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## The Impact of Preference Erosion on Middle-Income Developing Countries

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## **IMF Working Paper**

Policy Development and Review Department

### **The Impact of Preference Erosion on Middle-Income Developing Countries**

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#### **Abstract**

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Preference erosion has become an obstacle to multilateral trade liberalization, as beneficiaries of trade preferences have an incentive to resist reductions in most-favored-nation (MFN) tariffs. This study identifies middle-income developing countries that are vulnerable to export revenue loss from preference erosion. It concludes that the problem is heavily concentrated in a sub-set of preference beneficiaries—primarily small island economies dependent on sugar, banana, and—to a lesser extent—textile exports. Accordingly, measures to help mitigate the impact of preference erosion can be closely targeted at the countries at risk.

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Contents	Page
Summary and Implications .....	3
I. Introduction .....	5
II. Review of the Literature.....	6
III. Rationale .....	7
IV. Data: Sources and Caveats.....	9
V. Sources of Vulnerability .....	9
VI. Formulas .....	12
VII. Calculation of Preference Margins.....	16
A. General Considerations .....	16
B. Calculation of Preference Margin for Bananas .....	18
C. Calculation of Preference Margin for Sugar .....	21
D. Results.....	24
VIII. Impact of Preference Erosion on Exports .....	25
IX. Conclusions.....	27
Tables	
1. Average Margin on Sugar for Selected Sugar Exporters.....	23
2. Contribution of Major Export Products to Preference Margin .....	24
3. Percentage Loss in Total Exports .....	25
4. Losses from Preference Erosion in a Macroeconomic Context.....	26
Figures	
1. Impact on Export Value: 40 Percent Cut in Preference Margin .....	3
2. Share of Products in Total Preference Margin.....	4
3. Middle-Income Countries: Diversification of Export Markets.....	11
4. Preference Margins with Tariff Quotas .....	15
5. Banana Prices 1997–2003.....	21
6. Raw Sugar Prices 1984–2003 .....	22
7. EU Sugar Quotas for ACP Countries under the SPS and World Sugar Prices.....	22
Appendices	
I. Quad Preferences Schemes Applying to the Middle-Income Countries Under Study .....	28
II. Percentage Loss in Export Revenues from a 40 Percent Reduction in the Average Preference Margin.....	30
References.....	32

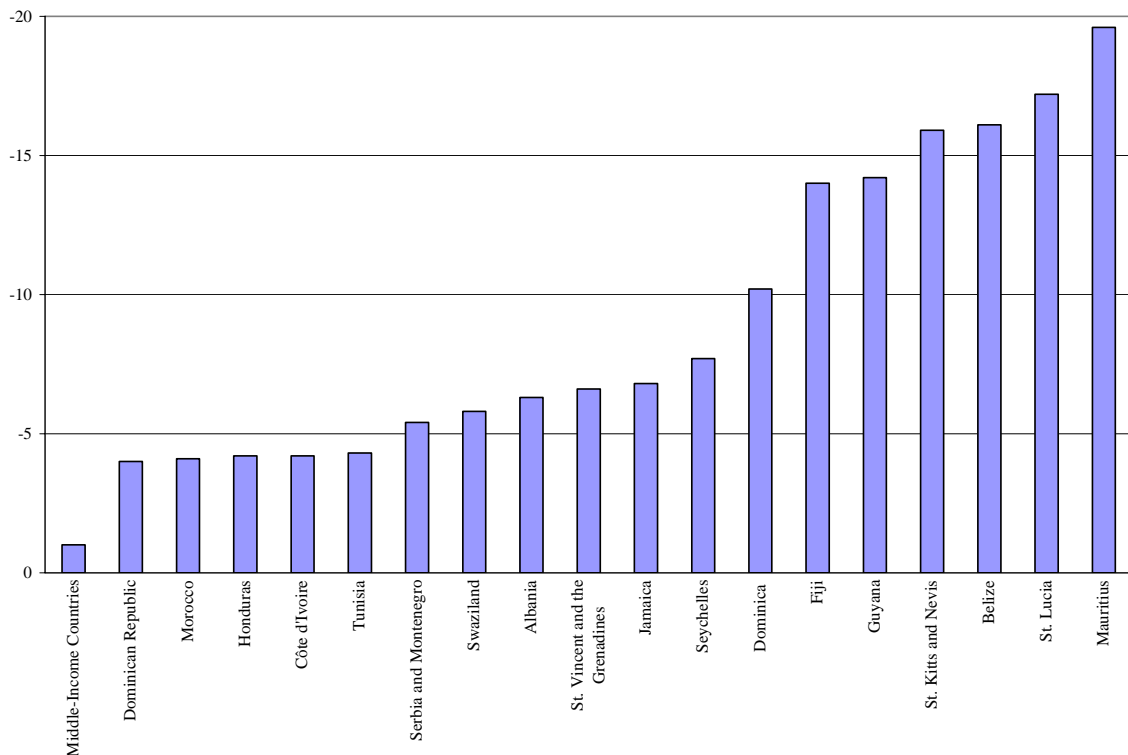
## SUMMARY AND IMPLICATIONS

“Preference erosion” refers to declines in the competitive advantage that some exporters enjoy in foreign markets as a result of preferential trade treatment. Preference erosion can occur when export partners eliminate preferences, expand the number of preference beneficiaries, or lower their most-favored-nation (MFN) tariff without lowering preferential tariffs proportionately.

The present study aims to identify middle-income developing countries that are potentially vulnerable to export losses from preference erosion. Estimates of export losses are based on partial equilibrium simulations of changes in trade-weighted preference margins, by product, between each country in question and key industrial country trading partners (commonly referred to in the context of trade negotiations as the “Quad”—Canada, the European Union, Japan, and the United States).

Figure 1 displays results for the hypothetical case where trade liberalization in the Quad causes a 40 percent reduction in each beneficiary’s aggregate preference margin. The impact of preference erosion is found to be small overall (between 0.5 and 1.2 percent of total exports of the middle-income countries considered, depending on elasticities of export supply), but could be significant for a subset of “vulnerable” countries. Vulnerability to preference erosion is determined overwhelmingly by a country’s export dependence on three products, namely sugar, bananas, and—to a far lesser extent—textiles, as well as on access to Quad preference regimes for these products (Figure 2). The results are biased upwards due to the underlying assumptions of complete utilization of preferences, constant world market prices, and full appropriation of the preference rents by the exporter, and by disregarding gains from multilateral liberalization. At the same time, higher export supply elasticities could imply larger shocks.

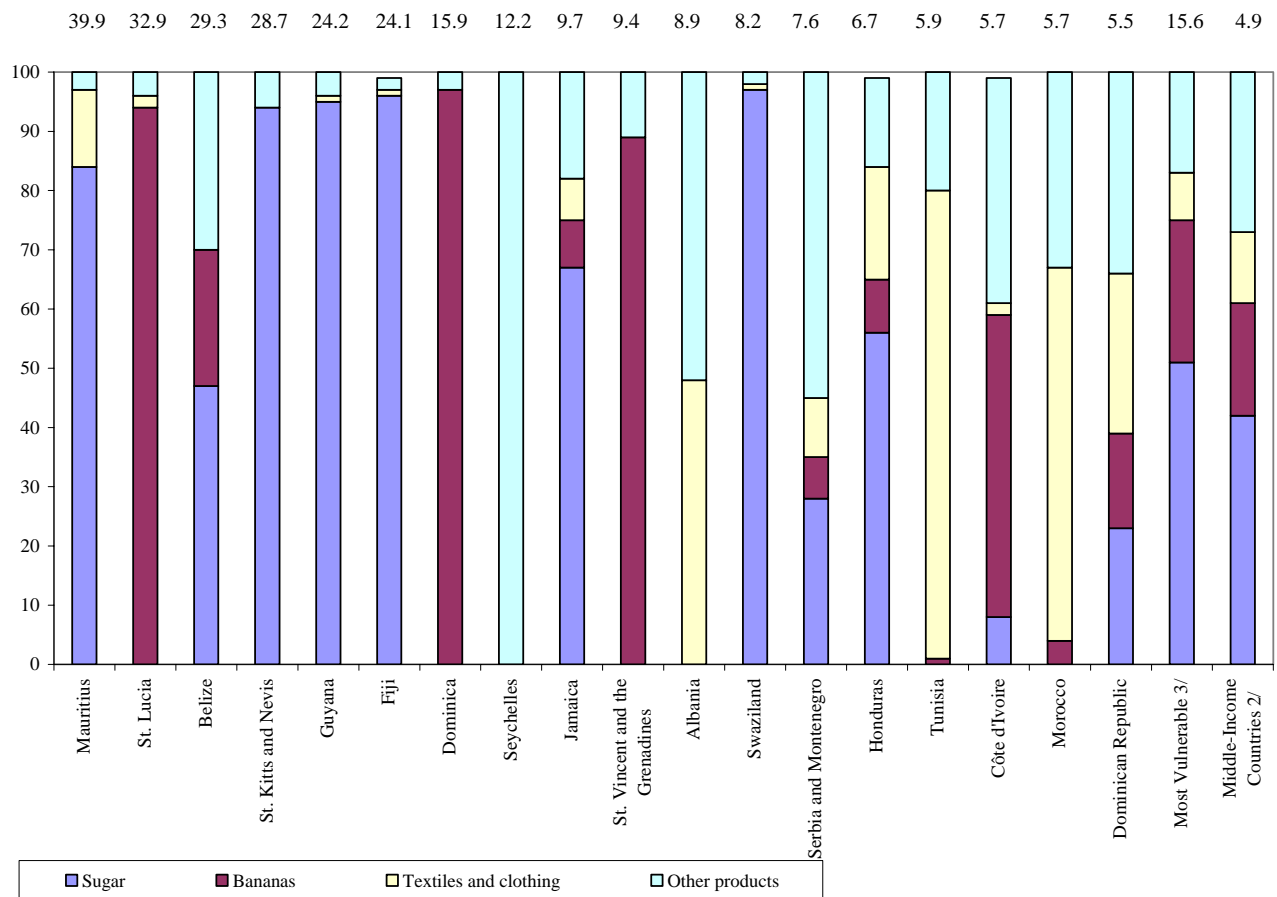
Figure 1. Impact on Export Value: 40 Percent Cut in Preference Margin  
(Export Supply Elasticity = 1)



The discussion of preference erosion, for example in the context of the World Trade Organization (WTO), has rarely relied on numerical estimates of the size of the problem. A majority of WTO members benefits from preferential market access in the Quad. This has allowed the impression to prevail that vulnerability to preference erosion is a significant concern shared by a broad range of countries.

