariff rates and the industries which they choose to unionize. In the last five years, organized labor in the U.S. has nearly succeeded in passing quite restrictive trade bills over the opposition of the multinational corporations, academics, consumer groups, and others. If organized labor wished to help labor in the less developed countries, they could easily get Congress to pass a bill providing for tariff preferences for less developed countries. (I assume that labor could get tariffs reduced but do not assume that they would succeed in raising tariffs above existing levels.)
Assuming that organized labor in the developed countries succeeds in benefiting unskilled labor in the less developed countries through trade preferences, how could they unionize in such a way as to prevent their real wages from falling or even increase their real wages? In the absence of raising their real wages through investments in political markets (for such techniques see Brock and Magee (1975)) I shall assume that they choose a wage strategy in unionized industries which is outlined below.

The first and most important analytical principle to be used here is that with international trade or fairly elastic demand present, expansion of output of any industry always benefits the intensive factor in that industry (relative to the rest of the economy). The following types of paradoxes are possible. Let us assume that unions decide to cut wages in the labor intensive sectors of the economy and keep them, say, 10 percent below the wage level in sectors which are capital intensive. The result of this will be to expand the labor intensive industries and contract the non-labor intensive industries. But the labor intensive industries can expand only bidding labor away from the capital and skilled labor intensive industries. Every one unit expansion of the output of the labor intensive sector generates a demand for blue-collar workers which exceeds the number of workers released by decreasing one unit of output of the other industries. This pushes up the wage in the rest of the economy for blue-collar workers and begins pushing up the wage in the unionized sector which
just cut its wages. The rational policy for the union should be to keep unionized wages at the uniform level of 10 percent (or whatever) below wages in the rest of the economy. With free trade, it is a mathematical inevitability that when the new equilibrium is reached, the unionized sector will have expanded sufficiently to push up non-union wages by more than 10 percent and will have raised the union wage above the initial level.

A second strategy which would yield identical results would be for unions to organize only in industries in which labor is a fairly small proportion of value added and introduce a 10 percent differential in those industries above the cost of labor in the rest of the economy. The increase in wage cost to these industries would reduce profits and drive marginal firms out of business, providing factors of production to the labor intensive industries. As these industries expanded, there would be a greater demand for labor than the supply of labor forthcoming from the contracting unionized industry and wage rates in the economy would be bid up across the boards. Again, the union should maintain a 10 percent higher wage in the non-labor intensive sector than in the labor-intensive sector. But in both this case and in the previous one, we would get an identical increase in the total wage level in the economy as a whole. Clearly, there is some level of the wage differential between labor intensive and non-labor intensive industries such that the decrease in the tariff on imports from less developed countries could be more than offset by a rational wage setting.
policy (see Appendix B for development of this point).

Possibly one failure of American labor to succeed in certain industries in the long run has been a tendency to unionize in labor intensive rather than in capital and in skilled labor intensive sectors. For example, Gregg Lewis (1964) provides evidence of deleterious effects of unionization on the coal industry. He notes that in 1945, coal miners received wages roughly equal to the average wage in all of manufacturing. By 1959 hourly earnings were 28 percent higher than in manufacturing and hourly compensation was 42 percent higher. The problem with this strategy was that the share of labor in total costs in mining was over 50 percent so that unionization had a significant effect in the decline of the coal industry. Further evidence is provided by Miller and Williams (1974, page 76) who note that the wage increases in the coal industry during the 1950's probably benefitted large coal operators by putting labor intensive coal operators out of business. Again, a more rational union strategy would have been to organize in the capital intensive coal mines only which would have discouraged the substitution of capital for labor in other coal firms (through threat of unionization) and which would have put out of business the capital intensive rather than the labor intensive coal firms.

