Assessing the Economic Gains of Free Market Access for the Least Developed Countries in the QUAD

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The Least Developed Countries (LDCs) are the poorest countries in the world. Their share of world trade has declined from 0.8% in 1980 to less than 0.5% today. The purpose of this study is to evaluate the impact on the LDCs of getting duty- and quota-free access to their main export markets. Our conclusion is that the aggregate benefits are likely to be modest. The main reasons are (1) that most LDCs presently enjoy quite liberal market access in important export markets, and (2) that the ability of LDCs to take advantage of trade preferences is limited, due to supply constraints and restrictive rules of origin. JEL-codes: F13, O5

49 countries of the world are currently designated as "least developed" by the General Assembly of the United Nations. The combined population of the Least Developed Countries (LDCs) is 637.4 million. This amounts to 13.4% of the total population of all developing countries. Their average GDP per capita is 288 USD, or less than a dollar a day (UNCTAD 2002). The LDCs' share of world trade has declined from 0.8% in 1980 to less than 0.5% today (WTO 1997). They have also had much

slower economic growth than other developing countries. The average growth in real GDP per capita over 1990–99 was 1.1% in the LDCs compared to 3.0% in all developing countries. Thus, the LDCs are lagging behind. Policies that prevent further marginalisation of these countries are therefore most welcome.

Several initiatives have been taken in recent years in order to reduce trade barriers for exports from LDCs. Some of these initiatives can be traced back to the WTO Ministerial Conference in Singapore in 1996, where the WTO members agreed to a plan of action to favour LDCs, *"…including provisions for taking positive measures, for example duty-free access on an autonomous basis".* The EU recently decided to grant free market access for all products except arms within 2009. Two other OECD countries, Norway and New Zealand, have also decided to grant duty-free and quota-free access to all LDCs. The General Director of the WTO and the Least Developed Countries themselves have proposed to bind all tariffs on their products at zero rates in the WTO.

The purpose of this study is to evaluate the economic impact on the LDCs of getting duty- and quota-free access to their main export markets. We concentrate on markets in the QUAD-countries (the EU, the USA, Canada, and Japan), which represent 65–75% of LDC exports. Potential benefits of duty- and quota-free access to the QUAD include: (1) Higher prices on existing exports to the QUAD,[1] (2) Price gains from diverting sales from other markets (other export markets or domestic markets) to the QUAD countries, (3) Increased value added through expansion of production.

Our conclusion is that *the aggregate benefits of duty- and quota-free access for the LDCs are likely to be modest*, even when measured relative to their present low levels of income. The main reasons are (1) that *most LDCs presently enjoy quite liberal market access* in important export markets, and (2) that *the ability of LDCs to take advantage of trade preferences is limited*, due to supply constraints and restrictive rules of origin.[2]

The benefits for LDCs of improved market access have also been estimated by Ianchovichina *et al.* 2000, Hoekman *et al.* 2001, and UNCTAD 2000b. Of these, only the first study uses welfare as the measuring rod. Ianchovichina *et al.* 2000 find welfare increases that are larger than ours, but not so large as to change the conclusion that the benefits are relatively modest. A major problem with this study is that it does not take into account existing preferential margins, implying that the welfare gains may be overestimated. Hoekman *et al.* 2001 and UNCTAD 2000b measure increases in export revenues. Since part of the increase in export revenues comes from increased LDC production, which entails costs, these studies overestimate the change in welfare. In addition, they each in their own way exaggerate the possibilities for expanding exports. The UNCTAD study assumes that there are no supply constraints[3]; Hoekman *et al.* 2001 ignore the problems caused by

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1. As we discuss below, consumer welfare in the LDCs might also be affected by price changes. Consumer prices may rise or fall depending on domestic policies in the LDCs.
2. All preferential trade agreements need some mechanism to prevent countries other than the intended beneficiaries from gaining access at reduced rates of duty. Rules of origin aim at securing that imported products are produced in a country that is party to such an agreement, and not, for example, simply exported through such a country.
3. Formally, LDC supply curves are assumed to be infinitely price elastic.

restrictive rules of origin. On the other hand, none of these studies take into account the potential gains to LDCs from using import-export swaps, that is, satisfying domestic consumer demand through imports from countries not enjoying preferences while at the same time exporting their own production in order to take advantage of the preferential margins in the QUAD. In this study, we show that import-export swaps may play a key role in determining the size of the gains.

The rest of the paper is organised as follows. In the next section, we outline a theoretical approach to measuring the gains from increased market access on a preferential basis. Based on this approach we provide estimates of the benefits that LDCs might reap. We then interpret the results and qualify them through an assessment of various other types of barriers that might prevent these countries from capturing the potential gains from duty-free, quota-free access to the QUAD. In the final section, we summarise our arguments and results.

Gains from preferential market access – a theoretical approach

We develop a static partial equilibrium model in order to assess the potential gains from preferential market access for the Least Developed Countries in the QUAD.

Supply and demand

In the LDCs, a representative consumer consumes and produces two goods, x and g.[4] Only x is internationally traded. We use a quasi-linear utility function $u(x, g)=u(x)+g$, implying that the demand for x is not affected by changes in income.[5] Normalise

the price of g to one and let p_L denote the consumer price of x in the LDCs. Furthermore, let $v(p_L)$ denote the indirect utility function, representing the maximal utility obtainable when the price is p_L. By Roy's Identity, the demand for x in the LDCs is defined by $d(p_L)\equiv-v'(p_L)$. Good x is produced by firms that maximise their profits taking prices as given. Let $\pi(q_L)$ denote the maximum profit for a representative LDCs producer as a function of the producer price q_L. By Hotelling's Lemma, the supply of x in the LDCs is defined by $s(q_L)\equiv\pi'(q_L)$.

Good x is internationally traded. In addition to the LDCs, there are two trading regions: the QUAD (Q) and the rest of the world (R). Let $m_i=m_i(p_i,q_i)$ be the net import demand in region i ($i=L,Q,R$), defined as a function of the producer and consumer prices in the respective regions. m_i may be either positive (for a net importer) or negative (for a net exporter). Let t_{ij} denote the import tariff levied by region i on its imports from region j. Preferential treatment of the LDCs in the QUAD implies that $t_{QL}<t_{QR}$. Without loss of generality, we assume that there are no tariffs in region R (i.e., $t_{Rj}=0$). We also assume that the LDCs do not implement preferential tariff regimes (i.e., $t_{LQ}=t_{LR}\equiv t_L$).

The price level in rest of the world will henceforth be denoted by p and will be referred to as the "world market price" of good x. In the QUAD, which is assumed to be a net importer of x, the price of x will exceed the world market price by the import tariff t_{QR}. Hence, $p_Q=p+t_{QR}$. Both in the QUAD and in the rest of the world producer prices equal consumer prices. The respective

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4. Hence, issues of income distribution are ignored.
5. This is reasonable in a partial equilibrium model when the good that we study accounts for only a small fraction of total consumption.

import demand functions can then be written as $m_R = m_R(p)$ and $m_Q = m_Q(p + t_{QR})$.