The results of this study suggest that the problem is in fact heavily concentrated in a sub-set of products and preference beneficiaries. Reforms in Quad preference regimes for just two products—sugar and bananas—may leave only a fraction of the current preference margins of some of the most vulnerable preference beneficiaries. Accordingly, assistance to help countries cope with preference erosion can be closely targeted at the countries at risk. Many of these are small island economies that may have serious difficulties to adjust.

Figure 2. Share of Products in Total Preference Margin <sup>1/</sup>  
(In percent)



1/ As a percent of the trade-weighted average world market price of the country's exports. Numbers at the top of the columns represent the total preference margin as a share of the country's exports valued at world market (nonpreferential) prices.

2/ Average for 76 middle-income developing countries, weighted by overall margin.

3/ Eighteen countries with average preference margins greater than 5 percent.

## I. INTRODUCTION

“Preference erosion” refers to declines in the competitive advantage that some exporters enjoy in foreign markets as a result of preferential trade treatment—both unilateral and reciprocal. Preference erosion can occur when export partners eliminate preferences, expand the number of preference beneficiaries, or lower their most-favored-nation (MFN) tariff without lowering preferential tariffs proportionately.

The present study aims to identify those middle-income developing countries<sup>2</sup> whose exports might be especially exposed to preference erosion as a result of trade liberalization in the European Union (EU), the United States, Japan, and Canada (commonly referred to in the context of trade negotiations as the “Quad”)—for example, in the context of the WTO Doha Round. The objective is to single out the sources of vulnerability to preference erosion, identify the most vulnerable countries, and provide an order of magnitude for the financial impact in the event of a substantial reduction in preferences.

The study does not intend to evaluate alternative modalities of multilateral or unilateral liberalization by the Quad with reference to their impact on third countries. It also refrains from analyzing the benefits and drawbacks of preferential market access per se. These have already been the subject of an extensive literature, which has typically juxtaposed the stated *raison d’être* for nonreciprocal preference schemes—enhanced market access, encouragement of export-driven economic development or a politically convenient form of aid to developing countries—to the potential costs for preference recipients, including an inefficient allocation of resources, disincentives for trade liberalization and the administrative burdens of dealing with documentation and rules of origin.<sup>3 4</sup>

The study builds on an earlier paper (Subramanian, 2003), that focused on the impact of preference erosion on least developed countries (LDCs), by extending the cross-country analysis to middle-income countries and by adopting a more elaborate methodology for the calculation of preference margins. The study concludes that preference erosion is a relevant source of vulnerability for a set of countries that share a number of characteristics—namely, deep preferential access to Quad markets, an undiversified export base and a heavy export-dependence on the Quad, while the ability to absorb the impact will depend on the countries’ competitiveness in the affected sectors and the robustness of their macroeconomic situation.

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<sup>2</sup> Middle-income countries as defined by the World Bank (see footnote 16 below), and excluding major oil exporters. A complete list of countries included in the analysis is contained in Appendix I.

<sup>3</sup> Costs also include potential trade diversion for the preference-granting countries, adverse terms of trade effects on nonrecipient developing countries and hesitancy by recipient countries to participate in multilateral liberalization rounds out of concern over preference erosion.

<sup>4</sup> See, for example, Krueger (1995); Özden and Reinhardt (2002); Panagariya (2002); Romalis (2003); and UNCTAD (2001).

Small island economies that, for historic, geo-strategic or other reasons, enjoy deep preferences for banana exports (in the case of the EU), and sugar (in the case of both the EU and the United States) are projected to suffer most from liberalization in those two markets.<sup>5 6</sup>

## II. REVIEW OF THE LITERATURE

The literature on the methods to quantify the “value” of preferences and estimate the impact of preference erosion has been relatively short. This is surprising—given the vocal concerns of potentially vulnerable countries—but can be explained by the extent of the difficulties in obtaining reliable data and estimates in a number of areas, including the effective protection of certain key sectors in the Quad (especially agriculture), the effective utilization of preferences, the export supply response of preference beneficiaries, and the modalities of rent distribution between exporters and importers. Still, some studies do exist and have typically dealt with the above problems by making the results conditional on stated assumptions.

Earlier analyses quantify the value of preferences by comparing the export revenues of beneficiary countries under a preference scheme with an estimate of the revenues they might have had without the scheme. Baldwin, Mutti, and Richardson (1980) find that the increase in developing countries’ exports due to preferential schemes in the United States, European Community (EC), and Japan was 27 percent of exports covered by the preferences.<sup>7</sup> The estimate is “demand-driven,” consisting of the value of trade creation and trade diversion under the schemes in the preference-granting countries. It is based on specific assumptions for import elasticities and substitutability between products from beneficiaries and non-beneficiaries of preferences. Other studies reported in Baldwin (1984), for example, Aitken and Obutelewicz (1976), use a cross-sectional gravity model in which a dummy variable is introduced for preference-eligibility to estimate the rise in exports of African beneficiaries of the EC’s Yaoundé Conventions of 1963 and 1969. They find that preference-eligible exports had increased by 26 percent as a result of the EC schemes.

Subsequent studies estimated the value of preferences based on the calculation of “preference margins,” typically defined as “the difference between the MFN tariff and the preferential tariff for a product.” Yamazaki (1996) uses 1992 data to estimate the value of preference

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<sup>5</sup> Preferential access for beef and rum exports to the EU market under the EU’s Beef and Veal Protocol and Rum Protocol was not explored. In the case of the former, the dependence of the countries considered on beef exports was minimal: even for Botswana (one of the most important beneficiaries of the protocol), exports of beef products accounted for only around 2.5 percent of the total in 2001. The Rum Protocol effectively expired in 2003 as a result of an EU-U.S. agreement on distilled spirits during the 1997 WTO Ministerial meeting.

<sup>6</sup> In the case of preferential textile exporters, and given an extensive literature on the impact of the removal of textile quotas on January 2005, the present study only considers the potential export loss from preference erosion in a quota-free environment, assuming that the tariff preferences will remain at their current levels after January 2005.

<sup>7</sup> Reported in Baldwin (1984).

margins under particular schemes of the EU, the United States, and Japan for all preference beneficiaries.<sup>8 9</sup> He finds that, at the aggregate level, the value of the preference margin represents 12 percent of the total value of exports covered by the preferences, of which 73 percent is accounted for by preferential schemes granted by the EU. The EU preference schemes for sugar, in particular, accounted for 46 percent of the total value of the aggregate margin. The EU preferences for tobacco products also resulted in high margins, as did Japanese preferences for fruits and nuts.<sup>10</sup>

Tangermann and Josling (1999) estimate the value of EU preferences under the Lomé Convention and the EU protocols on beef and sugar, for selected agricultural exports from African ACP countries—including beef, sugar, fish, tobacco, fruit and vegetables, cereals and dairy products. (Bananas and rum were excluded from their analysis.) They find that, *as a percentage of exports (to the EU) of the product considered*, the value of the preferences is highest for beef and sugar, while it is small for cereals and fresh fruit.<sup>11</sup>

Subramanian (2003) examines the overall—rather than sectoral—impact on the exports of LDCs from preference erosion arising from trade liberalization by the Quad. He finds that the loss at the aggregate level amounts to just 1.7 percent of total LDC exports (assuming an elasticity of exports equal to 1 for all LDCs). However, individual LDCs may suffer a more significant loss from preference erosion due the concentration of their exports in products that enjoy deep preferences. Of these, Malawi, Mauritania, Haiti, Cape Verde, and São Tomé and Príncipe are found to be the most vulnerable to preference erosion.

### III. RATIONALE

The present study builds on Subramanian (2003) by extending the coverage to middle-income countries and by deriving aggregate preference margins from product-specific margin estimates, with a special focus on key export products.

The impact of preference erosion on middle-income countries can be expected to reveal both similarities and differences with LDCs. First, the key sources of vulnerability to preference erosion—namely lack of diversification of exports and/or export markets are also present in

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<sup>8</sup> Expressed in U.S. dollar terms by using the relation:  $V_i^P = (T_i^{MFN} - T_i^P) * P^W * M_i$  -that is, the portion of export value accounted for by the preferences. V denotes the preference margin, T the tariff rate,  $P^W$  the world price, M the value of imports, and suffixes P, MFN and i denote “preference” and “most-favored-nation” rates and the country, respectively.

<sup>9</sup> Yamazaki considers 168 preference beneficiary countries for the EU, 133 for the United States, and 151 for Japan. He examines the impact of preference erosion by region, looking separately at South America, Central America and the Caribbean, the Far East and Africa.

<sup>10</sup> The EU’s banana regime began in 1993 and therefore is not captured by Yamazaki’s data.

<sup>11</sup> Botswana and Namibia beef exports enjoy the most “valuable” preferences. In the case of sugar, Mauritius and Swaziland are the prime beneficiaries.



certain middle-income countries despite their generally higher capital base, better infrastructure, superior labor skills and higher productivity levels. Moreover, data on export concentration (in terms of both products and partners) for the two country groups show that the key exports of middle-income countries to the Quad tend to face higher trade barriers at the MFN level than the key exports of LDCs.