The point of this section is that it may be possible for labor or any factor of production to increase its real income worldwide. However,
my own judgment is that organized labor in the United States will not support increased real wages in LDC's by granting them tariff preferences. It is more likely that they will follow their own self-interest in attempting to keep DC wages high both at the expense of other factors in the DC's and unskilled labor in the LDC's.
Appendix A  Calculations of the Trade
Creation and Trade Diversion Effects of Preferences

Following Clague (1971), we shall derive the Verdoorn-Johnson
model of the effects of discriminatory tariff reduction on DC im-
ports from LDC's. For any DC importer, let $m_1$ represent the quantity
of imports from the LDC's and $m_2$ represent the quantity of imports
from all other DC's. Total real imports, $m$, equal

\[(1) \quad m = m_1 + m_2\]

and

\[(2) \quad m_i = s_i m \quad i = 1, 2.\]

where $s_i$ is the share of source $i$ in total imports. Logarithmic
differentiation yields

\[(3) \quad \hat{m}_i = \hat{s}_i + \hat{m} \quad i = 1, 2.\]

(Hats, "\(^\wedge\)", over variables indicate proportional changes.) The
relationship between changes in total imports and total import prices
is

\[(4) \quad \hat{m} = e_{mp} \hat{p}\]

where $e_{mp}$ is the price elasticity of demand for total imports and
\(\hat{p}\) is the proportionate change in the price of all imports caused by
the granting of tariff preferences to LDC's. The change in the share
of imports from source $i$ can be written

$\frac{\Delta}{\Delta} a_i^\wedge = e_i^\wedge (p_i^\wedge /p_j^\wedge)$

$i = 1, 2, (i \neq j)$

where $(p_i^\wedge /p_j^\wedge)$ is the proportionate change in the price of source $i$ relative to source $j$ and $e_i^\wedge$ is the elasticity of the share of source $i$ in total imports with respect to $(p_i^\wedge /p_j^\wedge)$.

The effect of preferences on the quantity of imports from each region can be obtained by inserting (6) and (5) into (3):

\[
\begin{align*}
(6.1) & \quad m_1^\wedge = e_i^\wedge (p_1^\wedge /p_2^\wedge) + e_{mp}^\wedge \\
(6.2) & \quad m_2^\wedge = e_2^\wedge (p_1^\wedge /p_2^\wedge) + e_{mp}^\wedge
\end{align*}
\]

The elasticity $e_1$ must be negative since a fall in the tariff-inclusive price of LDC imports caused by the preferences lowers $(p_1^\wedge /p_2^\wedge)$ and raises $s_1$, the share of the LDC's in $m$ (conversely, $e_2$ is positive). Thus, the first term in (6) is positive and reflects "trade diversion", i.e., expansion of LDC exports at the expense of other DC suppliers, while the second term measures the "trade creation" effect of the preferences.

Use of equation (6) to estimate the effect of preferences implicitly assumes that all supply elasticities are high. It provides an upper bound on the estimates since we shall ignore the effects of the preferences on foreign exchange markets.

Following Verdoorn (1960), Krause (1968) and others who have utilized
formula 6, I shall assume that $e_1 = -2$ and $e_2 = +2$. The price elasticities of total import demand, $e_{mp}$, are shown in column (5) of Table 2 in the text, are simple averages of three estimates by LINK, Houthakker and Magee and Taplin reported in Magee (1975, Table 1).

The tariff rates on imports from the DC's and the LDC's should be used with care because of the way I constructed them. The Documentation for the GATT Tariff Study (1970) gives tariff rates for three broad categories of products: raw materials, semi-manufactures and finished manufactures. For each market, these tariff rates were weighted by the share of each category for exports of DC's to the market to get the tariff rate on DC trade and weighted by LDC trade in the three categories to get the tariff rate on LDC trade. The computations for the remainder of the columns in Table 2 are described in the notes to Table 2.

While the tariff rates are a bit dated (since they include few of the Kennedy round cuts), the GATT study [23] was the only source from which I was able to extract differences in tariffs between DC and LDC suppliers to each market.
Appendix B  Some Theoretical Considerations  
Affecting World Wage Income

This appendix outlines the model whereby wage income could be increased in the LDC's through tariff preferences and the decline in wage income in the DC's could be more than offset (i.e., increased in total) by selective unionization. The apparatus used is the standard classical 2x2x2 general equilibrium trade model. It assumes full employment of the factors of production so that it is a model which is appropriate for a long-term strategy.