In the LDCs, preferential treatment may create a wedge between producer prices and consumer prices. LDC exporters must choose between exporting to the rest of the world and receive the world market price p or export to the QUAD and receive the price $p_Q - t_{QL}$. In general, the producer price in the LDCs is given as $q_L = \max(p, p_Q - t_{QL})$. Any trade preferences in the QUAD will make it profitable to export everything to that region: $p_Q - t_{QL} = p + t_{QR} - t_{QL} > p$ when $t_{QL} < t_{QR}$.[6] The producer price in the LDCs then exceeds the world market price by the preferential margin, i.e., $q_L = p + t_{QR} - t_{QL}$.

Any preferential trade agreement must include some kind of rules of origin in order to prevent third countries from taking advantage of the preferential margin. Since there are rules of origin, it is possible to maintain a consumer price below the producer price in the LDCs. LDC consumers may import good x at the world market price p plus any import tariffs imposed by the LDC countries t_L. Alternatively, they may buy the good from domestic producers at price q_L. The consumer price in LDCs is then $p_L = \min(p + t_L, p + t_{QR} - t_{QL})$.

Equilibrium
Two different types of equilibria may arise: (1) When the LDC import tariff is larger than the preferential margin $t_L > t_{QR} - t_{QL}$, LDC consumers will find domestically produced goods cheaper than imported goods. LDC production will then first satisfy domestic demand and any surplus will be exported to the QUAD. (2) When the LDC

import tariff is smaller than the preferential margin $t_L < t_{QR} - t_{QL}$, LDC consumers will find imported goods cheaper than domestically produced goods. The LDCs will then export all their production to the QUAD and import what they need for domestic consumption from the world market. This is known as an "import-export swap".

In equilibrium, world net imports must be zero. The equilibrium conditions for the two different types of equilibria can be stated as follows:

(I) Without import-export swap:

$$m_Q(p + t_{QR}) + m_R(p) + d(p + t_{QR} - t_{QL})$$
$$- s(p + t_{QR} - t_{QL}) = 0$$

(II) With import-export swap:

$$m_Q(p + t_{QR}) + m_R(p) + d(p + t_L) - s(p + t_{QR} - t_{QL}) = 0$$

These conditions define the world market price of good x as a function of trade policy parameters. For later reference, it will be useful to derive the effect on the world market price of preferential trade provisions towards LDCs in the QUAD. Implicit differentiation yields:

$$\text{(I): } \frac{dp}{dt_{QL}} = \frac{-d' + s'}{m_Q + m'_R + d' - s'} \in (0,1)$$

$$\text{(II): } \frac{dp}{dt_{QL}} = \frac{s'}{m'_Q + m'_R + d' - s'} \in (0,1)$$

where derivatives are denoted by primes (e.g. $s' = \partial s(q_L) / \partial q_L$). The signs of the derivatives on the right-hand side of these expressions are

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6. We assume that the whole of the preferential margin can be captured by LDC producers. As discussed below, this might not be an accurate description of reality, but unfortunately not much is known about the market power of QUAD importers in the relevant markets.

the conventional ones. Hence, with demand falling and supply rising in consumer and producer prices, respectively, net import demand in the QUAD and the rest of the world are declining functions of the market prices in those locations. It follows that preferential treatment (a fall in t_{QL}) reduces the world market price of good x. Trade preferences causes a rise in the producer price in the LDCs (and in case 1 also a rise in the consumer price). The effect is to increase net exports from the LDCs on the world market, which brings the world market price down.

Welfare

Welfare in the LDCs is the sum of utilities and profits.[7] In addition, there may be government income from import tariffs. However, in equilibrium tariff revenues are zero. The reason is the following: Assuming, as is reasonable, that LDC countries are price takers on the international import markets, an import tariff will be inefficient in our model. The reason why this policy instrument still is included in the model is that considerations about security of supply of certain essential goods (e.g., food) may lead LDCs to put up import controls in order to avoid extensive import/export swaps. In our model, this can be achieved by raising t_L above the preferential margin. Domestic producers will then satisfy domestic demand before any surplus is exported. But in this case, as long as the LDCs are net exporters of the relevant good, the equilibrium tariff revenue will be zero. In other words, we contend that the tax revenue is zero either because t_L is zero in order to achieve efficiency (in the model sense) or because the tariff is raised to a prohibitive level in order

to discourage import/export swaps for some other reason. Welfare is then

$$W = v(p_L) + \pi(q_L).$$

We now want to investigate the welfare effect of preferential tariffs for the LDCs in the QUAD. For convenience of notation, we analyse the case where tariffs on LDC exports to the QUAD are completely removed, i.e., $\Delta t_{QL} = -t_{QL}$. Let superscripts 0 and 1 refer to the initial and the new equilibrium, respectively. The welfare effect of the reform is then

$$\Delta W = W^1 - W^0 = v(p_L^1) + \pi(q_L^1) - v(p_L^0) - \pi(q_L^0)$$

In order to simplify the analysis, we will assume that demand and supply functions in the LDCs are linear (i.e., $v''' = \pi''' = 0$). By using a Taylor series expansion, the general expression for the welfare change can be approximated as

$$\begin{aligned}
\Delta W &= W^1 - W^0 \\
&= v(p_L^0) + v'(p_L^0)\Delta p_L + \frac{1}{2}v''(p_L^0)(\Delta p_L)^2 \\
&\quad + \pi(q_L^0) + \pi'(q_L^0)\Delta q_L + \frac{1}{2}\pi''(q_L^0)(\Delta q_L)^2 \\
&\quad - v(p_L^0) - \pi(q_L^0) \\
&= -d(p_L^0)\Delta p_L - \frac{1}{2}d'(p_L^0)(\Delta p_L)^2 + s(q_L^0)\Delta q_L \\
&\quad + \frac{1}{2}s'(q_L^0)(\Delta q_L)^2
\end{aligned}$$

Here we have used the facts that $v' = -d$, $v'' = -d'$, $\pi' = s$, and $\pi'' = s'$. Hence, with information on initial levels of production and consumption in LDCs, changes in consumer and producer

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7. We assume that firms are fully owned by LDC citizens. If some of the increase in profits accrues to foreigners, this will of course reduce the total welfare gains to the LDCs from preferential treatment. Unfortunately, there are no readily available measures of the extent to which this is the case.

prices, and the slopes of demand and supply functions, the change in welfare can be measured.

Welfare effect without import/export swaps
Consider first the case where the import tariff in the LDCs is raised sufficiently to prevent import/export swaps. Then, $p_L = q_L$ and $\Delta p_L = \Delta q_L = \Delta p - \Delta t_{QL} = \Delta p + t_{QL}$. The welfare change is

$$\Delta W_I = [s(q_L^0) - d(p_L^0)](\Delta p + t_{QL})$$
$$-\frac{1}{2} d'(p_L^0)(\Delta p + t_{QL})^2 + \frac{1}{2} s'(q_L^0)(\Delta p + t_{QL})^2$$

The first term is the terms of trade effect, which is positive as long as the LDC is a net exporter. The first order effect of the removal of tariffs is to improve terms of trade by t_{QL}. However, in equilibrium some of this gain is lost through the fall in the world market price of x ($\Delta p < 0$). Still, from the results derived above we know that $\Delta q_L > 0$ since the fall in the world market price is only a fraction of the decline in the tariff. The second term refers to the gain from replacing domestic consumption with exports as the export price rises; with a higher export price, the marginal willingness to pay in the LDCs will fall short of the price that can be obtained on the international market. Hence, a gain can be reaped by reducing domestic consumption somewhat and export these units instead. The third term refers to increased value added through higher production. A higher producer price stimu-lates LDC production, and the increase in the value added is part of the gain from preferential market access.