Second, middle-income countries are more likely to take advantage of preferential access than LDCs. This is thanks to their generally more vertically-integrated production capacity, which permits them to meet complex rules of origin (which set requirements for the origin of input materials), as well as their generally higher administrative capacity, which allows them to carry out with greater ease the complex documentation requirements associated with rules of origin.<sup>12</sup> With higher utilization rates, middle-income countries may have more to lose from preference erosion than LDCs, as the portion of their exports affected will be higher.<sup>13</sup>

Third, where sugar, bananas and rice are key export items, the impact of preference erosion from liberalization of the EU regime for these commodities is more imminent for middle-income countries than for LDCs: While the impact on the latter would be substantially (if not more than) offset by the additional preferences gained from the full implementation of the EU's Everything-But-Arms initiative in 2009—which will grant full duty-free access for bananas, rice and sugar from LDCs—the former are likely to suffer a net reduction in their preferential access to the EU, as EU internal prices decline.<sup>14</sup>

According to the simulations that follow, the aggregate loss in the value of exports due to preference erosion is several times larger for middle-income countries than for LDCs, under the same assumptions for export elasticities, though representing only one-third of the impact if measured as a share of total exports.<sup>15</sup>

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<sup>12</sup> Brenton (2003) and Lederman and Özden (2003) support this argument.

<sup>13</sup> In fact, preliminary World Bank research shows a mixed picture, with utilization rates depending both on the beneficiary as well as the particular preference schemes. Low utilization appears to be far more of an issue for textiles products than for agricultural trade. A similar picture holds for the cost of compliance with the administrative requirements (including rules of origin) set by a preference scheme.

<sup>14</sup> In some cases, however, improved market access for non-LDC partners in the EU's proposed Economic Partnership Agreements (EPAs)—to be phased in from 2008—may partly offset the impact of lower EU domestic prices.

<sup>15</sup> The impact on LDCs is quantified by using the data and methodology in Subramanian (2003), which differs in its approach to the calculation of preference margins—and hence the estimates are not entirely comparable.

#### IV. DATA: SOURCES AND CAVEATS

A list of middle-income countries was assembled based on the World Bank's classification of countries according to gross national income.<sup>16</sup> Major oil exporters were excluded from the analysis, as the vulnerabilities faced by these countries stem primarily from developments in the oil sector rather than preference erosion.<sup>17</sup> Also excluded was the current group of EU accession countries, on the grounds of applicability and relevance: The losses from preference erosion in the EU market and from the loss of preferential access in the U.S., Japanese, and Canadian markets, should be evaluated against the wider set of implications arising from EU membership, including the benefits of greater market integration as well as the provision of EU support schemes. Appendix I shows the list of 76 middle-income countries under study and the preferential scheme for which they are eligible in each Quad market.

Direction of trade data were taken either from the UN's Commodity Trade Statistics Database (UNComtrade) or, when not available, from the IMF's *Direction of Trade Statistics* database. The data show the breakdown of total export value by partner and could therefore mask instances where exports of a particular good (for example, sugar) are directed exclusively to one market as a result of preferential access or for other reasons. To correct this problem, the simulation carried out in this study used actual direction of trade data *per product* when the greater detail was deemed to be of consequence for the final results. Data on export composition by product at the two-digit level of the Harmonized System (HS) code were taken from UNComtrade and/or the International Trade Center's database. To contain the volume of data, and for the sake of uniformity, the year 2001 was used as the reference year for export values in the cross-country study rather than a multi-year average.<sup>18</sup>

#### V. SOURCES OF VULNERABILITY

Vulnerability to preference erosion from trade liberalization by Quad countries arises from a combination of the following factors:

- a. The magnitude of preferences for which a country is eligible (in the Quad).
- b. The degree of utilization of preferences.

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<sup>16</sup>The World Bank classifies countries according to 2002 GNI per capita, calculated using the World Bank Atlas method. The groups are: low income, \$735 or less; lower middle-income, \$736–\$2,935; upper middle-income, \$2,936–\$9,075; and high income, \$9,076 or more.

<sup>17</sup> Countries excluded from the analysis were: Algeria, Azerbaijan, Gabon, the Islamic Republic of Iran, Libya, Nigeria, Oman, Saudi Arabia, Turkmenistan, and Venezuela.

<sup>18</sup> A five-year average might have been more appropriate, to smooth out the impact of possible extraordinary factors—such as unusual weather, structural changes in an industry or strikes—that may have distorted the composition of exports of a country during 2001. In the case of the most vulnerable countries identified in this study, we checked for this possibility and concluded that the impact of a multi-year average on final results would be small.

- c. The degree of export dependence on the Quad markets.
- d. The degree of export-product concentration.
- e. The robustness of a country's economic environment and the macroeconomic significance of the sector(s) dependent on the preferences.

Appendix I shows that all 76 countries in the sample under study benefit from some preference scheme, with the depth of preferential access depending on the nature of the scheme: For example, access under the EU's Cotonou Agreement is deeper than that under the EU's GSP, while a comprehensive FTA would, in principle, dominate both.<sup>19</sup> Section VI explains how to quantify the "depth" of preferential access, namely by defining a "preference margin" and setting out the different methodologies for its calculation.

The "value" of a preference scheme increases with the extent to which it is utilized by the preferences-recipient. This in turn depends on the restrictiveness of the rules of origin of a particular scheme, a recipient's capacity to handle the administrative requirements, including the documentation required for qualification, the degree of exporters' awareness of the scheme, as well as the depth of preferences offered by the scheme (which will determine the incentive to incur the related costs). As an example, in 2001, Nicaragua's utilization rate under the U.S. Caribbean Basin Initiative (CBI) (i.e., the ratio of exports entering the U.S. market under the CBI over the total exports that were eligible for CBI access) was only 21 percent, compared with 68 percent for the Dominican Republic and 62 percent for Honduras.<sup>20</sup> For the purposes of this simulation, however, and to ensure uniformity across the sample in the absence of precise data on utilization rates per country and per scheme, we have assumed full utilization of preferential access—with the caveat that the results may exaggerate the actual impact when utilization is substantially lower.

Obviously, the degree of export-dependence on Quad markets also matters for the overall impact of Quad liberalization on preference beneficiaries. This does not mean that there would be no preference erosion from liberalization by non-Quad countries. In fact, many developing countries are signatories of regional trade agreements that provide for lower (or zero) trade barriers among the membership—the advantage of which would be eroded as the region lowered its (common) external tariff in the context of multilateral liberalization. However, the impact of preference erosion outside the Quad is expected to be generally small and more gradual, to the extent that intra-regional trade among the signatories of South-South agreements continues to represent only a small share of their exports, and developing countries benefit from "special and differential treatment" in the WTO and are likely to reduce their trade barriers at a slower pace under any multilateral agreement.<sup>21</sup>

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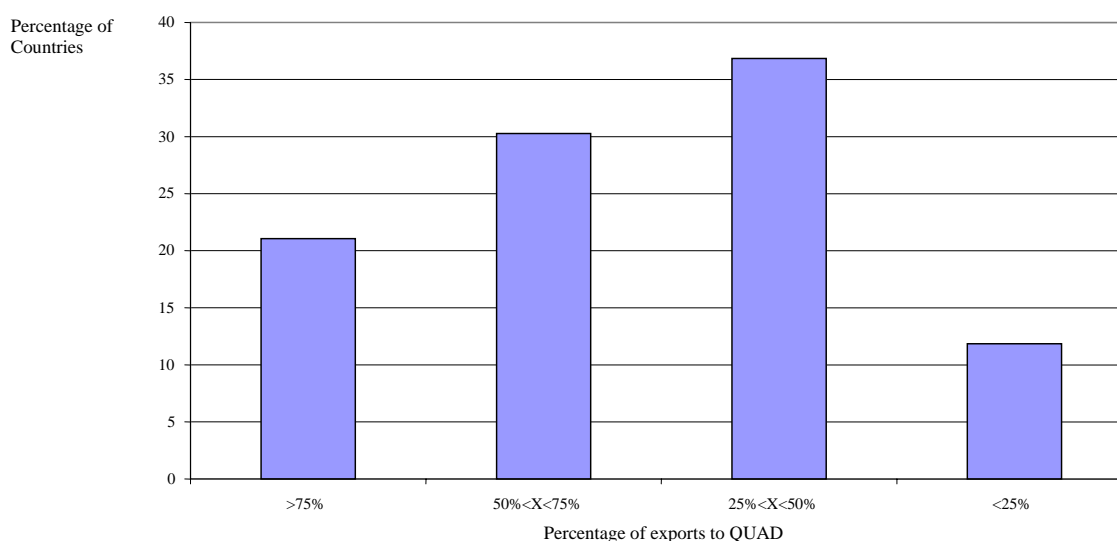
<sup>19</sup> In practice, some FTAs are still at the early stages of implementation and therefore the preferences under other schemes may be more favorable (at the time of study).

<sup>20</sup> World Bank (2003).

<sup>21</sup> Preference schemes by Australia and New Zealand—including SPARTECA, which grants signatories duty-free access to the Australian/New Zealand markets—and by the Russian Federation—including the Russian GSP and its GSP for LDCs—have not been covered by the study.

