

# **The Apparel and Textile Industries after 2005: Prospects and Choices**

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# **The Apparel and Textile Industries after 2005: Prospects and Choices**

## ***I. Introduction***

On January 1, 2005, the quota system that limits textile and apparel imports into the United States and other nations end for all member countries of the World Trade Organization (WTO). Not surprisingly, there has been widespread investigation into the likely impact of this monumental liberalization of international trade. A brief survey from the over 43,000 Google hits related to “textile apparel quota” demonstrates, however, a prevailing notion among scholars, industry groups and government agents: exports from low wage countries in general, and China and India in particular, will grow rapidly, virtually wiping out the textile and apparel sectors of the US and many other established suppliers. The United State Trade Commission released its own report in January 2004 on the *Assessment of the Competitiveness of Certain Foreign Suppliers to the U.S. Market* concluding:

*China is expected to become the “supplier of choice” for most U.S. importers (the large apparel companies and retailers) because of its ability to make almost any type of textile and apparel product at any quality level at a competitive price... Although many countries may see their share of the U.S. market decline, a large number of countries likely will become second-tier suppliers to U.S. apparel companies and retailers in niche goods and service.*

The conventional wisdom reflected in this statement hinges squarely on basic economic principles of international trade: factor prices, exchange rates, shipping costs and tariff rates. When sourcing decisions faced by global retailers and manufacturers are made strictly based on these traditional forces, it becomes obvious why so many producers are left wondering how to protect their present share of the huge US or EU markets. In particular, garment workers, their families and communities within the US

and other developed countries appear most vulnerable to lower cost developing nations no longer bounded by quotas.

The reality of modern sourcing strategy for retail goods may not be so straightforward. Our research suggests that factors driving textile and apparel sourcing decisions are much more nuanced than is suggested by these dire forecasts. Traditional decision factors alone can not explain the existence of certain phenomena within the industry, like the survival of relatively high-cost, quick-turn-around apparel sectors in New York and Southern California<sup>1</sup>, or Bangladesh's domination of the European import market for T-Shirts, but not the U.S. market.<sup>2</sup>

The continued survival of apparel manufacturing in Los Angeles and New York raises the critical importance of supplier characteristics that go beyond the traditional cost and quality components that have gained significance in retail strategy and deserve attention in the post-2005 debate. These "modern" factors, which include inventory risk, product diversity, replenishment and service, will remain influential for the private retail decision-makers even after quotas are lifted. By responding to these additional considerations, apparel and textile producers have some control over their fate.

The very different fates of Bangladeshi T-shirts in the European and U.S. markets serve as a reminder of the continuing role that public policies will play in shaping sourcing patterns. Tariffs will remain even after quotas are removed and can be used as a control mechanism to strategically tilt supply patterns. Bangladesh, due to its status as a "Least Developed Nation" enjoys free entry into the EU on apparel that undergoes two stages of production. In the case of T-shirts, this is knitting and sewing, both well within the capability of Bangladeshi producers. This competitive advantage allows the country to be the leading source of T-shirts into the EU, a status unrealized in the U.S. market where Mexico and Caribbean nations enjoy duty free T-shirt imports and Bangladesh does not. Clearly, then, through the forging of bi-lateral and regional trade agreements

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<sup>1</sup> Employment in apparel within New York City was 45,800, Southern California 96,700 in 2002 (Bureau of Labor Statistics, Current Employment Statistics).

<sup>2</sup> U.S. imports of T-Shirts from Bangladesh were not "quota-constrained" in 2003. Cotton T-shirts (not including underwear) fall within quota categories 338 and 339, which are together assigned a single quota level. T-shirts of man-made fibers fall within 638 and 639, and again receive a single aggregated quota. Undershirts of cotton or man-made fiber fall into 352 and 652, respectively, together receiving a single aggregated quota. In 2003, Bangladesh had quota fill rates of 87.1%, 78.9%, and 80.8%, respectively.

that reduce or eliminate tariffs for certain trade partners, governments will retain the opportunity to impact global retailers' sourcing decisions.

This article considers the impact of quota removal in light of the new market forces cited above, particularly changes in the relation of retail-apparel-textile supply chains, and the continuing role of public policies affecting trade flows. In doing so, we argue that the volitional choices of private and public actors remain important in the post-2005 period. These choices will affect future market share for apparel suppliers in close proximity to the U.S. (e.g. Mexico, Caribbean nations) and EU (e.g. Eastern Europe, northern Africa, and Mediterranean nations) markets, as well as employment within the US and EU textile and apparel sectors. These choices will also impact the fate of other developed and developing nations hoping to sustain or improve their nation's competitive positions in a quota-less world.

## ***II. Background***

### **The Rise of the Global Market**

Since the production of mechanical sewing machines in the 1850's, developing countries have seen the export of apparel products as a major pathway of economic development. Sewing apparel products has always been and remains a labor-intensive activity while textile production has been a capital-intensive industry since it was first mechanized in England in the later part of the 18<sup>th</sup> century and later in this country in New England (Rose 2000). Today spinning yarn and weaving cloth is a highly automated, very capital-intensive industry producing very high quality fabrics in nearly lint free plants. Modern textile plants worldwide use comparable machinery made by the same small group of equipment makers; the difference in product and its quality is then due primarily to worker training and process procedures and control.