These welfare effects are illustrated in Figure 1. The figure shows demand and supply functions in the LDCs and decom-poses the welfare effect of given free market

access to products from the LDCs on a preferential basis. The initial equilibrium price is p^0. The granting of trade preferences to LDCs reduces the world market price to p^1 and increases the LDC producer price to q_L^1. The consumer price in the LDCs is equal to q_L^1 when an import tariff is used in the LDCs in order to prevent import/export swaps and p^1 if import/export swaps are allowed and the import tariff is set to zero.

The terms of trade effect corresponds to the area C in the figure. The "export for consumption"-effect is represented by B, while the value added from increased pro-duction is reflected by area D. The total gain for the LDCs without import/export swaps is thus the area B+C+D.

Welfare effect with import/export swaps
Consider next the case where the LDCs keep their import tariff at zero, implying that preferential access will induce an import/export swap. Then, $p_L = p$, $\Delta p_L = \Delta p$ and $\Delta q_L = \Delta p + t_{QL}$. The welfare change is

$$\Delta W_{II} = -d(p_L^0)\Delta p \frac{1}{2} - d'(p_L^0)(\Delta p)^2$$
$$+ s(q_L^0)(\Delta p + t_{QL}) + \frac{1}{2} s'(q_L^0)(\Delta p + t_{QL})^2$$

The two first terms represent the gain in consumer surplus as the world market price of imported goods decreases (areas E and F in Figure 1). The third term is the gain from higher prices on existing exports (the area A+B+C), and the last term is the increased value added in production as the higher producer price induces a higher level of output (area D). The total welfare gain when import and export swaps are used is thus A+B+C+D+E+F, which exceeds the gain without swaps by A+E+F. The higher level of welfare is wholly due to the fact that LDC consumers in this case are allowed to benefit

Figure 1.
LDC gains and losses
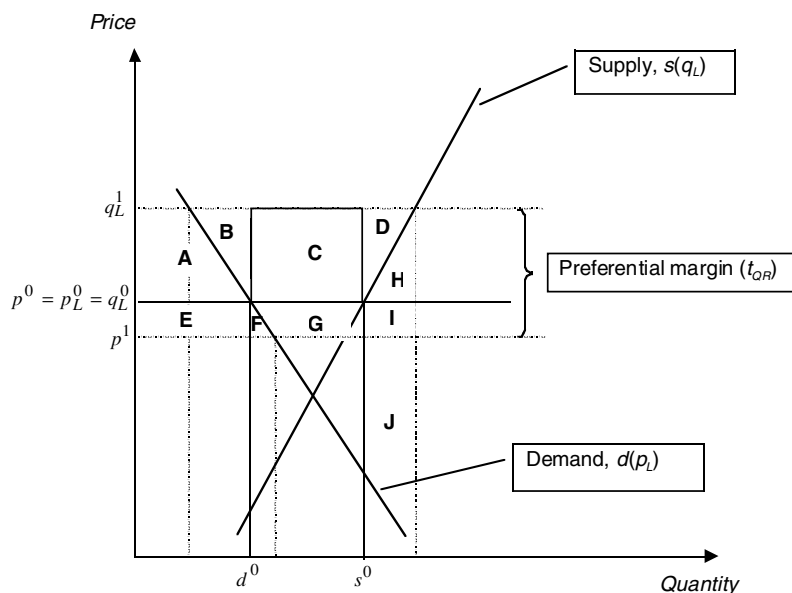
from the new, lower world market price of *x*.

Full utilisation of import-export swaps is probably not realistic in practice, for two reasons. First of all, LDC governments might be concerned about the reliability of supply of goods deemed to be of special importance, such as food. Secondly, transactions costs might limit the extent to which LDC producers are able to sell their production to the QUAD. For example, they would in all likelihood need to expend resources to certify the quality of their goods before they are able to penetrate the QUAD market. For these reasons, we limit the empirical analysis to a 10% import-export swap.

Measuring the gains of preferential market access

The methodology
In order to arrive at empirical estimates of the theoretical measures of the total gains for

LDCs of duty- and quota-free access in the QUAD, we need information about:

- The price responsiveness of demand and supply in the LDCs, import demand in the QUAD countries, and export supply in other countries;
- The quantities produced and consumed in the LDCs;
- The preference margin for goods exported by the LDCs to the QUAD (measured in absolute values).

Data are scarce in many of these areas, in particular concerning price responsiveness. It has therefore not been possible to undertake a comprehensive numerical assessment of the gains and losses for LDCs. Our approach is a pragmatic one, using available data to shed light on the potential magnitudes involved. We provide three different types of measures of the potential gains of duty-free access. The first two are approximations of our two

theoretical measures, ΔW_I and ΔW_{II}. Neither of these includes a satisfactory estimate of the value added from increased production. Unfortunately, no such estimate is readily available. However, Hoekman *et al.* (2001) provide an estimate of the potential increase in export revenue from freer market access in the QUAD that we use as the basis for our third measure, despite the shortcomings discussed below.

Measure I: Approximating ΔW_I
Recall that

$$\Delta W_I = [s(q_L^0) - d(p_L^0)](\Delta p + t_{QL})$$

$$- \frac{1}{2}\, d'(p_L^0)(\Delta p + t_{QL})^2 + \frac{1}{2}\, s'(q_L^0)(\Delta p + t_{QL})^2$$

We have data on the quantities involved as well as t_{QL}. We lack information about the change in the world market price that preferential market access for LDCs would induce and the responsiveness of supply and demand in LDCs to price changes. Our approach is therefore to estimate $[s(q_L^0) - d(p_L^0)](t_{QL})$, which corresponds to the areas C+F+G in figure 1. This might be a useful approximation of B+C+D; in any case, it is not possible to state with certainty that our measure over- or underestimates the theoretical measure.

To arrive at an estimate of C+F+G, we proceed as follows. First, we derive an estimate of the potential gains from higher prices on existing exports to QUAD. This is a measure of the pure price effect of higher prices on existing exports to the QUAD. It does not take into account the benefits of redirecting existing sales in non-QUAD markets or the value added from increased production. We use data on existing customs duties on LDC imports in the QUAD in order to arrive at this measure. The value of existing customs duties is in fact a very good estimate of the short-term gains of duty-free access. The reason is that most of the customs duties collected by the QUAD on LDC imports are related to the clothing sector. Under the Multifibre Agreement, imports of clothing to the USA and Canada are restricted by quotas until 2005. The exporters administer these quotas so that the value of the quotas – the so-called quota-rent – accrues to them. Import tariffs in the US and Canada reduce the market value of the quotas. By removing the tariffs, the market value of quotas would increase by the value of the existing customs duties. That is, the quota-rent increases. Hence, these revenues are good indicators of the short-term gains of duty-free access.