Figure 3 shows the distribution of the middle-income countries under study on the basis of the share of their exports that is directed to Quad markets. About a fifth of these countries direct more than 75 percent of their exports to the Quad.<sup>22</sup> These countries are, at the same time, eligible for highly preferential schemes, for example, bilateral FTAs, the EU-ACP Cotonou Agreement, or the U.S. CBI (see Appendix I). The high dependence on Quad markets suggests that this group of countries may be potentially vulnerable to preference erosion from trade liberalization by the Quad. It is worth noting that a further third of the countries under study direct between 50 and 75 percent of their exports to the Quad, although the preferences for some of these countries are not as “deep” as those of the first group.<sup>23</sup>

Figure 3. Middle-Income Countries: Diversification of Export Markets



Lack of export diversification at the partner level matters most when the key exports benefit from significant preferences in the Quad markets—as is the case for ACP bananas in the EU or sugar exports to both the EU and the United States. Export concentration data for the countries under study show that, for around 40 percent of the countries, two to three product categories (at the 2-digit level of the HS classification) accounted for more than 60 percent of total merchandise exports, while, for one in ten, more than 80 percent of exports consisted of three products at most.

<sup>22</sup> These countries are Albania, Belize, Bosnia and Herzegovina, Botswana, Dominican Republic, Guyana, Honduras, Mauritius, Mexico, Morocco, Serbia and Montenegro, Seychelles, St. Kitts and Nevis, Suriname, Tonga, and Tunisia.

<sup>23</sup> This group includes Colombia, India, Maldives, the Philippines, Russia, South Africa, Sri Lanka, Syria, and Vietnam, which in general benefit only from GSP schemes (some with exceptions for particular sectors that are regarded as sufficiently competitive).

Finally, in assessing vulnerability, it is important to place the potential export loss in the context of a country's broader macroeconomic framework, including relevant stock and flow variables and the exchange rate regime. For example, a large percentage loss in merchandise exports due to preference erosion—say, in sugar—could be small in terms of the economy as a whole, if, for example, the current account relies primarily on income from services (such as tourism). On the other hand, if the sugar sector accounts for a substantial share of total employment, the government budget may be required to assume part of the burden, by means of transfers such as unemployment benefits, re-training programs, etc. In that case, especially in the presence of significant debt, government spending to mitigate the impact of preference erosion might be severely constrained. A country's exchange rate regime also matters, as it would have an influence on the economy's ability to absorb the export shock and mitigate the emerging macroeconomic imbalances.

## VI. FORMULAS

The “preference margin” is defined in this study as the percentage by which the (average) unit price received by a preference recipient for a particular product exceeds that received by an MFN exporter as a result of eligibility for a preference scheme.

$$P_k^i = P_k^W (1 + m_k^i) \quad \text{or} \quad m_k^i = \frac{P_k^i}{P_k^W} - 1 \quad (1)$$

where,  $P_k^i$  is the unit price received by exporter  $i$  for product  $k$  and  $P_k^W$  is the world (or MFN) unit price for  $k$ . (1) implicitly assumes that markets are perfectly competitive and there is no product differentiation within each category  $k$ .

In order to find an expression for the loss of exports from preference erosion (i.e., from a reduction in the preference margin), we consider a partial equilibrium, small-economy model, with the following specifications:

- Products are perfect substitutes irrespective of their country of origin
- The economy is a price-taker in world markets.
- All rents from preferential access accrue to the exporter.
- Preferential access is fully utilized for all eligible product categories.
- A change in the Quad trade policy regime will not lead to a change in world prices.
- The elasticity of export supply is a constant.

When trade protection measures consist solely of ad valorem tariffs, the preference margin can be expressed as the difference between the MFN tariff and the tariff faced by a

preference-beneficiary in a particular market. The rationale is as follows: Dropping the product-specific parameters  $k$ , a preference-beneficiary  $i$  exporting to the Quad receives a price equal to:

$$P_i^{QUAD} = P^W (1 + T_{MFN}^{QUAD} - T_i^{QUAD}) \quad (2)$$

where  $T_{MFN}^{QUAD}$  is the ad valorem MFN tariff for a particular product and  $T_i^{QUAD}$  is the (export-weighted average) preferential tariff faced by exporter  $i$  in the Quad market.<sup>24</sup>

On the other hand, an MFN exporter receives the price  $P^W$ . Then, from (1), the margin is given by:

$$m_i^{QUAD} = T_{MFN}^{QUAD} - T_i^{QUAD} \quad (3)$$

(3) shows that the margin is higher the higher the level of protection at the MFN level and/or the lower the tariff applying to the preference-beneficiary.

The percentage change in the value of exports as a result of a change in the export price is given by:

$$\frac{\Delta X}{X} = \frac{X_2 - X_1}{X_1} = \frac{\Delta P}{P} + \varepsilon \frac{\Delta P}{P} \left[ \frac{\Delta P}{P} + 1 \right] \quad (4)$$

where  $X$  is the value of exports and  $\varepsilon = \frac{\Delta Q}{Q} / \frac{\Delta P}{P}$  a constant under the assumptions.

From (1), the change in the price received by an exporter as a result of a reduction in the Quad MFN tariff—say in the context of the Doha Round— would be:

$$\frac{\Delta P}{P} \approx \frac{\Delta P^W}{P^W} + \frac{\Delta m_i}{1 + m_i} \quad (5)$$

The second term is negative (the reduction in Quad tariffs reduces preference margins of preferential exporters) while the first term is positive (the reduction in Quad MFN tariffs shifts Quad demand from domestically-produced goods towards—now cheaper—imported goods, increasing world demand and, hence, world prices).

However, under the assumptions,  $\frac{\Delta P^W}{P^W} = 0$ , so that (4) becomes:

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<sup>24</sup> (2) assumes that all rents from preferential access accrue to the exporter, in line with the assumptions.

$$\begin{aligned}\frac{\Delta X}{X} &= \frac{\Delta m_i}{1 + m_i} + \varepsilon_i \left[ \frac{\Delta m_i}{1 + m_i} \right] \left( \frac{\Delta m_i}{1 + m_i} + 1 \right) \Rightarrow \\ \frac{\Delta X}{X} &= \mu_i \frac{m_i}{1 + m_i} + \varepsilon_i \left[ \mu_i \frac{m_i}{1 + m_i} \right] \left( \mu_i \frac{m_i}{1 + m_i} + 1 \right)\end{aligned}\quad (4a)$$

where  $\mu_i = \frac{\Delta m_i}{m_i}$ , the percentage change in  $i$ 's preference margin.

The first component on the right hand side gives the direct price effect—in other words, it is the reduction in the unit value of exports as a result of a reduction in the preference margin. The latter component gives the impact on export revenues of the response of (export) volumes to the change in price.

(4a) implies, in line with intuition, that the loss of export revenues is larger the larger the percentage reduction in the preference margin, the larger the elasticity of export supply and the larger the original margin  $m$ .

Apart from data limitations, there are a number of theoretical caveats in this approach:

- **Impact of MFN liberalization on preference margins:** It is not clear what the impact of a reduction in the Quad trade barriers at the MFN level will be on the preference margins themselves. Indeed, it will depend on the modalities of the liberalization, on the form of the original barriers (e.g. ad valorem tariffs versus preferential tariff-quotas, specific tariffs, etc.) and on the nature of the preference schemes. However, at the time of writing, data that would allow establishing an expression or an estimate for  $\partial m / \partial T$ , where  $T$  is the MFN tariff (or ad valorem equivalent) for the Quad are insufficient.
- **Homogeneous products:** The assumption that the exports of country  $i$  are identical to other products in the market is very strong. The general assumption in CGE work is that domestic goods are differentiated from imported goods. Making this assumption would blunt the effects of preference erosion.
- **Response of export supply to price changes:** The assumption that the elasticity of export supply is constant is, of course, simplistic. In the presence of fixed costs, state subsidies, domestic price rigidities, land constraints, etc., it is likely that the elasticity is highly price-dependent. In certain cases, especially in small markets, a discrete reduction in price due to the erosion of preferences may prompt the closure of key players in the sector, causing a more severe export loss than predicted in this simple cross-country simulation.
- **Assumption of 100 percent utilization of preferences:** In practice, utilization rates vary and can be significantly less than 100 percent. As discussed, utilization typically depends on the recipient country as well as the nature of the scheme itself. Of course, the





For two exporters that are eligible for identical preference schemes (for example, the same level of quota  $Q$  at zero duty), the preference margin will depend on each exporter's export supply curve. The more cost-efficient an exporter is—as in the case of exporter 2, in the graph above—the greater the amounts it will be able to export at the world price, which is bound to be lower than the (in-quota) price paid by, say, the EU. This, in turn, translates to a lower *average* unit price, that is, a lower margin, as shown by  $\bar{P}_1$  and  $\bar{P}_2$  above.<sup>26</sup> In effect, this means that reduction in the Quad MFN tariff will lead to different percentage reductions in the margins of different exporters, even if they belong to the same preference scheme. The analysis is further complicated by the fact that, even within the same preferential scheme (e.g., the EU's Sugar Protocol for ACP countries), the size of the quotas differs for different ACP members.

- **Impact of a change in tariff on the world price:** Depending on the import elasticities of the Quad for each good, the lower tariffs should raise Quad (and, hence, world) demand, and thus put upward pressure on world prices. This would tend to counterbalance, to some extent, the decrease in the price received by preference-beneficiaries from the reduction in the preference margins.
- **The assumption of 100 percent capture of rent by the exporter is unlikely to hold.** The extent of rent extraction by the exporters is likely to depend on the exporter's bargaining power vis-à-vis the importer. This means that the effective gain from preferences is lower than suggested by the simulation, thus lowering the actual impact from preference erosion.

## VII. CALCULATION OF PREFERENCE MARGINS

### A. General Considerations

The calculation of preference margins is central to estimates of the impact of preference erosion, as per equation (4). The simulation in this study yielded product-specific preference margins, which were then multiplied by each product's share in total exports to produce an export-weighted-average margin vis-à-vis each Quad partner. Direction of trade statistics were then used to produce a weighted-average preference margin for each beneficiary country vis-à-vis the Quad as a whole. That is:

$$m_i^{QUAD} = \sum_n w_n \sum_{k=1}^{99} w_{n,k}^i (T_{n,k}^{MFN} - T_{n,k}^i) \quad (6)$$

where  $i$  refers to the preferences-recipient,  $n$  refers to the four Quad markets—EU, the United States, Japan, and Canada—and  $k$  corresponds to the 99 product categories of the two-digit HS classification.

