

Price Effects of Preferential Market Access: Caribbean Basin Initiative and the Apparel Sector

Çaglar Özden and Gunjan Sharma

Preferential trade arrangements should be evaluated by their effect on prices rather than by their effect on the total value of trade. This point is emphasized in the theoretical literature but rarely implemented empirically. This article analyzes the U.S. Caribbean Basin Initiative's (CBI's) impact on the prices received by eligible apparel exporters. The CBI's apparel preferences are the most important and heavily used unilateral preferences because of high trade barriers imposed on exports from the rest of the world. A fixed-effects generalized least squares (GLS) estimation is used to isolate the effects of other factors (such as quality, exchange rates, and transaction costs) and to identify the effects of tariff preferences. CBI exporters capture only about two-thirds of their preference margin despite the high degree of competition among importers. This translates into a 9 percent increase in the relative prices they receive, with some variance across countries and years. Countries specializing in higher value items capture more of the preference margin, and the implementation of the North American Free Trade Agreement (NAFTA) has a negative effect. Removing Multifibre Arrangement quotas significantly lowers the benefits of CBI preferences.

Preferential trade arrangements have proliferated in both number and importance in recent years. Among them, reciprocal agreements, such as free trade agreements, receive more attention in academic and policy debates than unilaterally granted preferences do. However, enhancing unilateral market access became one of the centerpieces of developing country agendas in recent trade negotiations.¹ Furthermore, certain unilateral programs dramatically improve eligible developing countries' access to highly protected markets such as agriculture and apparel. Thus, they have significant impact on beneficiary, excluded, and granting countries.

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1. See Özden and Reinhardt (2005) on how unilateral preferences affect recipient countries' own trade policies.

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This article analyzes the impact of unilateral preferences on the prices received by apparel exporters under the U.S. Caribbean Basin Initiative (CBI). The CBI was initiated in 1983 and grants duty- and quota-free market access to a wide range of exports from 24 eligible countries in Central America and the Caribbean. Apparel preferences are the most valuable and heavily used ones because of high trade barriers imposed by the United States on exports from the rest of the world.

The effects of discriminatory arrangements have been widely discussed and studied in the empirical literature. The focus has generally been on the total value of trade, even though the theoretical literature emphasizes that prices are a more appropriate instrument for evaluating trade policies.² However, quantity and price data are either not widely collected or not made available by most countries. Furthermore, even if these data were available, it is difficult to compare unit prices for differentiated products (such as machinery) that are aggregated in the same category. In short, the availability of very detailed and disaggregated data, together with the high utilization of the preferences, makes apparel an ideal sector for studying price effects of preferential arrangements.

This article answers two related questions: How much do the prices received by CBI exporters increase due to preferences? What share of the preference margin is captured by exporters through higher prices? The prices received by CBI exporters naturally depend on the preferential tariffs they face and the most favored nation tariffs paid by excluded countries, as well as on many other market characteristics. One innovation here is the use of country-, industry-, and year-fixed effects in a generalized least squares (GLS) estimation to isolate the effects of other factors, such as quality variation, exchange rates, transaction costs, and other market characteristics. CBI exporters capture about two-thirds of their preference margin, which translates into roughly a 9 percent increase in the relative prices they obtain. But this is an upper bound. Eligibility for preferences requires compliance with complicated rules of origin requirements that entail significant administrative and production costs.³ Two recent innovative articles address this issue within the context of the North American Free Trade Agreement (NAFTA). Anson and others (2005) show that a large share of Mexico's preferential access was eroded by the rules of origin compliance costs. Cadot and others (2005) specifically analyze apparel imports from Mexico using a methodology similar to the one used here. They find that the border price of Mexican exports rises about 12 percent, with one-third of this increase being compensation for the cost of complying with NAFTA's rules of origin. In short, when these issues are all taken into account, the net benefits of preferential market access are likely to be much lower.

2. See Winters (1997) for a convincing argument to this effect.

3. For example, CBI rules require the use of fabric and yarn from U.S. or domestic sources instead of inputs from third countries, which are generally cheaper. Another issue is the presence of intermediaries in certain markets, who might also capture some of this preference rent.

The results in this article exhibit significant variation across countries and years. More specifically, the implementation of NAFTA leads to a decline in the share of the preference margin captured by the beneficiaries, whereas specialization in higher value items leads to an increase. Finally, the benefits from CBI preferences are significantly lowered when the Multifibre Arrangement quotas imposed on third countries such as China and India are removed.

The results have important policy implications for the future of preferential trade arrangements. Among the main goals of such programs are the integration of developing countries into the world trading system and long-term economic growth through international trade. Many unilateral preference programs fail to deliver the promised gains for a variety of reasons.⁴ However, CBI programs provide significant advantages over other programs—such as the inclusion of the apparel sector—and are considered a success based on the rapid growth of exports from beneficiary countries. Nevertheless, eligible exporters do not capture the full benefits of preferential access, and the benefits seem to be even lower in low-value products and are likely to be further restrained by the rules of origin restrictions.

Another important point is that preferential access is valuable as long as excluded countries face high trade barriers. When these barriers are lowered, as in the case of the implementation of NAFTA or the removal of Multifibre Arrangement quotas, the value of the preferences to the beneficiaries are considerably eroded. Recipient countries should not rely on preferences to deliver long-term rents but use them as a transition stage to an environment where trade flows are determined by comparative advantage rather than by preferential access. Possible options are moving to higher quality products and taking advantage of geographic proximity to the U.S. market. CBI exporters can command higher prices by providing rapid deliveries to U.S. retailers who are implementing just-in-time inventory management systems. This would require tighter integration of production facilities with the supply chain networks of the consumers, as Evans and Harrigan (2005) emphasize.