Assume that we label blue-collar workers "labor" and lump skilled labor, capital and other inputs into a composite factor which we shall call "capital", for simplicity; the two factors are denoted L and K in Figure 1. We assume that (L/K) in LDC's exceeds that in DC's, so that \((L/K)_{1dc} > (L/K)_{dc}\), as shown by the two endowment lines in the right-hand quadrant. Good X is assumed labor intensive relative to Y, with identical production technologies world wide. LDC's are assumed to export good X, the labor intensive product to DC's. However, tariff and non-tariff barriers in the DC's prevent equalization of the price of good X world wide. Thus, before preferences are instituted, \(P_{dc} > P_{1dc}\) (\(P = P_x/P_y\)). Failure of goods prices to equalize and limited factor mobility also prevents equalization of factor rewards between DC's and LDC's. Before preferences, absolute and relative wages are lower in LDC's than in DC's (\((u/r)_{1dc}^0 < (u/r)_{dc}^0\)).
Assume that preferences are introduced. There will be an 
expansion of trade with $P_{idc}$ rising and $P_{dc}$ falling. This raises 
wages in the LDC's and lowers them in the DC's. There will never 
be complete trade-induced equalization of wages worldwide since 
transport costs and other barriers to product movements prevent complete 
product price equalization. For simplicity, assume, however, that 
product prices are equalized at $P$ and factor prices are equalized at 
$(w/r)\lambda$. Labor is better off in LDC's but worse off in DC's with preferences.

Unions in the DC's could offset the declines in their wages by 
(1) organizing in labor intensive industries in the DC's (industry $X$) 
and cutting their wages and maintaining their wages at some fixed 
differential in labor intensive industries below the wage level in 
the rest of the economy (industry $Y$); or, by organizing in capital 
intensive industries and pushing their wages to a level consistently 
above the economy wage level. Either strategy will reduce output in the 
capital intensive sector, freeing up lots of $K$ and only a little $L$ 
for the labor intensive industry to use in its expansion. Expansion 
of industry $X$ pushes up $w$, lowers $r$, and increases the real wage rate 
above its original level, even in the industry with the lower wages in-
dustry ($X$). In Figure 1, introduction of a wage differential between 
$X$ and $Y$ breaks the one to one relationship between product and factor prices 
denoted by the heavy "non-union" line in the left quadrant. At 
unchanged product prices, when a differential causes $w_y > w_x$, both 
price lines shift up. If $w_y = 1.10 \cdot w_x$, and $r_x = r_y$, it must be the
case that \((w/r)_y = 1.10 (w/r)_x\) so that \(PE = 1.10 PA\) in Figure 1.

Starting from the post-preference equilibrium at OP and introducing the union strategy is not the end of the story, however, since \(F\) cannot be a product price which will clear international product markets. The wage differential in \(Y\) induces an expansion of the \(X\) industry, which is import-competing. This reduces the desired level of imports of \(X\). The export industry, \(Y\), contracts. At fixed relative product prices there must be a decline in the desired level of exports (production declined and consumption is unchanged). Thus, the offer curve of the DC's shifts in. At the original equilibrium relative product prices, there is a world excess supply of \(X\) and demand for \(Y\). For world product markets to clear, \(P_x/P_y\) must fall below \(P\). So long as the new world equilibrium price cuts the line \(AF\) between \(A\) and \(C\), wage levels in both industry \(X\) and industry \(Y\) are higher than before the combined preference-wage differential policy was instituted. If the new price line cuts the line segment \(CD\), then LDC labor is better off than initially (its wage payments are read off of the "non-union" line) and, given our construction of Figure 1, labor in \(Y\) is better off than before, although the labor in \(X\) is not. The flatter the "union" lines, the more likely that labor in both \(X\) and \(Y\) will be better off when world product markets clear.
References


التفضيلات الجمركية للدول النامية

س. م.أ.ي

بحث هذه المقالة موضوعا هاما بالنسبة للدول النامية وهو منح تفضيلات في الرسوم الجمركية بواسطة الدول المتقدمة على وارداتها من الدول النامية.

ويمثل المقال هذا الموضوع إلى جانب مناهج أخرى في التجارة الدولية بعمق وسلاسة عرض، وقد أثبت فائدة تحرير التجارة في الولايات المتحدة، إلا أنه اوضح أن منح تفضيلات في الرسوم الجمركية للدول النامية بواسطة الدول المتقدمة سوف يعود بالضرر على هذه الأهدية.

ومع أن هذا المقال قد يكون مال إلى اتخاذ وجهة نظر الدول المتقدمة، إلا أنه قد يكون حافزا للاقتصاديين في الدول العربية والدول النامية لإبداء وجهة نظرهم في المقابل.

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