<sup>26</sup> The “margin” reflects the average price per unit of *total* exports.

As shown in Section VI, preference margins can be calculated in either of two ways, using equations (1) or (3), depending on the availability of data on tariffs or unit prices.

There are two advantages to using (3) over (1) in calculating preference margins.

1. Availability of comparable data: Unlike unit-price data, where uniformity and comparability across products and markets is very hard to establish in the absence of comprehensive data sources, comparable data on tariffs by preference scheme do exist—although within the limitations described below.
2. Usage of (1) relies on data on the *observed* price received by an exporter. This in turn will reflect a number of factors other than preference margins, including freight and insurance costs, quality considerations and the distribution of rents, which are likely to differ among exporters. Therefore, an estimate of the margin based on (1) will not be purely the result of preferential access, which means in turn that the calculated impact of its reduction on export revenues would be blurred by inaccurate data on the initial margin.

Nevertheless, when (tariff)-quotas are in place and their ad valorem tariff equivalents are not available, (3) does not provide a feasible alternative, and the use of price data is more suitable despite the limitations. This latter approach was adopted for bananas and sugar, which received particular attention in this study due to their large share in some countries' export revenues; and the high degree of (non-ad valorem) protection at the MFN level that they receive in the Quad countries.<sup>27</sup>

The textiles and clothing sector—where bilateral import quotas of the EU, the United States, and Canada<sup>28</sup> will be removed on January 1, 2005, as per the WTO Agreement on Textiles and Clothing (ATC)—was also identified as a source of vulnerability for those countries that benefit from quota-free access (or nonbinding quotas) to the EU, U.S., and Canadian markets for their textile and clothing exports;<sup>29</sup> benefit from preferential tariffs under a particular preference scheme (e.g., GSP, AGOA, CBI, NAFTA, or bilateral agreements such as between the EU and Romania); and rely heavily on textiles and clothing for their export revenues.

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<sup>27</sup> In the case of bananas, at least five countries in the sample enjoy highly preferential access to the EU market under the Cotonou Agreement, with bananas accounting for up to 54 percent of total exports. Sugar is even more important, accounting for more than 10 percent of exports in nine countries that are, at the same time, eligible for highly preferential access under the Sugar Protocol/Special Preferential Sugar scheme in the EU and under an annual quota system in the United States.

<sup>28</sup> Japan has no textile quotas.

<sup>29</sup> In the case of the EU, quotas on imports of textiles and clothing apply to the following WTO members: Argentina, Hong Kong SAR, China, Macao SAR, Korea, Singapore, India, Pakistan, Thailand, Indonesia, Malaysia, Peru, and the Philippines. In the case of the United States, quotas apply to 55 exporting countries.

The pending removal of quotas is a source of vulnerability for a number of countries, as it is expected to shift demand towards the most competitive suppliers. However, there is an extensive literature on this subject and we will not examine it here. Instead, we consider the potential export losses resulting in a quota-free environment, assuming that the tariff preferences will remain at their current levels after January 2005. However, it should be stressed that these results are only indicative, given that the quota removal is likely to cause a change in the export structure of certain countries.

Regarding data sources, the WTO's Integrated Database (IDB) was the key source of MFN and preference-specific tariff structures for the United States, Canada, and Japan, while the WTO's 2000 Trade Policy Review was the source for the EU. The WITS database was used as an alternative source of comparison, in particular for tariff structures under bilateral schemes such as the one between the EU and Tunisia. For EU tariff structures vis-à-vis the southeastern European countries, the texts of the relevant bilateral agreements (and their various amendments) were used.

Caveats with these data include the potential for error stemming from the aggregation of the trade measures per tariff-line to the two-digit level. The problem becomes particularly acute when the measures consist of quotas, tariff-quotas, specific tariffs, etc., rather than ad valorem tariffs—as is the case for most agricultural imports by the EU, Japan, and Canada. In the WTO's IDB database (which, as mentioned above, was not used for the EU), tariff lines with non-ad valorem measures are excluded from the aggregation—a method that severely underestimates protection in cases where the number of excluded tariff lines is large.<sup>30</sup>

## **B. Calculation of Preference Margin for Bananas**

The countries for which preferential access for bananas to the EU market—under the Cotonou Agreement—is a source of vulnerability are Belize, Côte d'Ivoire, Dominica, Dominican Republic, St. Lucia, St. Vincent and the Grenadines, and Suriname.<sup>31</sup> Vulnerability stems from the large share of bananas in total exports (e.g., around 54 percent for St. Lucia), the high degree of preferential access granted by the EU and the dependence on the EU as an export market.

The EU's banana regime was introduced in 1993, when an EU-wide system replaced the national banana import schemes applying at the time. The system's key objective has been to support banana producers in the ACP states (and a few in the EU) by means of a tariff-quota system, under which a specified quota of ACP bananas enter the EU market duty-free, while imports from the rest of the world are restricted by a larger quota with a non-zero in-quota

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<sup>30</sup> As an example, the calculation of the aggregate tariff for category 17 (sugar) applied by Japan excludes more than half of the tariff lines belonging to that category.

<sup>31</sup> The United States and Canada have zero MFN tariffs on bananas. Japan applies ad valorem tariffs on bananas with MFN rates between 20–25 percent, with a margin of 5–10 percent for GPT-eligible countries (LDCs enjoy duty-free access).

tariff.<sup>32</sup> Restrictions on non-ACP producers have been modified since 1993 to accommodate the expansion of EU membership as well as an adverse WTO ruling in April 1999.<sup>33</sup> As a result, the competitive advantage of ACP exporters stemming from preferential access in the EU market may have declined somewhat.<sup>34</sup>

On July 1, 2001 (the year for which data were drawn for this study), the EU's import system was reformed following an agreement between the EU and the United States in the WTO banana dispute. The reform focused on removing country-specific allocations for nonpreferential bananas entering the EU, while marginally reducing the duty-free quota for ACP exporters by 7,700 metric tonnes to 850,000 metric tonnes. (The impact of the reduction of the ACP quota is likely to have been negligible, given that the quota had never been fully utilized.)

In January 2002, the ACP (duty-free) quota was further reduced, by 100,000 metric tonnes, with one of the quotas open to non-ACP exporters increased by the same amount. Further changes are to occur during the period 2004–06, in line with an EU commitment to switch to a tariff-only system by January 1, 2006. This could preserve preferential access for ACP exporters through a tariff-only preference scheme, although the modalities and impact of the reform are still uncertain.

Given that import restrictions are not *ad valorem*, price data were used to calculate the preference margin, taking also into account the fact that the ACP quota has never been binding at the aggregate level—in other words, the ACP exporters in question sell (practically) all their bananas to the EU.<sup>35</sup>

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<sup>32</sup> Banana exporters can in principle exceed the quota, but, in practice, the over-quota tariffs for non-ACP countries are prohibitive.

<sup>33</sup> Reforms were first introduced on January 1, 1999 and subsequently revised in April 2001, following agreement with the United States in the WTO banana dispute. They became effective on July 1, 2001.

<sup>34</sup> According to Brent Borrell's *Bananarama* series of papers (see Borrell 1999 for a summary), it is far from clear that the EU banana regime has provided effective support to producers other than those of the first generation. The first generation get the windfall benefit of the introduction of the regime. But subsequent generations must pay the cost of the capitalized benefit of the program, for instance by borrowing to buy a farm where the benefits of future subsidies are capitalized. This leaves their viability just as vulnerable as unsubsidized farmers, whose debts are smaller. Borrell also concludes that another major beneficiary were large trading companies.

<sup>35</sup> At the individual country level, however, this may not be true. Still, ACP exporters enjoy preferential access also for out-of-quota sales.

Then, the average margin for ACP banana exporters is given by:

$$m = \frac{P^{EU}}{P^W} - 1$$

where  $P^{EU}$  is the EU price, which, given the under-utilization of quotas, is equal to the unit price received by ACP exporters.<sup>36</sup>

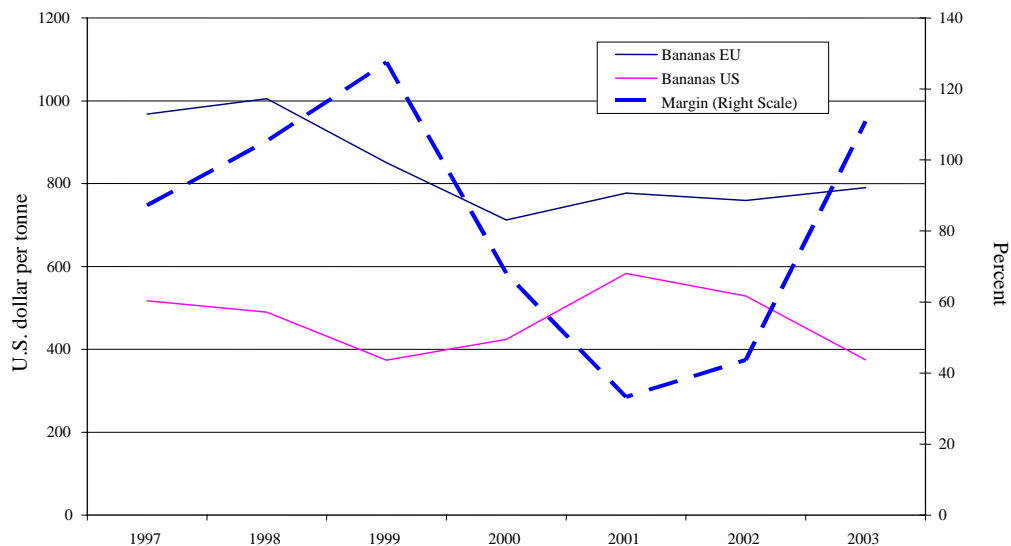
The U.S. price was used as a proxy for the world free-market price of bananas, given that there are virtually no trade restrictions on bananas in the U.S. market. Both U.S. and EU prices were taken from the World Bank's Pink Sheets, which report "internal-market" prices (and, hence, incorporate the impact of tariffs, as well as freight, insurance and distribution/rail costs).