The rest of the article is organized as follows: Section I reviews the literature. Section II presents a brief history of the CBI followed by some stylized facts that motivate the article. Section III explains the analytical model that forms the basis of the estimation, as well as the data and the methodology. Section IV presents the main results, along with how the effect of preferences on export prices varies across countries and across years and how it is influenced by the Multifibre Arrangement quotas. Conclusions follow.

I. PRICES AND PREFERENTIAL MARKET ACCESS

The empirical literature on the impact of trade policies, especially preferential arrangements, on prices is not very large. In one of the earliest studies, Kreinin

4. See Hoekman, Michalopoulos, and Winters (2003) for a review.

(1961) shows how the reductions of most favored nation tariffs by the United States influenced the export prices of its trading partners. With respect to the effects of discriminatory policies, the initial focus has been on voluntary export restraints. Crandall (1985) and Feenstra (1985) analyze the effect of U.S. voluntary export restraints on Japanese and domestic automobile prices. In a different approach, Dinopoulos and Kreinin (1988) investigate the effects of voluntary export restraints on nonrestricted European exporters' prices.

The price effects of preferential arrangements began to receive more attention only recently. Winters and Chang (2000) find that, as predicted, European exporters' prices increased relative to non-European exporters after Spain joined the European Community. Later, Winters and Chang (2002) also find that the relative prices of exports from excluded countries declined after Mercosur was implemented. Specifically, they show that, among the excluded countries, Chile and Japan fully pass through their own tariffs, Germany and the United States do so partially, and the Republic of Korea does so nominally. These articles, especially that of Winters and Chang (2002), are the most closely related to this article. Their empirical methodology and results are discussed in more detail in the following section.

Olarreaga and Özden's study (2005) seems to be the only study of the price effects of unilateral preferences. They show that, in the case of African Growth and Opportunity Act (AGOA) preferences, beneficiary countries' prices increased by only one-third of the preference margin, with the rest captured by importers. They then provide empirical evidence to show that the market power enjoyed by importers contributes to this division of the preference margin. However, limited data prevent them from conducting an in-depth analysis that fully controls for other factors. Krishna, Erzan, and Tan (1994) and Krishna and Tan (1998) also find wide evidence of rent sharing between exporters and importers in the context of apparel quotas from various East Asian countries.

This article is also related to the pass-through literature, which focuses mostly on the effect of exchange rate fluctuations on exporter and importer prices. Goldberg and Knetter (1997) provide a comprehensive review of this vast literature. The most relevant study is by Feenstra (1989), who estimates the effect of tariffs and exchange rates on U.S. prices of Japanese cars and finds that the long-run pass-through is identical. His estimation equation, which is similar to the one used here, is discussed in the methodology section.

II. HISTORY OF THE CBI

The CBI is a general term used to refer to the Caribbean Basin Economic Recovery Act of 1983 (CBERA), the Caribbean Basin Economic Recovery Expansion Act of 1990 (CBERA Expansion Act), and the Caribbean Basin Trade Partnership Act of 2000 (CBTPA). The aim of the CBI is "to assist in the achievement of a stable political and economic climate by stimulating the development of the export potential of

the region.”⁵ Its main feature is quota- and tariff-free market access granted unilaterally by the United States to exports from eligible countries.

Textile and apparel articles subject to textile agreements (such as the Multi-fibre Arrangement) were initially exempt from preferential treatment. In June 1986, a special access program, called the Super 807, was implemented for imports of textile apparel assembled in CBI beneficiaries from fabric formed and cut in the United States. It granted partial duty-free treatment on the domestic value added and on inputs from the United States. Export processing zones rapidly appeared in the region for the production of eligible products. Initially, a sunset provision was included (Section 218) that terminated duty-free treatment on August 5, 1990. But the CBERA Expansion Act, signed on August 29, 1990, extended the initial preferences.

Once NAFTA was implemented in 1994, CBI countries began to worry about the erosion of their preferences. The CBTPA was a response to these concerns. Section 211 specified the new regime for textiles and apparel preferences. In contrast to the previous regime, which granted partial duty-free treatment, the CBTPA allows textile and apparel articles to enter the United States without any tariffs or other restrictions when certain rules of origin and other requirements are satisfied. As before, these rules of origin favor the use of materials formed in the United States or CBI countries. In short, the CBTPA has provided CBI members with NAFTA-like treatment without the burden of reciprocity prescribed by NAFTA.

Stylized Facts

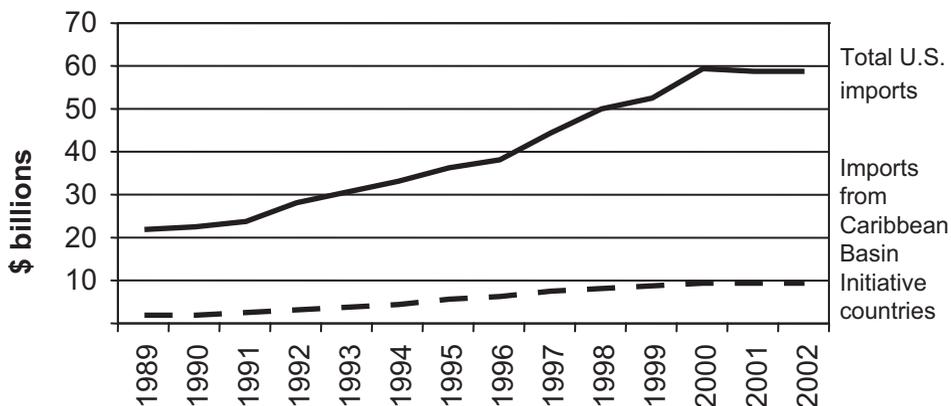
The CBI preferences had a large impact on the aggregate volume of apparel exports from the beneficiaries,⁶ which accounted for a steadily rising share of total U.S. imports during 1989–2002, the span of data used here. In 1989, exports from CBI countries were valued at \$1.7 billion, 7.8 percent of total U.S. imports. In 2002, their exports increased to \$9.5 billion, 16.2 percent of total U.S. imports (figure 1).