Secondly, we derive an indicator of the gains from redirecting existing exports to markets outside the QUAD to the QUAD. Redirecting exports that currently go to other destinations will be the easiest way of increasing exports to the QUAD markets in the short run. The existence of exports must imply that an export infrastructure has been established in the home country. Therefore, redirection of exports only requires that marketing channels are established in the QUAD markets (if they are not there already) and that the products satisfy consumer preferences and legal standards in the QUAD. Unfortunately, a complete measure of the potential gains from rerouting existing exports to the QUAD requires detailed data on preferential margins and quantities by product category. In the absence of the requisite information, we have calculated the potential benefits of redirecting exports from non-QUAD markets to the EU for a selected group of products containing the most important agricultural exports of the LDCs.

Figure 2.
QUAD customs duties and imports from LDCs
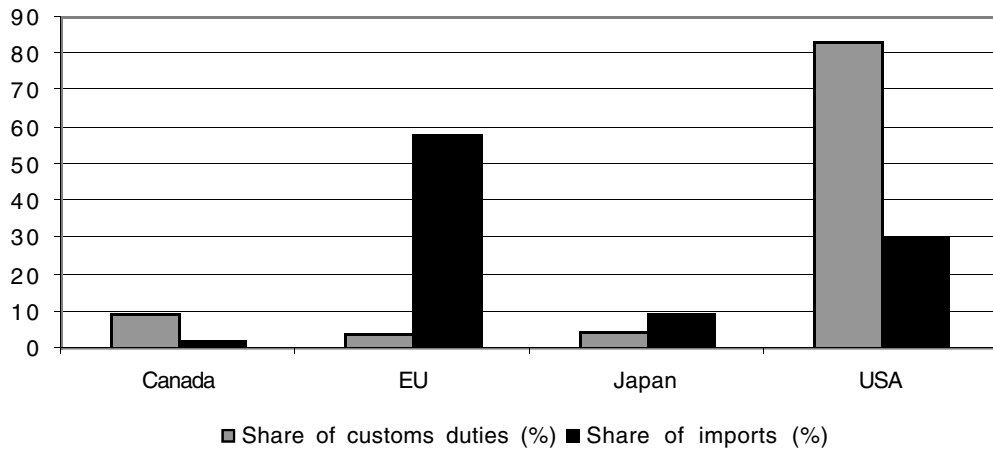
The QUAD countries collect about 220 million USD annually in customs duties on their imports from LDCs. As shown in Figure 2, more than 80% of these duties is collected by the USA. Canada also collects a disproportionally high share of the duties. The EU, while representing almost 60% of the total QUAD imports, collects less than 4% of the customs duties. The customs duties collected by all the QUAD countries on the imports from LDCs amount to 1.1% of total LDC exports and 0.13% of total GDP in the LDCs (UNCTAD 2000a). Hence, the removal of import tariffs will not raise incomes in the LDCs significantly unless there is a change in export volumes to the QUAD.

Removal of tariffs will mean more for some LDCs than for others. In Canada, 92% of the customs duties are collected from Asian LDCs and Bangladesh alone accounted for 77%. We would expect a similar pattern in the USA as well, because the customs duties in the USA are related exclusively to the imports of clothing, and exports of these products from Africa are very

low. Therefore, if some of the current tariff revenues are transferred to the LDCs, the main beneficiary will be Bangladesh. But even for Bangladesh, the values at stake are not sufficiently large to make a major difference. If we assume, for the sake of illustration, that 80% of the reduced tariff income accrues to Bangladesh, this would mean an increase in GDP of 0.4%. Although such an increase in income certainly would be welcome, it would not mean a big leap forward for this country, which has experienced annual grow rates in real GDP of 4–5% during the period 1990-98 (UNCTAD 2000a). For a country like Bangladesh, which has demonstrated its ability to develop a thriving export industry, the main benefits of reduced tariffs will in the long run be more related to the possibilities of expanding production and export volumes as competitiveness is improved.

In sum, the overall benefits that can be reaped by LDCs from higher prices on existing exports to the QUAD are quite limited. Would rerouting exports to the

Table 1.
The potential gains from redirecting exports

		EU price (USD/t)	World price (USD/t)	Non-QUAD share of LDC exports	Total LDC exports (1000t)	Value of redirecting existing exports (mill. USD
Cereals						
	Wheat	123	109	1	124.5	1.7
	Maize	129	85	0.75	183.5	6.1
	Rice	554	277	0.97	110.7	29.7
Sugar		600	231	0.1	280.1	10.3
	Fruits/ vegetables					
	Bananas	609	332	0.32	20.6	1.8
	Tomatoes	727	584	0.32	1.6	0.1
Meat						
	Beef	2566	1640	0.18	5.1	0.9
	Poultry	1232	902	0.39	0.1	0.0
	Sheep	3077	1363	0.18	14.0	4.3
Dairy products						
	Butter	2727	1207	1	1.932	2.9
	Cheese	3231	1989	1	0.019	0.0
Total these products						58.0

Sources: FAO on production and exports, European Commission (2001a) on prices, and GTAP version 4 on export shares to non-QUAD countries.

QUAD from the rest of the world create sizeable benefits, then? The figures in table 1 suggest that the answer is no. All the products included in table 1 face high tariffs in the EU at present. Most of them are highly protected in the Japanese market as well, but not in the USA and Canada. The higher prices in the EU-markets mean that there is more to gain by redirecting non-QUAD exports to the EU than to the North American QUAD-countries. Hence, the EU would be the most likely destination if the LDCs switch export markets to gain from preferential access in the QUAD. As mentioned previously, we calculate the potential benefit to the LDCs under the assumption that LDC producers capture the whole preferential margin. We approximate the preferential margin in the EU by the differential between the prices on the world market and in the EU, shown in columns two and three. Multiplying the result with the volume of exports going to destinations outside the QUAD (column four times column five) yields a measure of the potential gain from switching export sales to the EU by product category, stated in millions of USD in the rightmost column. The total across all products is slightly more than a fourth of the value of existing custom duties. It is thus clear that adding these gains to the value of current customs revenues in the QUAD does not change our previous conclusion that the benefits to the LDCs appear to be modest. Of course, the total of about 278 million USD annually does not

Table 2.
The potential gains from import-export swaps

		EU price (USD/t)	World price (USD/t)	LDC production (1000t)	Value of 10% import/export swap (mill. USD)
Cereals					
	Wheat	123	109	7217	10.0
	Maize	129	85	16335	72.4
	Rice	554	277	40807	1130.2
Sugar		600	231	2056	75.9
	Fruits/ vegetables				
	Bananas	609	332	5694	157.7
	Tomatoes	727	584	1176	16.7
Meat					
	Beef meat	2566	1640	2235	207.2
	Poultry meat	1232	902	886	29.3
	Sheep meat	3077	1363	1159	198.7
Dairy products					
	Butter	2727	1207	109	16.6
	Cheese	3231	1989	197	24.5
Total these products					1939.1

Sources: FAO on production and exports, European Commission (2001a) on prices, and GTAP version 4 on export shares to non-QUAD countries.

include potential gains from expanding production. These are discussed later. First we shall see that import-export swaps offer potentially much greater benefits to the LDCs.