Figure 5 shows the movement in the U.S. and EU prices for the period 1997–2003. The margin fluctuates heavily each year due to volatility both in world prices and, to a lesser extent, in the EU price—the latter due to both internal-market conditions as well as the changes in the EU's banana regime during the period. In 2001, the year under study, the margin stood at 33 percent. This was lower than in earlier years, in part due to substantially higher world prices compared to the average for the period. To avoid underestimating the margin, we used a four-year average, yielding a margin of 59 percent. A longer period seemed inappropriate in light of the repeated changes in the EU's banana regime, which seem to have led to a progressive drop in the internal EU price. However, depending on the period chosen, as well as the methodology of calculation, the margin could range between 33 percent and 70 percent.

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<sup>36</sup> Actual margins for each ACP banana exporter, calculated on the basis of the EU's COMEXT data, tended to be around one-third lower than the "theoretical" margin derived by the methodology above and were typically different for different ACP exporters. Reasons could include out-of-quota sales by the more efficient exporters (which would drive the average unit price down), differences in quality, bargaining power or freight and insurance costs (COMEXT gives c.i.f. values), or misreporting on behalf of the importers.

Figure 5. Banana Prices 1997–2003



Source: World Bank.

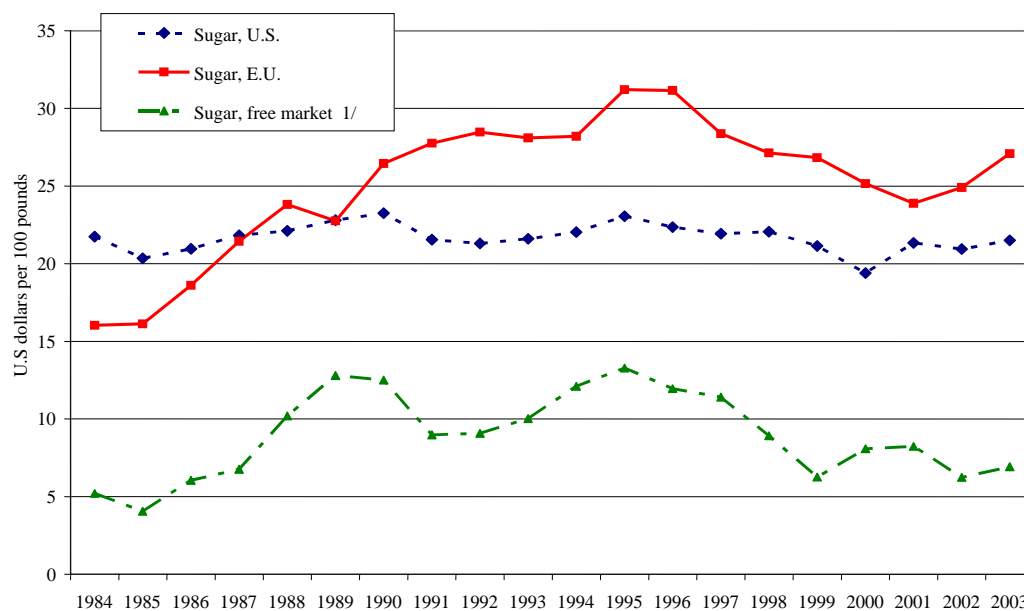
### C. Calculation of Preference Margin for Sugar

In both the EU and the United States, sugar is imported under a tariff-quota system that raises the level of the domestic price for sugar—thus protecting domestic producers (Figure 6).

In the case of the EU, quotas are allocated to eligible ACP producers under the Sugar Protocol (SP) and the Special Preferential Sugar scheme (SPS), according to which predetermined, country-specific sugar quotas can enter the EU market at guaranteed prices. Quotas under the SP have remained constant over the past three decades, at 1.3 million metric tonnes on aggregate, while annual quotas under the SPS have shown substantial variability, in part in response to world market conditions for sugar (Figure 7).

In the case of the United States, exporters are assigned annual quotas within which duties are either minimal or, in the case of GSP/ATPA/CBI/NAFTA beneficiaries, zero. Allocations are in line with each country's historic shares of sugar exports to the United States (in the period 1975–81). Countries can also export outside the quota but at considerably higher duties. Currently, in the case of raw cane sugar, the United States commits to import a minimum annual quota of 1.12 million metric tonnes on aggregate, although higher amounts can be permitted on an ad hoc basis if it is judged that “domestic supply of sugars may be inadequate to meet domestic demand at reasonable prices.”

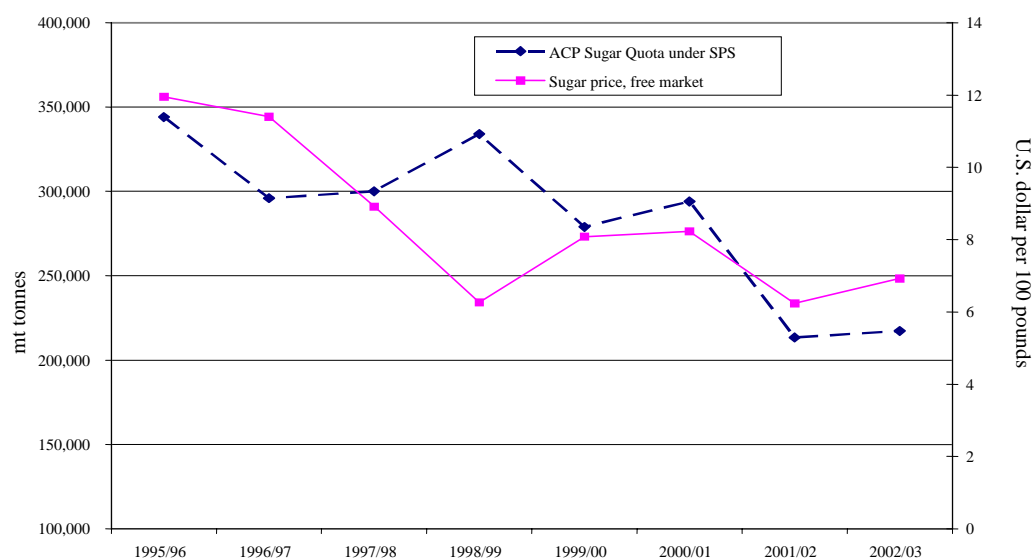
Figure 6. Raw Sugar Prices 1984–2003



1/ Refers to the export price for raw sugar quoted on the New York Coffee, Sugar & Cocoa Exchange (Contract No.11).

Source: IMF *World Economic Outlook* and *Country Staff Papers* (various).

Figure 7. EU Sugar Quotas for ACP Countries under the SPS and World Sugar Prices



Source: European Commission.

In the presence of non-ad valorem trade protection, expression (1) has been used to calculate each country's preference margin for sugar as in the case of bananas. Sugar, however, differs from bananas in that for most sugar-exporting countries, quota allocations are binding. This implies that the average unit price for sugar received by a preferential exporter is typically lower than suggested by the high out-of-quota MFN tariffs on sugar by the Quad. A country's unit price (and, hence, the margin) will be higher: (i) the higher its quota allocation in the EU and the United States; (ii) the *lower* its out-of-quota exports, at the lower world price (which is likely to reflect a less efficient cost structure).

More formally:

$$m_i = \frac{P_i}{P^W} - 1 = \frac{Q_i^{EU} / Q^T * P^{EU} + Q_i^{US} / Q^T * P^{US} + Q_i^{RoW} / Q^T * P^W}{P^W} - 1 \quad (7)$$

For the calculation of (7), data on sugar volumes were taken mainly from the FAO database while f.o.b. export values were taken from UNCOMTRADE (ITC Statistics), with some corrections based on IMF, EU or U.S. databases or on the websites of the countries' Central Banks when required. Data on the world price for sugar were taken from the IMF's WEO database. Table 1 shows each country's margins for sugar on the basis of five-year averages. It is noteworthy that two of the top scorers, Jamaica and St. Kitts and Nevis, have typically not filled their joint EU and U.S. sugar quotas—hence the high margins, as per (ii) above. Mauritius, on the other hand, enjoys very large quotas under the EU quota system (a third of the joint SP and SPS quotas). In 1999, volume data suggest that it did not fill the joint quota, thus lifting the unit price.

Table 1. Average Margin on Sugar for Selected Sugar Exporters  
(in percent)

Sugar Exporter	1997	1998	1999	2000	2001	Average Margin
Mauritius	148.9	204.2	328.4	180.2	160.4	204.4
Serbia and Montenegro	n.a.	n.a.	n.a.	n.a.	190.1	190.1
Jamaica	136.5	196.1	256.0	176.5	99.8	173.0
St. Kitts and Nevis	n.a.	n.a.	n.a.	n.a.	150.5	150.5
Honduras	92.4	147.4	129.9	89.8	144.4	120.8
Guyana	n.a.	n.a.	n.a.	n.a.	120.6	120.6
Côte d'Ivoire	97.8	130.8	200.1	85.3	27.2	108.3
Fiji	n.a.	n.a.	n.a.	72.8	136.3	104.5
Belize	-30.6	119.1	170.8	91.3	115.8	93.3
Nicaragua	15.3	147.4	237.4	1.9	35.7	87.5
Dominican Republic	63.5	n.a.	n.a.	n.a.	105.8	84.6
El Salvador	45.1	52.4	65.7	-8.1	30.2	37.0
Swaziland	n.a.	n.a.	n.a.	80.0	32.1	56.0
Guatemala	4.0	25.6	26.7	-12.3	8.7	10.5

Sources: Calculations based on FAO, UNCOMTRADE, IMF WEO database, and EU and U.S. sources.