As stated earlier, the main focus here is on the prices received by apparel exporters due to the preferences. The average price of U.S. apparel imports peaks at \$83 in 1991 and declines rapidly to \$52 in 2002 (figure 2). These are nominal prices, so the decline in real prices is even steeper. The average price of CBI apparel exports is always below the average U.S. import price, probably because of quality and other differences. However, the gap narrows considerably over time. To put it differently, the price ratio starts at 84 percent in 1989 and increases to 90 percent in 1993. It stays quite stable at about 90 percent until the CBTPA is implemented, after which it rises to 92 percent in 2002.

5. The U.S.-Caribbean Trade Partnership Act of 2000, Title II: Trade Benefits for Caribbean Basin, Subtitle A, Section 202.

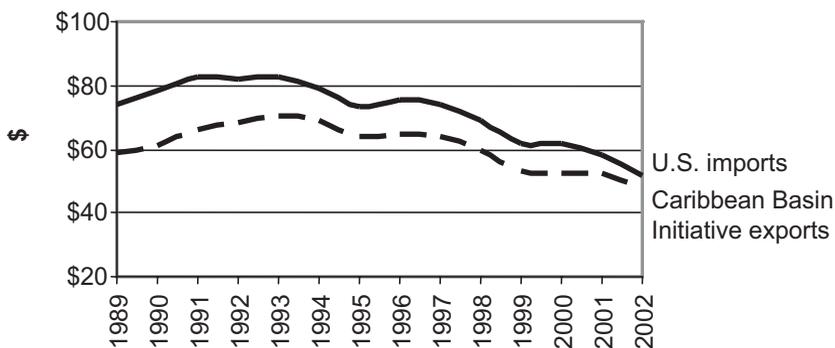
6. Some countries are more successful at increasing their exports. Eight of the 24 eligible exporters—Costa Rica, the Dominican Republic, El Salvador, Guatemala, Haiti, Honduras, Jamaica, and Nicaragua—account for more than 99 percent of the total.

FIGURE 1. U.S. Imports of Apparel, 1989–2002



Source: United States International Trade Commission.

FIGURE 2. Average Unit Prices for U.S. Apparel Imports and Caribbean Basin Initiative (CBI) Apparel Exports, 1989–2002

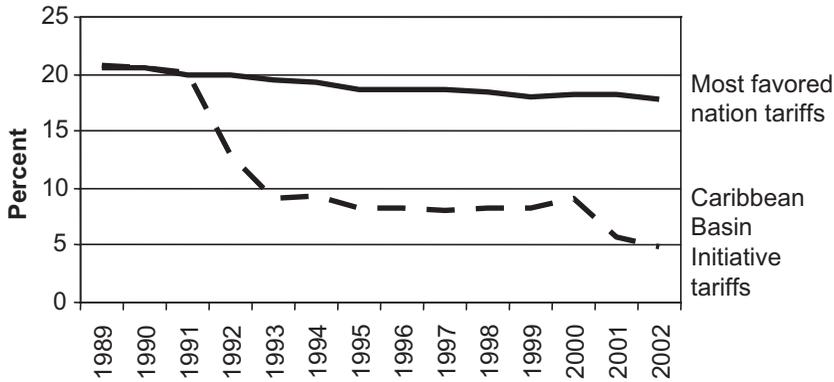


Source: United States International Trade Commission.

Although the average most favored nation tariffs gradually decline from 20.6 percent to 18 percent over 1989–2002, the preferential tariffs paid on CBI exports drop rapidly from 20.7 percent in 1989 to 9 percent in 1993, where they remain stable until the CBTPA is implemented (figure 3). They then fall to 5 percent in 2002. In other words, in 2002, CBI countries enjoyed an average preference margin of about 13 percent.

The relative prices of exports from beneficiary countries and their preference margins both increased from 1989 to 2002, indicating a strong correlation. But

FIGURE 3. Most-Favored Nation and Preferential Tariffs, 1989–2002



Note: Tariffs are weighted by Caribbean Basin Initiative (CBI) export volume.
 Source: United States International Trade Commission.

price increases can be caused by many factors, such as quality upgrades by exporting firms, declines in transportation and other transaction costs, fluctuations in exchange rates, and declines in tariffs. The key question is whether (and what share of) this export price increase is due to the preferential market access. And a related question is what share of the preference the exporters capture through higher prices. The next section provide an analytical and empirical framework to investigate the preliminary evidence presented.

III. ANALYTICAL FRAMEWORK

The previous section showed that CBI countries increased their exports to the United States considerably and obtained higher prices for their exports after the CBERA and CBTPA were implemented. This section attempts to identify the extent of the export price change that is due to the preferential access.