Measure II: Approximating ΔW_{II}
With full utilisation of import-export swaps, we know from the theoretical analysis that the potential gain for the LDCs corresponds to the areas A+B+C+D+E+F in figure 1. In this case, we could approximate the gains by A+B+C+E+F+G. That is, we could take the product of the preferential margin and existing sales, which might be greater or smaller than the theoretically appropriate measure. Once again, though, data limitations preclude us from producing a comprehensive

estimate. We have to limit ourselves to the products considered in the analysis of market switching for existing exports, and use preferential margins for the EU market.

However, it should be noted that the LDCs will have much greater difficulties diverting sales from their domestic markets to the QUAD countries. It appears that such trade swaps are most likely for agricultural food products, for which only a few LDCs have established an adequate export infrastructure. In addition to building physical infrastructure, the LDCs must create mechanisms to ensure compliance with sanitary and phytosanitary regulations in the importing countries. They will also have to develop import infrastructure and internal distribution networks that can adequately

serve domestic consumers. Finally, considerations about food supply security may make some countries reluctant to engage in import-export swaps in food products on a large scale. We therefore limit our calculations to the effects of a 10% swap.

The exercise in table 2 exemplifies the benefits to the LDCs from diverting 10% of their existing production (which presently by and large is used to serve domestic needs). We emphasise that these numbers are not based on an assessment of the actual export potential. That would require detailed analysis at the product and country level. These figures should therefore be interpreted with great caution. There is however, a clear tendency wherein the potential gains from a 10% import-export swap are significantly greater than the potential gains from redirecting existing exports. This is due to the fact that LDC exports of these products presently are very low relative to their production levels. The potential gains from import-export swaps also seem relatively large compared to the value of higher prices on existing exports to the QUAD. In total, our estimate of ΔW_{II} is more than seven times our estimate of ΔW_I.

The potential gains from redirecting exports of textiles and clothing are probably limited, in part because the QUAD share of existing exports of clothing is very large and partly because consumer preferences differ greatly between markets. The probability of import-export swaps is greater for cereals and sugar than for meat and dairy products due to more stringent sanitary and phytosanitary measures for the latter categories. Thus, the potential for substantial gains from import-export swaps seems to be greatest in such

products as sugar and rice. However, there are a number of reasons why we may have exaggerated the gains in the rice sector. First, Myanmar, which is excluded from pre-ferential treatment both in the EU and the USA for political reasons, is the main LDC exporter of rice (90% of the total) and also an important producer (25% of the total). Moreover, the EU market for rice is too small to accommodate a 10% import-export swap; the export increase is almost twice the size of the EU market. If large quantities of rice are admitted into the EU market, the price is likely to fall dramatically, as will the potential gains for the LDCs. On the other hand, if some of the exports is accommodated by the Japanese market, which is four times larger than the EU market and where current prices exceed the world market prices by a factor of five, substantial gains could still be attained in this sector.[8]

Measure III: The value added of increased production

We have yet to take into account the fact that the removal of tariffs and quotas may increase the level of production in the LDCs. This would create additional gains. Note, however, that a dollar increase in export revenues generated by increased production has a smaller impact on GDP than one extra dollar received on existing exports. The reason is that the gain on existing exports is a pure price effect, implying that GDP increases in step with the export revenues, while gains arising from a production increase come at a cost, since additional inputs must be used in order to increase production. A meaningful comparison between the two requires that only the value-

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8. For other products than rice, LDCs would still have a minor market share in the EU (less than 4% in most cat-egories, except bananas (16%) and mutton (8%)).

added component (i.e., the extra export revenue minus the additional costs of inputs) is counted in the case of export revenues generated by increased production. Only if the expansion of output is generated by employing resources that are presently idle will the increase in export revenues be identical to the increase in valued added. Hence, the extra revenues are an upper bound on the value added from increasing production.

A few studies of the potential increase in LDC export revenue from improved market access in the QUAD are available (Ianchovichina *et al.* 2000, Hoekman *et al.* 2001, UNCTAD 2000b). The study by Hoekman *et al.* comes closest to our needs, and we will therefore report some of its results.[9] Hoekman *et al.* investigate the consequences of removing all tariff peaks (defined as tariffs above 15%) in the QUAD on imports from LDCs on the export revenues of the latter. With reference to figure 1, the measure provided by Hoekman *et al.* corresponds to the area C+D+H+I+J, which surely may differ considerably from the "ideal" measure of higher value added from expanding production, D. In the extreme case where the social opportunity cost of increasing export supply is zero, though, the total increase in value added is D+H+I+J. Then we would only need to subtract C, the extra revenues on existing exports, in order for the measure of Hoekman *et al.* 2001 to be correct.

However, their study also have some other important shortcomings: 1) In cases with tariff-quotas, they use out-of-quota

tariff rates. Since LDCs in many cases enjoy duty-free access within quotas (e.g. for several agricultural products in the US and the EU), this will lead to an overestimation of the gains. 2) If current exports are zero, the simulated export level will also be zero when tariffs are reduced. Moreover, the model does not capture potential gains from import-export swaps. This suggests that gains may be underestimated. 3) The assumptions about supply capacity in LDCs are arbitrary.[10] 4) The model does not take into account that rules of origin may prevent LDCs from taking advantage of preferential access. The latter point is a crucial one, because most of the gains come in the clothing sector, where rules of origin are a significant trade barrier for LDCs (see the next section).

Hoekman *et al.* find that if the QUAD countries eliminate all tariff peaks *simultaneously*, LDC export revenue would increase by 11% (i.e., 2.5 billion USD). This is more than ten times the current customs duties collected by the QUAD countries on LDC imports. It is also higher than our estimates of ΔW_I and ΔW_{II}. To obtain an upper bound for the increase in value added from an expansion of production, we subtract the gain from higher prices on existing exports. This is the figure we arrived at for ΔW_I: 278 million USD. Hence, we conclude that the gains from increasing production in response to preferential treatment in the QUAD are no higher than about 2.2 billion USD annually.

The study also shows that the gains for LDCs would be much larger if the tariff

9. The main problem with Ianchovichina *et al.* is that not all LDCs are included, and among the countries which are included, there are several non-LDCs. Our main problem with the UNCTAD study is that it does not take into account the supply constraints in the LDCs.
10. A one percent increase in the export price is assumed to generate a 0.5 percent increase in export volumes for all products and countries.