## D. Results

We can now draw the results together by adding the price-based estimates of the preference margins for bananas and sugar (weighted by their share in exports) to the estimates for all other HS 2-digit products, which were calculated from tariff differentials as per equation (3) and aggregated as per (6). This yields an estimate for the total preference margin, i.e., the percentage by which a country's average export unit value exceeds that which would obtain in the absence of any preference schemes.

Total preference margins are reported in the first data column of Table 2 for countries in which the margin exceeds 5 percent. The remaining columns display the shares of key products in the total margin. The results confirm that preferences are of significant importance for a number of countries, and in particular for small island economies. For six countries, preferences add one-quarter or more to the value of exports.

Table 2. Contribution of Major Export Products to Preference Margin

	Total Preference Margin 1/	Percent of Margin Accounted for by Preferences for:			
		Sugar	Bananas	Textiles and clothing	Other products
<b>Middle-Income Countries 2/</b>	<b>4.9</b>	<b>42</b>	<b>19</b>	<b>12</b>	<b>27</b>
<b>Largest beneficiaries 3/</b>	<b>15.6</b>	<b>51</b>	<b>24</b>	<b>8</b>	<b>17</b>
Mauritius	39.9	84	0	13	3
St. Lucia	32.9	0	94	2	4
Belize	29.3	47	23	0	30
St. Kitts and Nevis	28.7	94	0	0	6
Guyana	24.2	95	0	1	4
Fiji	24.1	96	0	1	2
Dominica	15.9	0	97	0	3
Seychelles	12.2	0	0	0	100
Jamaica	9.7	67	8	7	18
St. Vincent and the Grenadines	9.4	0	89	0	11
Albania	8.9	0	0	48	52
Swaziland	8.2	97	0	1	2
Serbia and Montenegro	7.6	28	7	10	56
Honduras	6.7	56	9	19	15
Tunisia	5.9	0	1	79	20
Côte d'Ivoire	5.7	8	51	2	38
Morocco	5.7	0	4	64	33
Dominican Republic	5.5	23	16	27	34

1/ As a percent of the trade-weighted average world market price of the country's exports.

2/ Average for 76 middle-income developing countries, weighted by margin.

3/ Eighteen countries with average preference margins greater than 5 percent.

Equally striking is the overwhelming importance of sugar and banana preferences, which together account for three-quarters of the value of preferences received by the largest beneficiaries. Textiles and clothing score a distant third, while other products in the HS-2 classification (which totals 99 categories) contribute only minor shares on average.

### VIII. IMPACT OF PREFERENCE EROSION ON EXPORTS

We now examine the impact of preference erosion on export revenues under different assumptions regarding export supply elasticities. For the purposes of this exercise, we posited a 40 percent reduction in each country's preference margin as a result of MFN-based liberalization of imports by the Quad. The modalities of this reduction are not considered in the present analysis. Applying equation (4a) under three different assumptions for elasticities of export supply, the results are presented in Table 3.

Table 3. Percentage Loss in Total Exports

Most Vulnerable Middle-Income Countries 1/	e=0	e=1.0	e=1.5
Mauritius	-11.5	-19.6	-23.7
St. Lucia	-9.8	-17.2	-20.9
Belize	-9.1	-16.1	-19.6
St. Kitts and Nevis	-8.9	-15.9	-19.3
Guyana	-7.9	-14.2	-17.3
Fiji	-7.8	-14.0	-17.2
Dominica	-5.5	-10.2	-12.6
Seychelles	-4.2	-7.7	-9.5
Jamaica	-3.5	-6.8	-8.4
St. Vincent and the Grenadines 2/	-3.4	-6.6	-8.2
Albania	-3.3	-6.3	-7.7
Swaziland	-3.0	-5.8	-7.2
Serbia and Montenegro	-2.8	-5.4	-6.8
Tunisia	-2.2	-4.3	-5.3
Côte d'Ivoire	-2.2	-4.2	-5.2
Morocco	-2.1	-4.1	-5.1
Dominican Republic	-2.1	-4.0	-5.0

1/ Countries for which the potential export loss from preference erosion under an export elasticity of zero is larger than two percent of total exports.

2/ For St. Vincent and the Grenadines, the percentage loss is for exports *including* re-exports. Excluding the latter, the percentage loss is considerably larger, although the absolute value remains at similar levels.

The results show that several countries could experience significant declines in export revenues even at low export supply elasticities. Nevertheless, it should be borne in mind that any adjustment in MFN tariffs, and therefore the erosion of preferences, is very unlikely to be implemented from one day to the next. Under realistic scenarios, tariff adjustment will be phased over many years, and the impact on the exports of preference recipients in any one year would be much smaller than it appears in Table 3.

Mauritius emerges as the country most exposed to preference erosion, primarily due to the highly preferential terms on which it exports sugar to the EU, while the key source of vulnerability for St. Lucia is the large contribution of the banana sector in total exports and the depth of the preferences it receives in the EU. In fact, sugar and/or banana preferences are the source of the vulnerability for the ten most exposed countries, with the exception of Seychelles, whose vulnerability is associated with preferential access to the EU market for fish-related products.

Table 4 places the results in a broader macroeconomic context. In most cases, a large shock to merchandise exports translates into a significant macroeconomic shock, with Guyana and Mauritius showing the highest vulnerability (in terms of percentage loss in GDP terms).

Table 4. Losses from Preference Erosion in a Macroeconomic Context

Country	Absolute Loss under e=0 (US\$ million)	As a percent of exports of goods	As a percent of exports of goods and services	As a percent of GDP	As a percent of government revenue
Mauritius	-201	-11.5	-7.2	-4.4	-24.4
St. Lucia	-4	-9.8	-1.1	-0.6	-1.9
Belize	-18	-9.1	-4.1	-2.1	-8.0
St. Kitts and Nevis	-3	-8.9	-1.8	-0.8	-1.9
Guyana	-41	-7.9	-6.2	-5.8	-17.7
Fiji	-41	-7.8	-3.8	-2.2	-9.1
Dominica	-2	-5.5	-1.9	-0.9	-2.3
Seychelles	-10	-4.2	-1.9	-1.6	-3.7
Jamaica	-46	-3.5	-1.4	-0.6	-2.2
St. Vincent and the Grenadines	-5	-3.4	-2.7	-1.3	-4.3
Albania	-10	-3.3	-1.2	-0.2	-1.0
Swaziland	-21	-3.0	-1.8	-1.6	-5.8
Serbia and Montenegro	-45	-2.9	-2.2	-0.4	-3.9
Tunisia	-146	-2.2	-1.5	-0.7	-2.5
Côte d'Ivoire	-69	-2.2	-1.6	-0.6	-3.7
Morocco	-152	-2.1	-1.4	-0.4	-1.8
Dominican Republic	-100	-2.1	-1.2	-0.5	-2.7

Sources: IMF *International Financial Statistics* and IMF Country Reports (various).

However, even in cases where the export shock may appear less significant, stock variables could be such as to inhibit shock absorption through expansionary fiscal policy (e.g., in the form of transfers to the economic sectors that have been hurt). For example, a subset of the countries that are most vulnerable to preference erosion also have debt-to-GDP ratios that exceed 100 percent and/or unfavorable debt dynamics. In those cases, while the export shock from preference erosion might appear small in terms of GDP, it could still be difficult for the governments to mitigate the adjustment pressures through additional fiscal spending. Inflexible exchange rate regimes in some of these countries can introduce further rigidities. However, a discussion of adjustment problems goes beyond the scope of this paper.

## IX. CONCLUSIONS

Trade liberalization by the Quad—Canada, the EU, Japan, and the United States—is likely to reduce the value of the trade preferences currently enjoyed by a wide range of developing countries. As competition in key markets becomes more intense their exports might suffer.

In this study, we found that the magnitude of the potential shock, in a realistic liberalization scenario, was small in aggregate: between 0.5 and 1.2 percent of total exports of the middle-income countries considered, depending on the elasticities of export supply. The effect is also likely to be spread over time in accordance with liberalization schedules established in the context of the Doha Round or other trade reforms. This should make it easier to plan for adjustment.

However, shocks could be significant for a subset of countries. Vulnerability increases with export concentration on goods that benefit from deep preferential access in Quad markets. Vulnerability also increases with export dependence on the Quad markets, and could be accentuated if a country's broader macroeconomic framework is fragile. Countries with these characteristics—which includes, in particular, a number of small island economies—may face serious adjustment challenges as the value of their trade preferences erodes.

Nevertheless, one of the key results of the study is that, among middle-income developing countries, vulnerability to preference erosion is associated overwhelmingly with just three products: sugar, bananas and—to a far lesser extent—textiles and clothing. Sugar and bananas alone explain three-quarters of the current preference margin of countries that have a total margin greater than 5 percent of the value of their exports.

The obvious implication is that the policy discussion—and any support for adjustment—should preferably be targeted at these products and the countries dependent on them. A broader focus risks being a distraction. Another implication is that developments in the sugar and banana regimes of the EU and the United States matter most. In fact, to the extent that these regimes are reformed outside of the WTO framework—and reform initiatives for both products are indeed underway in the EU—preference erosion as a result of a multilateral trade agreement would become far less significant.