The first estimation equation is based on the examples in the pass-through literature. Let p_k^i denote the price of product k from country i inclusive of tariffs and transport costs. Similarly, let p_k^{ROW} denote the final average import price if k was imported from the rest of the world. Based on these definitions, a typical estimation equation in the pass-through literature would be

$$(1) \quad \ln p_{kt}^i = \alpha_0 + \alpha_1 \tau_{kt}^i + \alpha_2 \ln p_{kt}^{ROW} + \alpha_3 \ln w_t^i + \alpha_4 \ln e_t^i + u_t$$

where t is the time subscript and τ is the tariff rate (Goldberg and Knetter 1997). This equation implies that p_k^i would depend on the price of imports from other countries (or the domestic price index in that category), the tariff rate, the wages w (or another proxy for costs), and the exchange rate e of country i . The main

coefficients of interest would be α_1 , the tariff rate pass-through coefficient, and α_4 , the exchange rate pass-through coefficient. With perfect pass-through, both coefficients would equal 1. Other control variables and fixed effects can also be included.

Winters and Chang (2000) derive a similar equation based on an imperfect competition model to analyze the effect of Spain's accession to the European Union (EU) on the prices of excluded countries' exports to Spain, including those from the United States. However, they estimate a relative price equation of the following form:

$$(2) \quad \ln\left(\frac{p_t^i}{p_t^{\text{ROW}}}\right) = \alpha_0 + \alpha_1\tau_t^i + \alpha_2\tau_t^{\text{ROW}} + \alpha_3 \ln z_t^i + \alpha_4 \ln z_t^{\text{ROW}} \\ + \alpha_5 \ln Y_t + \alpha_6 P_t + u_t$$

where the product subscript k is suppressed; p^i , p^{ROW} , τ^i , and τ^{ROW} are as defined above; z^i and z^{ROW} are the costs of exporters and are functions of wages and exchange rates, and Y and P are the income and price levels in Spain used to capture demand conditions. The focus of attention is the coefficients α_1 through α_4 as well as certain restrictions implied by theory. Their results imply that a 1 percent decline in the tariffs faced by i (EU countries) causes a 0.56 percent decline in the relative prices of U.S. exporters to Spain. They estimate a similar equation for Mercosur in the article by Winters and Chang (2002) where the dependent variable is the ratio of U.S. (excluded country) export prices in Brazil to export prices in the rest of the world.

In contrast to the above studies, the focus here is on the prices received by exporters, net of tariffs, and other transaction costs. The p_k^i (p_k^{ROW}) here denotes the net prices received by exporters of k from i (ROW) without tariffs or other costs, τ_k^i represents the preferential tariff imposed on i , and τ_k^{ROW} is the most favored nation tariff rate imposed by the United States on the rest of the world. The estimating equation here is similar to equation (2), but the dependent variable is the ratio of pretariff prices:

$$(3) \quad \ln\left(\frac{p_{kt}^i}{p_{kt}^{\text{ROW}}}\right) = \beta_0 + \beta_1(\tau_{kt}^{\text{ROW}} - \tau_{kt}^i) + \beta_2 X_{kt}^i + \beta_3 M_{kt}^{\text{ROW}} + \sum_i \gamma^i \Omega^i \\ + \sum_k \delta_k \Phi_k + \sum_t \theta_t \Psi_t + u_{kt}^i$$

where $\ln(p_{kt}^i/p_{kt}^{\text{ROW}})$ is the approximate difference (in percentage) in net prices received by exporters from the CBI and the rest of the world, and $(\tau_{kt}^{\text{ROW}} - \tau_{kt}^i)$ is the average preference margin enjoyed by the exports of beneficiary country i . Because the tariff imposed by the United States on the rest of the world, τ_{kt}^{ROW} , did not vary considerably in the sample over time, the tariff difference in estimation was used instead of two separate tariffs. Also included are the total

export volume of country i in category k , denoted by X_{kt}^i , and total U.S. imports in that category, denoted by M_{kt}^{ROW} .

Country, product, and year dummy variables, denoted Ω , Φ , and Ψ , respectively, are added to capture variables that are missing from the estimation equation.⁷ These include exchange rates and wages that are included in equations (1) and (2) as well as variables such as differences in quality and transport costs that are unrelated to the effects of preferential market access programs.⁸ As mentioned earlier, these dummy variables help isolate all these effects that influence prices and allow the focus to be the impact of preferential programs.

Implementation of a preference program is equivalent to a decline in the tariff rate faced by the beneficiaries, τ_k^i . If eligible countries capture all the benefits of the tariff reduction (that is, $\beta_1 = 1$), the prices they receive for their exports should increase by the amount of the tariff decline. However, if the increase in export prices is less than the tariff decline (that is, $\beta_1 < 1$), the importers are capturing a share of the tariff rents created by the preferential market access. The traditional tariff pass-through effect, denoted by α_1 in equations (1) and (2), can be found from the estimation. More specifically, given the definitions of prices used here, $\alpha_1 = 1 - \beta_1$. If $\beta_1 = 0.25$, this implies that a 1 percent tariff increase would decrease the pretariff price by 0.25 percent (or increase the posttariff price by 0.75 percent). Thus, the tariff pass-through rate is 75 percent.

Data and Methodology

The United States International Trade Commission collects and publishes detailed and disaggregated customs data, including the customs value, unit prices, and duties paid in a given eight-digit Harmonized System category from any country for 1989–2002.⁹ The data are further classified by whether the imports entered the United States under a specific preference program (such as AGOA, the CBTPA, Generalized System of Preferences, or NAFTA) or no program (that is, under most favored nation status).¹⁰

7. Other specifications with country-product fixed effects and the like are also tested; they are identified in more detail in the *Results* section.