Figure 3.
Increase in LDC export revenue with unilateral liberalisation (mill. USD)
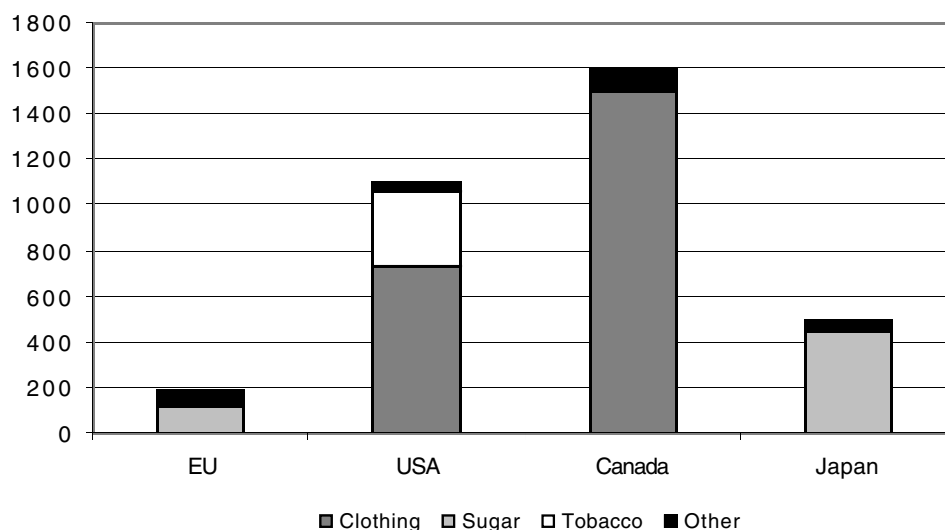
peaks were eliminated in the US and Canada than in Japan and the EU. Indeed, the gains from an EU reform are quite modest. Figure 3 demonstrates the impact on LDC export revenue of removing tariff peaks in each of the QUAD countries (while trade policies are kept constant in the three other regions). The potential increase in export revenue is concentrated in a few product categories; apparel, sugar and tobacco. In the US and Canada, where the main benefits are to be reaped, the share of apparel in the total revenue increase is 66% and 94%, respectively. In the US, another 30% of the revenue increase comes in the tobacco sector. In the EU and Japan, most of the increase in export revenues comes in the sugar sector, the shares being 64% and 91%.

The gains will also be very unevenly distributed across LDCs. Exporters of apparel in Asia (e.g. Bangladesh, Laos, and Cambodia) are the main beneficiaries. We believe that the gains in the clothing sector may be overestimated because exporters of apparel in Asia, particularly Bangladesh, have

difficulties in satisfying rules of origin in a number of product categories. On the other hand, the gains for certain agricultural products may be underestimated because current exports are low or absent due to existing trade barriers.

Discussion

Our results indicate that the potential gains for the LDCs of free market access are quite modest. In this section we seek to explain why this is so. We firstly point out that LDCs already enjoy quite liberal market access in the QUAD. Secondly, we argue that the export supply of these countries for a variety of reasons is likely to be fairly price inelastic in the short to medium run. Thirdly, we discuss how restrictive rules of origin in the preference schemes of the importing countries are likely to prevent some of the LDCs which potentially have the most to gain, the Asian producers of clothing, from realising the full benefits of improved market access. Finally, we point out that due to

policy responses in importing countries, an LDC success in utilising preferential access may erode the preference margins over time.

Relatively low trade barriers towards LDCs at present

All QUAD countries presently provide preferential market access for LDCs under their respective *Generalised System of Preferences* (GSP). Moreover, all LDCs but the Asian ones, benefit from the *Cotonou Agreement* with the EU, and Sub-Saharan LDCs benefit from special arrangements in the USA under the *African Growth and Opportunity Act*. This means that duty- and quota-free access typically will be of less value for the LDCs than for other developing countries.

The scope and depth of the preferential trade agreements vary greatly among the QUAD countries. The broad pattern is as follows:

The EU market has been quite open for the LDCs for a long time. All industrial products have been liberalised, along with a number of agricultural products. However, there have been import restrictions on products that come under the Common Agricultural Policy, notably for rice, sugar, bananas, maize, meat, and dairy products. After the recent approval of the (revised) "everything-but-arms" initiative, only rice, sugar, and bananas are not fully liberalised.

The USA has a restrictive import policy for textiles and clothing. But most agricultural products that have been restricted in the EU have enjoyed duty-free access in the US. However, there are import quotas for meat, dairy products, peanuts, sugar, and tobacco. Japan has a quite liberal trade policy towards LDCs in the industrial sector. There are restrictions on imports of leather products and a tax on petroleum. Textile

imports from LDCs are subject to constraints as well, although these barriers will be removed shortly. The agricultural sector in Japan is heavily protected, and only a few product categories are granted duty- and quota-free access.

Canada's import regime is similar to the American one, but it is considerably more restrictive. There are tariffs and tariff quotas on a number of agricultural products (e.g. dairy products, poultry, eggs, margarine, wheat, barley, beef, and a number of vegetables). Out-of-quota tariffs are extremely high for meat and dairy products. Although most industrial products are liberalised, there are severe import barriers on products that are of great importance for LDCs, such as textiles, clothing, and footwear.

We draw the following conclusions: for industrial products, LDCs do not face duties or import quotas in the QUAD in sectors other than textiles, clothing, and footwear. Moreover, most non-Asian LDCs have enjoyed free market access for these products in the EU for decades without being able to take advantage of it. Hence, there is no reason to believe that duty-free access in the North American markets will make a big difference for these countries. Therefore, the main beneficiaries of free market access in these products are likely to be the Asian LDCs.

Similarly, most agricultural products from LDCs that currently face import restrictions in one of the QUAD countries, enjoy free market access in one or more of the other countries. The inability of LDC exports to penetrate QUAD markets even in the absence of restrictions is a strong indication of lack of competitiveness. Admittedly, preferential access to markets that presently are protected might induce some exports due to higher prices in these

markets than on the world market. But to stake a lot on products in which one is not competitive on the world market is risky business; unless the LDCs are able to become competitive through "learning by doing" type effects, it is unlikely that the LDCs will be able to obtain long-term gains by expanding their exports in such commodities.

Inelastic Supply

In the long run, increasing the production of export commodities is probably the most important potential source of benefits from preferential trade liberalisation. The size of the gains depends on the price elasticity of supply, which will vary across products and countries. Within the confines of this article, it is not possible to be specific with respect to products and countries. Instead, we look at the aggregate supply capacity of "the average LDC". The conclusion is that export supply in LDCs is likely to be fairly inelastic in the short to medium term.[11] In other words, we concur with Hoekman *et al.* (2001) that the supply elasticity is fairly low, and argue that this is at least partly due to costs being so high that exporting is not profitable even when preferential access is granted.

First of all, note that if there is to be a change in export patterns or supply, the benefits of increased prices in the QUAD must obviously be passed on to producers. That is, LDC governments must refrain from taxing away all gains.[12] If they do, it is likely that there are unemployed or underutilised

resources in the LDCs. However, while this might allow them to increase export supply rapidly at a fairly low cost, it is clearly the case that the average worker in LDCs is significantly less productive than his counterparts elsewhere. This holds both in the aggregate and with respect to the important agricultural sector. For example, calculations based on data from World Bank (2000) show that over 1995–98 labour productivity in LDCs was only 61% of the productivity level in the entire group of low-income countries. The data in Hall and Jones (1999), who measure labour productivity relative to the US for 126 other countries in 1988, indicates that the low level of productivity in LDCs is attributable to low levels of fixed and human capital, as well as to low levels of total factor productivity (TFP).[13] The major cause of the productivity gap was the latter. In this sense, the supply capacity of LDCs seems limited, since it will take either large amounts of inputs or sizeable increases in TFP to produce extra output.