I. Quad Preference Schemes Applying to the Middle-Income Countries Under Study

	EU	United States	Japan	Canada
Albania	EU-Albania	GSP	GSP	MFN
Argentina	GSP (excl I, III, XI, XVII)	GSP	GSP	GPT
Armenia	GSP (excl II, XXVI)	GSP	GSP	GPT
Belarus	GSP (excl II, XV, XXV, XXVI, XXVII)	GSP	GSP	GPT
Belize	Cotonou	CBI	GSP	CARIBCAN
Bolivia	GSP-Drugs	ATPA	GSP	GPT
Bosnia and Herzegovina	EU-Bosnia and Herzegovina	GSP	GSP	GPT
Botswana	Cotonou	AGOA-Wearing Apparel Provision	GSP	GPT
Brazil	GSP	GSP	GSP	GPT
Bulgaria	Europe Agreement	GSP	GSP	GPT
Cameroon	Cotonou	AGOA-Wearing Apparel Provision	GSP	GPT
Chile	GSP (excl V, IX, XV)	FTA	GSP	FTA
China	GSP (excl IV, VIII, XIV, XXVI, XVIII, XXII, XXIII, XXIV, XXVII, XXXIII)	MFN	GSP	GPT
Colombia	GSP-Drugs	ATPA	GSP	GPT
Costa Rica	GSP	CBI	GSP	FTA
Côte d'Ivoire	Cotonou	AGOA	GSP	GPT
Croatia	SAA Croatia	GSP	GSP	GPT
Dominica	Cotonou	CBI	GSP	CARIBCAN
Dominican Republic	Cotonou	CBI	GSP	GPT
Ecuador	GSP-Drugs	ATPA	GSP	GPT
Egypt	Coop Agreement	GSP	GSP	GPT
El Salvador	GSP	CBI	GSP	GPT
Fiji	Cotonou	GSP	GSP	GPT
Georgia	GSP	MFN	GSP	GPT
Ghana	Cotonou	AGOA	GSP	GPT
Grenada	Cotonou	CBI	GSP	CARIBCAN
Guatemala	GSP-Drugs	CBI	GSP	GPT
Guyana	Cotonou	CBI	GSP	CARIBCAN
Honduras	GSP-Drugs	CBI	GSP	GPT
India	GSP	GSP	GPT	
Indonesia	GSP	GSP	GSP	GPT
Jamaica	Cotonou	CBI	GSP	CARIBCAN
Jordan	GSP	FTA	GSP	GPT
Kazakhstan	GSP (excl II, XV, XXV, XXVI, XXVII)	GSP	GSP	GPT
Kenya	Cotonou	AGOA-Wearing Apparel Provision	GSP	GPT
Kyrgyz Republic	GSP	GSP	GSP	GPT

I. Quad Preference Schemes Applying to the Middle-Income Countries Under Study (Concluded)

	EU	United States	Japan	Canada
Lebanon	GSP	GSP	GSP	GPT
Macedonia, FYR	EU-FYROM	GSP	GSP	GPT
Malaysia	GSP (excl VII, X, XVI, XIX, XXII, XXIX)	MFN	GSP	GPT
Maldives	GSP	MFN	GSP	GPT
Mauritius	Cotonou	AGOA-Wearing Apparel Provision	GSP	GPT
Mexico	FTA	NAFTA	GSP	NAFTA
Moldova	GSP	GSP	GSP	GPT
Mongolia	GSP	MFN	GSP	MFN
Morocco	Association Agreement	GSP	GSP	GPT
Namibia	Cotonou	AGOA-Wearing Apparel Provision	GSP	GPT
Nicaragua	GSP	CBI	GSP	GPT
Pakistan	GSP	GSP	GSP	GPT
Panama	GSP-Drugs	CBI	GSP	GPT
Papua New Guinea	Cotonou	GSP	GSP	GPT
Paraguay	GSP	GSP	GSP	GPT
Peru	GSP-Drugs	ATPA	GSP	GPT
Philippines	GSP (Excl X)	GSP	GSP	GPT
Romania	Europe Agreement	GSP	GSP	GPT
Russian Federation	GSP (excl II, XIII, XV, XXVI, XXVII)	GSP	MFN	GPT
Serbia and Montenegro	EU-SM	MFN	GSP	MFN
Seychelles	Cotonou	AGOA	GSP	GPT
South Africa	GSP (excl XXVI)+Cotonou	AGOA	GSP	GPT
Sri Lanka	GSP	GSP	GSP	GPT
St. Kitts and Nevis	Cotonou	CBI	MFN	CARIBCAN
St. Lucia	Cotonou	CBI	GSP	CARIBCAN
St. Vincent and the Grenadines	Cotonou	CBI	GSP	CARIBCAN
Suriname	Cotonou	GSP	GSP	CARIBCAN
Swaziland	Cotonou	AGOA-Wearing Apparel Provision	GSP	GPT
Syrian Arab Republic	GSP	MFN	GSP	GPT
Tajikistan	GSP	MFN	GSP	GPT
Thailand	GSP (excl II, V, XI, XVI, XVIII, XXII, XXIII, XXV, XXXIII)	GSP	GSP	GPT
Tonga	Cotonou	GSP	GSP	GPT
Trinidad and Tobago	Cotonou	CBI	GSP	CARIBCAN
Tunisia	FTA	GSP	GSP	GPT
Turkey	CU (FTA)	GSP	GSP	GPT
Ukraine	GSP (excl II, VIII, XV, XXVI)	GSP	GSP	GPT
Uruguay	GSP (excl I)	GSP	GSP	GPT
Uzbekistan	GSP	GSP	GSP	GPT
Vietnam	GSP	MFN	GSP	GPT
Zimbabwe	Cotonou	GSP	GSP	GPT

II. Percentage Loss in Export Revenues from a 40 Percent Reduction  
in the Average Preference Margin  
(In percent)

Country	e=0.0	e=1.0	e=1.5
Albania	-3.3	-6.3	-7.7
Argentina	-0.1	-0.3	-0.3
Armenia	-0.2	-0.5	-0.6
Belarus	-0.2	-0.4	-0.5
Belize	-9.1	-16.1	-19.6
Bolivia	-0.1	-0.2	-0.3
Bosnia and Herzegovina	-1.7	-3.4	-4.2
Botswana	-0.7	-1.3	-1.7
Brazil	-1.7	-3.3	-4.1
Bulgaria	-1.1	-2.1	-2.6
Cameroon	-0.8	-1.6	-2.1
Chile	-0.3	-0.7	-0.8
China	-0.1	-0.2	-0.3
Colombia	-0.2	-0.3	-0.4
Costa Rica	-0.7	-1.4	-1.8
Côte d'Ivoire	-2.2	-4.2	-5.2
Croatia	-1.2	-2.2	-2.8
Dominica	-5.5	-10.2	-12.6
Dominican Republic	-2.1	-4.0	-5.0
Ecuador	0.0	0.0	0.0
Egypt	-0.4	-0.8	-1.0
El Salvador	-1.5	-2.9	-3.6
Fiji	-7.8	-14.0	-17.2
Georgia	-0.1	-0.2	-0.2
Ghana	-0.7	-1.3	-1.6
Grenada	-0.7	-1.3	-1.7
Guatemala	-0.9	-1.8	-2.2
Guyana	-7.9	-14.2	-17.3
Honduras	-2.1	-4.2	-5.2
India	-0.3	-0.6	-0.7
Indonesia	-0.2	-0.4	-0.5
Jamaica	-3.5	-6.8	-8.4
Jordan	-0.5	-1.0	-1.2
Kazakhstan	-0.1	-0.3	-0.4
Kenya	-0.6	-1.2	-1.5
Kyrgyz Republic	0.0	-0.1	-0.1
Lebanon	-0.2	-0.3	-0.4
Macedonia, FYR	-1.4	-2.8	-3.4
Malaysia	0.0	-0.1	-0.1
Maldives	-0.1	-0.2	-0.2
Mauritius	-11.5	-19.6	-23.7
Mexico	-1.0	-2.0	-2.5

II. Percentage Loss in Export Revenues from a 40 Percent Reduction  
in the Average Preference Margin (Concluded)  
(In percent)

Country	e=0.0	e=1.0	e=1.5
Moldova	-0.2	-0.3	-0.4
Mongolia	0.0	-0.1	-0.1
Morocco	-2.1	-4.1	-5.1
Namibia	-0.4	-0.7	-0.9
Nicaragua	-1.4	-2.7	-3.3
Pakistan	-0.3	-0.6	-0.7
Panama	-0.6	-1.2	-1.6
Papua New Guinea	-0.1	-0.2	-0.2
Paraguay	-0.1	-0.1	-0.2
Peru	-0.2	-0.4	-0.5
Philippines	-0.3	-0.6	-0.7
Romania	-1.4	-2.8	-3.4
Russian Federation	-0.1	-0.2	-0.3
Serbia and Montenegro	-2.8	-5.4	-6.8
Seychelles	-4.2	-7.7	-9.5
South Africa	-0.5	-1.0	-1.2
Sri Lanka	-0.3	-0.6	-0.8
St. Kitts and Nevis	-8.9	-15.9	-19.3
St. Lucia	-9.8	-17.2	-20.9
St. Vincent and the Grenadines	-3.4	-6.6	-8.2
Suriname	-1.7	-3.4	-4.2
Swaziland	-3.0	-5.8	-7.2
Syrian Arab Republic	-0.6	-1.2	-1.5
Tajikistan	-0.3	-0.6	-0.7
Thailand	-0.2	-0.5	-0.6
Tonga	-0.2	-0.3	-0.4
Trinidad and Tobago	-0.4	-0.9	-1.1
Tunisia	-2.2	-4.3	-5.3
Turkey	-1.0	-1.9	-2.4
Ukraine	-0.2	-0.3	-0.4
Uruguay	-0.1	-0.2	-0.3
Uzbekistan	-0.2	-0.4	-0.5
Vietnam	-0.2	-0.5	-0.6
Zimbabwe	-1.1	-2.0	-2.4
Total	-0.5	-1.0	-1.2



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