8. Quotas imposed on other exporting countries, shocks to demand in the United States, and supply shocks in the apparel sector can also be included.

9. Data were obtained from the United States International Trade Commission Web site at <http://www.dataweb.usitc.gov>. The customs value data exclude insurance and freight.

10. Until the CBTPA was implemented in 2000, the main preference scheme under the CBI was duty-free treatment on the portion of the value-added created in the beneficiary country and the inputs (fabric and yarn) imported from the United States. In other words, the most favored nation tariff was paid only on the portion of the inputs imported from third countries. However, all shipments to the United States in the same eight-digit category were compiled together and listed under the most favored nation category. The tariffs reported for a given eight-digit category are thus an average rate of the tariff paid on individual shipments. Because shipment-level data are not available, these averages are relied on here. Since 2000, separate data are available for exports entering under the CBTPA (where the tariff is zero) and under the old scheme (listed as most favored nation). The results in table 5 indicate that the coefficients of the tariff difference variable are not statistically different under the two regimes.

The data are customs value, quantity, and duties collected from each country in the sample for 1989–2002 disaggregated at the eight-digit level of the Harmonized System. The prices received by the exporters, denoted as p_{kt}^i , are unit prices, calculated as the ratio of customs value to the number of units of category k in year t from country i . The average U.S. import price, p_k^{ROW} , is the average unit price received by exporters from the rest of the world, excluding CBI countries.¹¹ Tariffs imposed on the exports of country i in category k in year t , denoted as τ_{kt}^i , were calculated as the ratio of collected duties to customs value. In addition, most favored nation tariffs, τ_k^{ROW} , were calculated as the ratio of collected duties to customs values from all exporters to the United States, excluding beneficiaries of preference programs (such as AGOA, the CBI, Generalized System of Preferences, and NAFTA). Both most favored nation tariffs and U.S. prices vary over products and years but not over beneficiary countries.

The analysis is conducted for the eight largest exporters of apparel to the United States from the Caribbean and Central America: Costa Rica, the Dominican Republic, El Salvador, Guatemala, Haiti, Honduras, Jamaica, and Nicaragua. Of 24 eligible countries under the CBI, only 14 actually exported apparel to the United States during 1989–2002. The data set used here for the eight countries covers 99 percent of the \$82.3 billion worth of apparel imports into the United States from all eligible CBI countries during the period. The data have 211 eight-digit categories, which are grouped into 32 four-digit categories (table 1).

The product dummy variables are at the four-digit level rather than at the eight-digit level.¹² Most eight-digit categories within a four-digit category are very similar, and four-digit product dummy variables are likely to capture most of the effects (quality, margin effects, and demand and supply shocks) targeted

TABLE 1. Sample Statistics

	Mean	Standard Deviation
Ratio of Caribbean Basin Initiative price to U.S. price (percent)	91.28	95.96
Tariff difference (percent) (post-1991)	9.72	7.59
Export value (millions of dollars)	10.02	32.34
Total U.S. imports (millions of dollars)	193.91	496.76
Number of countries	8	
Number of years	14	
Number of eight-digit product categories	211	
Number of four-digit product categories	32	
Number of observations	7,784	

Source: Authors' analysis based on data described in the text.

11. Unit prices are product specific, such as per dozen shirts or pants; they are not measured by weight or amount of fabric used, as some apparel data are reported.

12. Eight-digit categories are extremely narrow and detailed. For example, 6105 is men's or boys' knitted shirts, whereas 61052020 is men's or boys' cotton knitted shirts.

here, whereas eight-digit dummy variables unnecessarily reduce the degrees of freedom of the estimation.

Despite the highly disaggregated data, fixed effects may not be enough to capture systematic differences between products. In particular, heteroskedasticity in residuals is a concern. For example, heteroskedasticity may exist across panels—that is, the variance of the error may be different for each panel (the product k). This may be due to the variation of scale in imports of different products. It could also be due to specific features of a product that systematically affect the error. To correct for heteroskedasticity, a two-step feasible GLS estimation procedure is adopted. In the first step, β is estimated using ordinary least squares and used to calculate the residuals. These are in turn used to construct a consistent estimator for the variance matrix. Each variable is reweighted by the inverse of the commodity-specific residual standard deviations from the variance matrix, and β_{GLS} is estimated.

The fixed-effects GLS estimator allows product-, country-, and year-specific unobserved error terms to be estimated as parameters while allowing the idiosyncratic component of the error to have a more general structure. Robust standard errors can also be used on ordinary least squares estimators. The feasible GLS estimator is more efficient than the fixed-effects estimator obtained by ordinary least squares as the number of panels (that is, the product categories) as $K \rightarrow \infty$, T fixed.