According to the best available cross-country data on educational achievement (Barro and Lee 2000), in 1995 the average adult in an LDC had only 2.37 years of schooling. Equally as bad is the fact that over half of the population in LDCs aged fifteen years or above had no schooling. Since it takes time to accumulate educational capital, rapid increases in education levels are not to be expected. Thus, in the near future levels of human capital will continue to be low when

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11. The arguments that lead to this conclusion are spelled out in more detail in appendix 3 of Hagen, Mæstad, and Wiig (2001).

12. The benefits can be taxed away directly or indirectly through the operations of state trading enterprises (STEs). STEs are major actors in many markets for agricultural goods in LDCs, but unfortunately not much is known about the nature of their operations (c.f. Ingco and Ng 1998).

13. Production per worker in LDCs was on average only about 4.5% of the US level. Note that there are two outliers among the LDCs, Yemen and Bangladesh, which at relative levels of production per worker of 21.2% and 12.7%, respectively, are head and shoulders above the rest of the group. If they are excluded, the average drops to 4.1%.

measured by this indicator. The situation is unfortunately not much better with respect to health. There is certainly an enormous need for expanding and upgrading health and education systems in LDCs. In light of these observations, it is doubtful whether the current spending levels will make much difference. This conclusion is strengthened if we take into account the fact that several studies show that public spending in developing countries has little effect, if any, on outcomes in the social sectors (e.g., infant mortality).[14]

Rates of net domestic fixed investment in LDCs are comparable to those of both low-income and middle-income countries. However, one should bear in mind that the efficiency of the investment might be low. The astonishing conclusion of Devarajan, Easterly, and Pack (2000) - that in Africa, where most of the LDCs are located, neither private nor public investment is productive – indicates that this problem is for real. Moreover, public infrastructure of vital importance to the export sectors is in a sorry state. For example, in 1988 25% of the main paved roads and 51% of the main unpaved roads were in poor condition.[15] As most LDCs are located far from the QUAD markets and sixteen of them are further hampered by being landlocked[16], it seems reasonable to conclude that higher prices due to increased market access will not lead to a significant supply response in the short to medium term.

In the 1990s, the average rate of net domestic savings was negative in LDCs, implying that they did not manage to reduce their rate of indebtedness during this period and that sustaining the investment effort depends on financial flows from abroad. High levels of debt are currently a major problem for the LDCs. More than half of them (twenty-six) are classified as heavily indebted by the World Bank. In present value terms, they owed almost 90% of their GNP in 1998. Although the HIPC (Highly Indebted Poor Countries) initiative holds the promise of reducing the debt to manageable levels for many LDCs, they would still have to adjust in order to qualify for debt relief.[17] This means that the timing and magnitude of any reduction are uncertain. Moreover, what is not forgiven must be repaid at some point in time. Hence, there is uncertainty about future tax rates. This might deter investment in physical capital, which is often irreversible, making investors reluctant to commit themselves in the face of uncertainty about future returns, of which taxes are one important determinant.

Macroeconomic policy uncertainty and volatility, which have repeatedly been shown to be detrimental to investment and growth, is strongly present in LDCs. The situation is most problematic with respect to exchange rates. A third of the countries for which there is data had black market premiums exceeding 20% on average in 1996–98, which must be considered high. Exchange rate overvaluation

14. See e.g. Filmer, Hammer, and Pritchett (1997), Filmer and Pritchett (1999), and Gupta, Verhoeven and Tiongson (1999), as well as the references cited therein. This might be due to corruption or mismanagement, or simply reflect an inoptimal composition of spending.
15. The scale of this problem in the year in question in countries like Guinea (50% and 100%, respectively), Guinea-Bissau (35% and 88%) and Chad (90% and 100%) is simply mind-boggling. These numbers are taken from the largest database on infrastructure indicators assembled so far (see Canning 1998).
16. Limao and Venables (1999), for instance, find that the median landlocked country in their sample had transport costs which were 58% higher than the median coastal country.
17. At the end of 2000, thirty of the forty-one HIPCs were LDCs.

penalises the export sectors by reducing their revenues measured in terms of the national currency. Thus, if sustained over time, such policies discourage investment in these sectors. Furthermore, the real effective exchange rate is extremely volatile in some countries. This makes it difficult for exporters to predict their returns, and negatively affects their willingness to invest.[18] It is therefore doubtful whether higher prices in the QUAD, which, when viewed in isolation, obviously will strengthen investment incentives, are sufficient to create a positive investment response in the export sectors.[19]

Foreign aid is the only really important source of external financing for LDCs. In the 1990s aid flows have been several orders of magnitude larger than inflows of foreign direct investment (FDI), and FDI is the second most important source of foreign funds for LDCs. There are of course many reasons for the extreme dependency of LDCs on foreign aid. They are not creditworthy in private international capital markets. Their financial markets are underdeveloped. Thus, neither private bank lending nor portfolio flows are important to these countries. Although there has been some improvement during the 1990s, FDI bypasses LDCs to a large extent. Given that foreign aid flows have declined sharply in the latter half of the 1990s and cannot be expected to make a major recovery in the near term, it is doubtful whether the levels of investment necessary to support a major export drive can be generated.

Restrictive rules of origin
As was pointed out in the section "Measuring the gains of preferential market access", rules

of origin may severely limit the benefits that LDCs can reap from duty-and quota-free access. Importing countries may use rules of origin as a trade barrier by making the rules unduly complex or restrictive. The LDCs claim that the industrialised countries are already doing this by employing regulations that are unreasonably restrictive and by not harmonising the rules across product groups and across countries. When Hoekman et al. (2001) showed that most of the potential gains from duty-free access accrue in the clothing sector, they did not take into account that a considerable share of this potential cannot be realised under the present rules of origin.

Harmonisation of rules of origin in the GSP systems would reduce the *information requirements* and therefore the costs of utilising the GSP system. A reduction in costs would probably increase the utilisation rates (see below). The importance of harmonisation is further underscored by the lack of harmonisation between non-preferential and preferential rules of origin and the fact that a country may face different sets of regulations in different preferential arrangements.

Rules of origin are not a problem for the majority of LDCs since their exports are restricted to agricultural products and raw materials. These products are generally wholly produced within one country. Though, problems arise with respect to industrialised products, in particular textiles and clothing. Several Asian LDCs have a considerable capacity to produce apparel if they are allowed to freely import the intermediates. Their ability to do so is, however, limited by the rules of origin in the QUAD.

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18. See e.g. Elbadawi (1998) for an empirical analysis which documents the importance for non-traditional exports from developing countries of keeping the real exchange rate stable at its equilibrium level.
19. This conclusion is supported by the fact that other sources of investment risk, such as volatility of the terms of trade and political risk, are also highly significant in LDCs.

Table 3.
Utilisation rate of GSP preferences in the QUAD, 1997

	Imports GSP covered (1000 USD)	LDCs Imports GSP received (1000 USD)	Utilisation rate (%)	All beneficiaries Utilisation rate (%)
Canada	8 537	4 656	54.5	65.9
EU	2 888 780	770 768	26.7	55.9
Japan	313 753	228 913	73.0	42.5
USA	2 719 570	790 655	29.1	61.1

Source: UNCTAD (1999b).