IV. ESTIMATION RESULTS

The results of the main estimation using the full sample are summarized in table 2. As described earlier, equation (3) is estimated using feasible GLS, which provides consistent and efficient estimates. The second column reports results with separate country-fixed, year-fixed, and four-digit product category-fixed effects. The third column presents the results from a similar regression with joint country–year–product category dummy variables. Instead of separate dummy variables for each country, four-digit category, and year (denoted by Ω^i , Φ_k , and Ψ_t respectively), a single dummy variable denoted as Υ_{kt}^i is used. This much more general structure allows for quality effects in category k to vary across years and countries simultaneously. The disadvantage is that it requires additional dummy variables, and it substantially reduces the degrees of freedom.¹³

All the variables have very significant coefficients with the expected signs. The variable of most concern is *Tariff Difference*, which is the difference between the most favored nation tariff imposed by the United States and the preferential tariff enjoyed by the CBI beneficiaries. The coefficient is 0.663 in the second

13. For example, the data set covers eight countries, 14 years, and 32 four-digit product categories. In the first regression, this leads to a total of $51(7 + 13 + 31)$ dummy variables, because one variable from each group is dropped. But in the second estimation, there are $3,584(8 \times 14 \times 32 - 1)$ potential variables. In the actual estimation, many of these are dropped because of collinearity, but 2,413 dummy variables remain. Significantly increased computation time is an additional cost.

TABLE 2. Effect of Preference Margin on Caribbean Basin Initiative Beneficiaries' Export Prices

	All Observations	Quality Controlled
Tariff difference	0.663* (0.056)	0.642* (0.062)
Log of export value	0.042* (0.003)	0.026* (0.004)
Log of total U.S. imports	-0.026* (0.004)	-0.019* (0.005)
Constant	-0.010 (0.072)	0.362 (0.354)
Product group-fixed effects	Yes	No
Country-fixed effects	Yes	No
Year-fixed effects	Yes	No
Country-year-product-fixed effects	No	Yes
Number of observations	7,784	7,784
χ^2	4,585.31*	10,332.94*

*Statistically significant at the 1 percent level.

Note: Dependent variable is the ratio of Caribbean Basin Initiative price to average U.S. price. Numbers in parentheses are standard errors. The second column includes separate product group-, country-, and year-fixed effects; the third column includes a combined dummy variable.

Source: Authors' analysis based on data described in the text.

column and 0.642 in the third column, implying that the CBI beneficiaries capture about two-thirds of the preference margin (or the tariff rent). Another way to interpret this result is to look at the price increase received by the CBI beneficiaries. Although it varies across years, countries, and products, the average preference margin in the sample in 2002 is 13 percent. This means that the exporter price increase due to preferences is about 8.5 percent. The other 4.5 percent is captured by the importers, who now enjoy lower import prices.¹⁴

In a perfectly competitive market with homogeneous goods, the exporters would be expected to capture all this potential rent. The main estimation equation included additional variables to capture market power effects that might explain why the tariff rent is being shared between exporters and importers. The variables are the natural log of the total exports of country i and the natural log of total U.S. imports in category k in year t . The coefficients of both variables are significant. The results in the second column imply that doubling the exports of i (with constant U.S. imports so that the market share of i is also doubled) is associated with a 4.2 percent increase in the relative export prices received. But doubling U.S. imports (with constant exports from i so that its market share is halved) is associated with a 2.6 percent decline in export prices. The coefficients in the third column are smaller, indicating that the additional dummy variables are capturing some of these effects. The results do not depend on the inclusion of the market power effect variables.

14. As mentioned in the *Introduction*, the rules of origin create large administrative costs for compliance and production costs from having to use more expensive U.S. inputs instead of possibly cheaper inputs from third countries. If the CBI beneficiary firms cannot pass these costs onto the buyers, the real benefits of preferential access are likely to be lower than the 8.5 percent price increase.

If both are dropped from the estimation, the coefficient of *Tariff Difference* falls to 0.58 and retains the same level of significance.

Variation Across Countries

The next question is whether the tariff rent captured and export price increase due to preferential access vary across countries. Equation (3) is estimated for each country, with year and four-digit product dummy variables. The coefficient of *Tariff Difference* is reported in the second column of table 3, although the market share variables are included in the estimation. The countries are ordered in terms of decreasing export volumes to the United States in the data set, with the Dominican Republic as the largest exporter and Nicaragua as the smallest.

The results for the three largest exporters are similar: the Dominican Republic, Honduras, and Guatemala capture 72–79 percent of the tariff rent. A similar result is found for Costa Rica, the fifth largest exporter. But El Salvador, the fourth largest, captures 46 percent. When the average preference margins faced by the countries over time are calculated, the Dominican Republic, Honduras, El Salvador, and Costa Rica have similar trade-weighted averages: 10–11.5 percent (after 1991) compared with only 6 percent for Guatemala. This implies that the average export price increases due to preferential market access are 8.5–9.5 percent for the Dominican Republic, Honduras, and Costa Rica but only about 4.5 percent for El Salvador (due to a smaller share of the rents being captured) and Guatemala (due to lower preference margins).¹⁵

TABLE 3. Variation Across Countries, 1992–2002

	Tariff Difference	Total Imports (Millions of Dollars)	Number of Observations
Dominican Republic	0.794* (0.110)	23,250	817
Honduras	0.729* (0.117)	17,226	938
Guatemala	0.719* (0.117)	11,814	1,260
El Salvador	0.458* (0.127)	10,764	1,126
Costa Rica	0.750* (0.171)	9,297	817
Jamaica	-0.692* (0.232)	4,686	411
Haiti	1.315* (0.217)	2,193	533
Nicaragua	0.098 (0.224)	2,101	220
Product-fixed effects	Yes		
Country-fixed effects	No		
Year-fixed effects	Yes		

*Statistically significant at the 1 percent level.

Note: Dependent variable is the ratio of Caribbean Basin Initiative price to average U.S. price. Numbers in parentheses are standard errors. Each estimation includes separate product group- and year-fixed effects and has a χ^2 statistic significant at the 1 percent level.

Source: Authors' analysis based on data described in the text.

15. Detailed country-level data are not presented due to space limitations. They are available from the authors upon request.

The other three countries (which export significantly lower volumes than the top five) exhibit different patterns. Haiti has a coefficient that is larger than but not statistically different from 1, which means that it is capturing all 15 percent of the preference margin. Thus, it is no surprise that Haiti had one of the fastest growing export volumes to the United States over the time period. Nicaragua's coefficient is not statistically different from 0, which means that it receives none of its average 5.7 percent tariff preference rent. The most perplexing outcome is Jamaica's negative and significant coefficient. Jamaica has the worst export performance, with volumes declining from a peak of \$500 million in 1994 to \$120 million in 2002. The decline in export volumes and failure to capture the preference margins should be related. Also, the vast majority of plants in Jamaica are subsidiaries of U.S. firms. The surprising result might be the outcome of transfer pricing issues.

What can explain the different patterns in the capture of tariff preference rents? Larger exporters naturally capture a larger share of the rent. This result is also found in Olarreaga and Özden's (2005) analysis of AGOA preferences in apparel. The category of exports in which these countries specialize also matters. The average export unit price for the Dominican Republic, Honduras, Guatemala, and Costa Rica is about \$58, but the average price for all U.S. imports in categories where these countries export is \$63. By contrast, the average export price for El Salvador is \$37, and the average U.S. import price in these categories is \$44. These values imply that the first four countries, when compared with El Salvador, are specializing in higher value categories and are producing higher quality products relative to average U.S. imports in these categories.

These are consistent with the results of Evans and Harrigan (2002), who emphasize the increasing importance of just-in-time manufacturing and retailing in apparel. By specializing in high-value categories where other product features (such as quality, timely delivery, and production flexibility) become more important, these countries are able to extract better prices from importers. Both Haiti and Nicaragua also specialize in low-price categories, but they perform differently. Haiti's average preference margins are similar to those of the larger exporters, whereas Nicaragua's margins are much lower. This difference indicates that a larger share of Haitian exports enter tariff-free and that Haitian exporters are better at complying with the rules of origin requirements and at taking advantage of the preferences, which requires a certain level of legal and business expertise.

Variation Across Years

Another interesting issue is the variation in the level of the preference margins captured by the exporters over time. The main equation is estimated for each year separately starting in 1992, when the preferences first appear in the data (figure 3), using country and product category dummy variables. All the coefficients on *Tariff Difference* are highly statistically significant, starting with a value of 1.05 in 1992 and declining to 0.685 in 1998 (table 4).

TABLE 4. Variation Across Years

	Tariff Difference	Total Imports (Millions of Dollars)	Number of Observations
1992	1.052* (0.289)	3,084	458
1993	0.787* (0.207)	3,808	502
1994	0.812* (0.198)	4,367	527
1995	0.686* (0.192)	5,322	596
1996	0.728* (0.173)	5,927	629
1997	0.658* (0.182)	7,529	661
1998	0.685* (0.192)	8,219	673
1999	1.183* (0.203)	8,765	659
2000	1.287* (0.202)	9,570	661
2001	0.592* (0.156)	9,486	650
2002	0.815* (0.163)	9,474	628
Product-fixed effects	Yes		
Country-fixed effects	Yes		

*Statistically significant at the 1 percent level.

Note: Dependent variable is the ratio of Caribbean Basin Initiative price to average U.S. price. Numbers in parentheses are standard errors. Each estimation includes separate product group- and country-fixed effects and has a χ^2 statistic significant at the 1 percent level.

Source: Authors' analysis based on data described in the text.

One explanation is the NAFTA effect: these are the years when NAFTA entered into force, which led to Mexico becoming a significant competitor to CBI countries, the only countries with preferential access to the U.S. apparel market until NAFTA.¹⁶ However, the rents captured by the beneficiary countries seem to have sharply increased in 1999 and 2000 before the CBTPA went into force. In fact, the beneficiaries seem to be capturing all the tariff rents, because the coefficient is larger than but not statistically different from 1. The coefficient is 0.592 in 2001 and 0.815 in 2002. But the net benefit stays the same, because preference margins also increase due to the CBTPA (figure 3). For example, the average preference margin in 2002 is 13 percent, which means that the average export price increase due to preferential access is still about 10.5 percent.

The beneficiaries capture a larger share of the rents under the original CBI regime (71 percent) than they do under the new CBTPA regime (64 percent) (table 5).¹⁷ However, the average preference margin under the old regime is 9.5 percent compared with 12.6 percent under the CBTPA. This means that the average increase in export prices due to preferences is 6.7 percent under the old regime and 8.1 percent under the CBTPA. This once more explains why the CBI countries were so keen on implementing the CBTPA.

16. As mentioned earlier, the competition from Mexico actually led the CBI beneficiaries to extensively lobby the U.S. government to implement the CBTPA and greatly increase CBI benefits while relaxing the rules of origin requirements.

17. The CBTPA portion of the data includes only the exports that enter under zero tariffs.

TABLE 5. Effect of the Caribbean Basin Initiative (CBI)

	1992–2000 (CBI)	2001–2002 (CBTPA)
Tariff difference	0.709* (0.071)	0.642* (0.166)
Log of export value	0.036* (0.004)	0.034** (0.008)
Log of total U.S. imports	–0.019* (0.005)	–0.009 (0.012)
Constant	–0.014 (0.084)	–0.383 (0.259)
Product group-fixed effects	Yes	Yes
Country-fixed effects	Yes	Yes
Year-fixed effects	Yes	Yes
Number of observations	3,890	986
χ^2	2,441.53*	1,432.12*

CBTPA, Caribbean Basin Trade Partnership Act of 2000.