By comparing the imports that would be eligible for GSP treatment if formal requirements were fulfilled with the imports that actually receive preferences, we get an indication of the significance of rules of origin. As shown in table 3, a substantial share of the imports that are covered by the GSP – i.e., eligible for preferential treatment – does not receive it, c.f. the low rates of utilisation of preferences. One possible explanation is that the preferential margins may be too low to warrant the efforts needed in order to receive GSP treatment. A low utilisation rate for Angola in the US might for instance be explained by the fact that the preference margin on oil imports is only a few cents per barrel.

However, being unable to satisfy rules of origin is also a major reason why preferential treatment is not received. Looking at disaggregated data for the EU one observes that some Asian countries that typically have large exports of textiles and clothing have very low utilisation rates even though preferential margins are significant. For instance, only 27% of the imports from Bangladesh to the EU, most of which is apparel, are granted preferential access. The explanation is that Bangladesh is not able to satisfy rules of origin in the EU for apparel based on woven fabrics (although they

qualify for knitted products). Bangladesh has to rely on imported fabrics (only 15% of woven fabrics are produced domestically, as compared to 60% of knitted fabrics). Without building up a domestic textile industry, Bangladesh is likely to face similar problems in the US and Canada if textiles or clothing products receive larger preferences in these markets. In this case, more liberal rules of origin would be far more important than simply a harmonisation. It is noteworthy that the utilisation rate for LCD beneficiaries in the EU, the US, and Canada is lower than the utilisation rate for all beneficiaries, even though LDCs typically receive a higher preference margin. This indicates that the question of rules of origin is more important for LDC's than for other developing countries.

The general rule when inputs are imported is that products must undergo a *substantial transformation* in order to confer origin. Two different principles or tests are currently applied to define a substantial transformation. The EU rules are based on a change of tariff heading (at the four digit level). The change in heading is referred to as a *tariff jump*. When the change-of-tariff-heading approach is used, LDCs will benefit if the required number of tariff jumps is small. In the EU and Japan, textiles and

clothing must satisfy a "double jump" in order to confer origin. LDCs such as Bangladesh, which do not produce woven fabrics domestically, are unable to fulfil this requirement. If only a single jump was required, the potential gain for LDCs of duty-free and quota-free access would be substantially enhanced. The alternative principle is a *percentage* criterion, either a maximum percentage of imported inter-mediates or a minimum percentage of domestic content (typically more than 35%). If the percentage criterion is used, LDCs need the requirements for domestic content or value added to be below 20–25% in order to take full advantage of preferential market access in the clothing sector. For instance, the value added (as a share of product price) of a typical product in Bangladesh, say a woven pair of trousers, produced on the basis of imported fabrics is 27% (Rahman and Bhattacharya 2000). The percentage in-creases when grey fabrics are imported or when accessories are produced domestically, but only when production is based on imported yarn, does the value added exceed 50%.[20] Without reducing the required number of tariff jumps or percentage domestic content, it is unlikely that LDCs will achieve the level of gains as suggested by Hoekman et.al. (2001).

Market and policy responses in importing countries

As mentioned in the section "Measuring the gains of preferential market access", all of our empirical measures of the gains to LDCs from greater market access in the QUAD are based on the assumption that there is no market power in the importing countries, whether at the retail or the wholesale level. This is probably unrealistic. We know that multinational companies (MNCs) are major operators in international markets for agricultural commodities, and the five largest supermarket chains have a market share of more than 50% in most European countries (UNCTAD 1999a). Unfortunately, a lack of data prevents us from estimating the extent to which the gains from improved market access might be captured by market actors outside LDCs.[21]

However, even if the leakage of benefits through these channels is small, gains for LDCs might be limited by policy changes in the importing countries. Hoekman *et.al* (2001) show that the benefits to LDCs from the elimination of tariff peaks will be smaller with multilateral trade liberalisation. That is, for these countries, it is essential that preferences are maintained. There is no guarantee, though, that their competitive position will not be eroded during future rounds in the WTO.

Moreover, LDC success in utilising pre-ferential access may undermine the pre-ference margins. The rationale for main-taining high import protection against non-LDCs in importing countries might disappear if LDCs capture large market shares from domestic producers. Likewise, other policies which sustain high price margins in the QUAD could lose political support in such an event. The purpose of redirecting existing sales is to take advantage of high domestic prices in protected QUAD

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20. This implies that clothing exporters in Bangladesh will not be able to take advantage of the rules on regional cumulation in the Everything-But-Arms regulation in the EU. Under the cumulation rule, more than 50% of the product value must stem from domestic sources.
21. The same problem applies to the analysis of the extent to which export producers in the LDCs are owned by foreigners.

markets relative to the world market. Therefore, beneficial trade swaps are not likely to be sustainable in the long run unless imports from the LDCs continue to be of marginal importance in the QUAD.

Conclusion

In this paper, we have discussed potential gains to the LDCs from improved market access in the QUAD. In principle, the economic benefits of extending the LDC trade preferences can be divided into three components: (1) the value of higher prices on existing production and exports; (2) the value-added from expanding production; and (3) the benefits created for (or diverted from) consumers in LDCs. Based on measures of the gains that approximate the theoretical measures, we conclude that *the aggregate benefits of duty- and quota-free access for the LDCs are likely to be modest*, even compared to their present low levels of income. The main reasons are (1) that *most LDCs presently enjoy quite liberal market access* in important export markets, and (2) that *the ability of LDCs to take advantage of trade preferences is limited*, due to constraints on supply capacity and restrictive requirements for rules of origin. Moreover, their gains could be eroded either by further multilateral tariff liberalisation in the context of the WTO or by unilateral policy changes in the QUAD in the event that LDC exporters capture significant market shares from domestic producers.

Of course, our empirical measures suffer from several shortcomings. The most critical one is perhaps the lack of an explicit link between higher export prices and future supply capacities in the LDCs. For example, it has been argued that binding preferences in the WTO would ensure that the investment needed for a significant supply response would be forthcoming. However, while binding would be beneficial for LDCs when viewed in isolation, it would not remove the uncertainty surrounding preference margins. In addition, producers in LDCs face a host of other risks that may very well swamp the benefits from improved market access. Their debt-burdened governments might not be able to commit to passing the gains on to producers, and even if they do, it is unlikely that they will be able to provide the infrastructure necessary for a major export drive. This holds not only with respect to transport and communication infrastructure, but also to the institutions necessary to provide exporters with market information and help with satisfying packaging, labelling, and sanitary and phytosanitary standards in importing countries. Here donors might make a contribution by aiding the LDC governments that are making an effort at supporting their exporters. Whether such beneficial partnerships will be established remains to be seen. Even if they are, we are unfortunately doubtful that this will radically alter our conclusions over the short to medium term. The burden of the past as manifested in low levels of labour productivity, inadequate infrastructure, and high levels of fertility is not shed overnight; nor is a Rome of economic and political stability built in a day.

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