*Statistically significant at the 1 percent level.

Note: Dependent variable is the ratio of CBI price to average U.S. price. Numbers in parentheses are standard errors. Each estimation includes separate product group-year- and country-fixed effects.

Source: Authors' analysis based on data described in the text.

Impact of Quotas

The final question addressed here is the impact of U.S. apparel quotas (imposed on third countries, mainly Asian countries such as China, India, and the Republic of Korea) on the export prices and tariff rents received by the CBI beneficiaries. Because quota data and import data (with unit prices and preference programs) are collected under different classification schemes and in most cases a quota category covers multiple eight-digit categories and the coverage might vary by exporting country, the data had to be adjusted. First, a list of the top 16 apparel exporters to the United States that face significant quotas was compiled.¹⁸ Second, data on the country-level quota size and the fill rate (assumed to be the same for all Harmonized System categories within that quota category for that country) were collected. Third, various measures of quota restriction were constructed to analyze the impact of the Multifibre Arrangement regime on the CBI beneficiaries. Fourth, equation (3) was estimated for the sample 1998–2002 with country-fixed, year-fixed, and four-digit product group-fixed effects (table 6).

The first variable is *percent of Exports from Quota Countries*. It has a mean of 52.2 percent and is the market share of the quota countries for a given year in a given Harmonized System category. The market share of quota countries has no significant impact on the prices received by CBI beneficiaries. The second variable, *percent of Exports under Quotas*, is the total value of imports entering under quotas, whether they are binding or not. It has a mean value of 22 percent

18. These are China, Turkey, India, Pakistan, Bangladesh, Sri Lanka, Thailand, Vietnam, Cambodia, Malaysia, Indonesia, the Phillipines, Macao (China), the Republic of Korea, Hong Kong (China), and Taiwan (China). The others in the top 20 exporters of apparel are Mexico, Canada, and CBI countries.

TABLE 6. Effect of Quotas

	Percent of Exports from Quota Countries	Percent of Exports under Quotas	Percent of Exports under Binding Quotas
Tariff difference	0.656* (0.056)	0.661* (0.056)	0.645* (0.056)
Quota restriction variable	0.021 (0.019)	0.066* (0.022)	0.078* (0.037)
Product group-fixed effects	Yes	Yes	Yes
Country-fixed effects	Yes	Yes	Yes
Year-fixed effects	Yes	Yes	Yes
Number of observations	3,883	3,883	3,883
χ^2	2,679.96*	2,690.31	2,682.96*

Statistically significant at the 1 percent level.

Note: Dependent variable is the ratio of Caribbean Basin Initiative price to average U.S. price. Numbers in parentheses are standard errors. Each estimation includes separate product group-, year-, and country-fixed effects.

Source: Authors' analysis based on data described in the text.

and a coefficient of 0.066, which implies that CBI countries receive about 1.3 percent higher relative prices in an average category where quotas are imposed on other countries. This is an important benefit of preferential access. Finally, a third variable, *percent of Exports under Binding Quotas*, is constructed, with a quota defined as binding if the fill rate is above 80 percent. The mean value for this variable is 7.2 percent, and the coefficient is 7.8 percent, which is the relative price increase obtained by CBI beneficiaries due to binding Multifibre Arrangement quotas.

These different results imply that the quotas and other nontariff barriers imposed on a group of countries have an important effect on the prices received by other countries, especially the beneficiaries of preferential market access. These results are intriguing and need to be further explored.

V. CONCLUSION

The theoretical literature emphasizes that trade policies should be evaluated by looking at their effect on prices rather than on the value of trade. However, this rarely occurs empirically, except in the pass-through literature and recent work on regional agreements by Winters and Chang (2000, 2002). The CBI preferences in apparel are ideal for the analysis of these issues. First, because of barriers imposed on excluded countries, these preferences are highly valued and heavily utilized by the beneficiaries. Second, detailed and disaggregated unit value and quantity data of more than a decade are available. When country-, year-, and product category-fixed effects are used, the effects of other variables (quality changes, exchange rates, and the like) can be isolated, and the focus can shift to the price effects of preferences. This has not been done as extensively as in the literature.

The results here indicate that CBI beneficiaries capture about two-thirds of the preference margin, which causes their relative prices to increase by about 9 percent. The net benefits to exporters are likely to be lower, because they face additional administrative and production costs to comply with the rules of origin. The rest of the benefits go to importers through lower prices. More interesting, strong variation occurs over time and across countries. For example, NAFTA has a negative effect, whereas specializing in higher value products has a positive effect on capturing the preference margin. Furthermore, eliminating Multifibre Arrangement quotas is likely to significantly decrease the benefits of preferential access.

There are several implications for exporters from beneficiary countries. First, they need to be aware that preferences do not necessarily have a positive effect on the prices they receive. Especially if they specialize in low-quality or low-price categories, they are likely to capture only a small share of the preference margin. Second, the price effect of preferential access is quite sensitive to the extent of the barriers imposed on the excluded countries. As these barriers are removed, the preferences are going to become less valuable.

Several issues remain. The results here indicate that the prices received by the excluded countries in the United States relative to prices of beneficiaries have declined. But how do the prices that they obtain in the United States change relative to the prices in the world markets? This is especially important if such unilateral preferences harm excluded countries. Also, the effect of preferences on quality upgrading has not been explored empirically despite the fact that policy-makers often claim positive effects.

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