Apparel manufacturing, on the other hand, depends much less on capital investment and more on the skill of the individual workers in the sequence of operations required in apparel production. In the U.S., apparel manufacturers have always looked for a stable low-wage work force. In the early part of the 20<sup>th</sup> century U.S. apparel was

cut and sewn primarily in big cities relying on a workforce composed mostly of recent immigrants. Such groups had a strong work ethic but were willing to work for low wages, because of their limited opportunities for finding other employment. In the 1920's and 1930's textile production and large segments of the apparel industry went to the south looking for lower wage rates, a less unionized workforce, and newer plants than those in New England and in the larger cities. The desired workforce was found in the small stable rural southern towns.

After WWII, international trade in all products began to expand with more reliable shipping and better communications. More clothing began to be made offshore, continuing the long-standing trend of seeking out the low-cost supplier. In 1962 the Long Term Arrangement Regarding International Trade in Cotton Textiles (LTA) attempted to bring order concerning access to the U.S. market. In 1974 the more sophisticated Multi-Fiber Arrangement (MFA) was created under The General agreement on Tariff and Trade (GATT). It provided the framework for international trade in apparel for almost 20 years until its expiration in 1994. The logic of MFA was to provide the textile and clothing industries in developed countries time to adjust to more competition from developing nations, while at the same time, fostering free trade. Essentially, member nations could maintain quotas established prior to the agreement, but were constrained from expanding those quotas by complicated restrictions.<sup>3</sup> For example, under the MFA, the annual growth rates applicable to these quotas ranged from less than 1 percent up to 10 percent but were mainly in the area of 3 to 6 percent.

## **The ATC**

On January 1, 1995 the MFA gave way to the Agreement on Textile and Clothing (ATC) under GATT. The ATC seeks to eliminate quotas through a highly complicated method of integration that entails a gradual four-step elimination of quotas so that all textile and apparel products stand quota free at the end of the 10-year period. At each

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<sup>3</sup> On January 1, 1995, the United States, Canada, the European Union (15 countries) and Norway had a total of 81 restraint agreements with WTO Members, comprising over a thousand individual quotas. Moreover, there were 29 non-MFA agreements or unilateral measures imposing restrictions on imports of textiles and apparel.

stage, products amounting to a defined minimum percentage of the country's textile and apparel import volume in 1990 (base volume) are to be taken off quota (see Table 1). Furthermore, the set of integration-bound products during each phase must include minimum shares in each of four product categories; tops and yarn, fabrics, made-ups, and clothing. The first three phases have already taken effect, cumulatively eliminating the quotas on 51% of each member nation's base volume. The last step in this process will occur on January 1, 2005. The remaining quota-constrained products, which represent 49% of 1990 volume trade, will then become quota free.

The ATC is built upon the same classification structure utilized under the MFA. First, every apparel or textile product imported into the U.S. is described by a 10 digit Harmonized Tariff Schedule of the United States (HTS) code based on the six digit international Harmonized Schedule (HS). The additional four-digit suffix allows the U.S. to track trade at a level of detail not possible under the standard international HS system<sup>4</sup>. As an example, HTS codes distinguish between men's cotton blue denim pants (6203424010) and men's cotton corduroy pants (6203424005). Next, a number of similar products are aggregated into an MFA Quota Category. To illustrate, the two distinct types of men's cotton pants above are binned together with 25 other products (i.e., HTS codes) to comprise quota category 347, "Men's and Boy's Cotton Trousers, Breeches, and Shorts". It is at this level that quotas act to restrict import volumes into the U.S. from a given country. As a result, the import volume of men's denim jeans from China, for instance, has a direct effect on the potential number of corduroy pants imports.

One of the clear intentions of the ATC, like the MFA before it, was to cushion and backload the impacts of quota elimination into the future. Besides the disproportionate 51% of volume still to be removed, the potential impact of the fourth phase is exaggerated by two other factors. First, during the initial two phases, developed countries took advantage of the lack of precision in the wording of the agreement. Because the ATC required the integration of a designated percentage of *all textile and*

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<sup>4</sup> Data of apparel imported into the U.S. is available on the U.S. Department of Commerce's Office of Textile and Apparel (OTEXA) WEB site for each HTS coded item from every exporting country. The current as well as the past quota fill rates for each MFA Quota Category is also available for each exporting country.

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*apparel imports*, not a percentage of the *previously restricted imports*, the importing countries integrated products that were not restricted previously.<sup>5</sup> Indeed, in the case of the US and the European Union, the percentage of imports of products not covered by restrictions in 1990 (the base year used for integration), was about 34% and 37% respectively. Thus, for these countries, it was possible to meet obligations in the first two stages without significantly removing restrictions.<sup>6</sup>

The second factor that may amplify the impact of the final integration is that importers were careful through the first ten years to liberalize largely in the lower value products, thus protecting their own value-added clothing industries. For example, in the first phase of quota removals, 70% of the products integrated were yarns and fabrics.<sup>7</sup> The value of the products integrated by the EU and the US in the first phase was 8.7% and 6.62% respectively of total textile and clothing imports (to achieve 16% physical volume requirement) and in the second phase 12.92% and 10.73% respectively (to achieve 17% physical volume requirement).<sup>8</sup> Thus, each producing nation has yet to witness the effects of quota removal on any major product groups vital to its domestic industry. For the U.S., this means every notable category will only now lose quota protection, including cotton pants, shirts and T-shirts (see Table 2).

Along with the phase out of quotas by 2005, the ATC also required that during the transition period, member nations increased the growth rate of quota covered products that had not been released. Once again, the rate of required increase in “quota constrained” product categories was set out in the agreement. This means that in some cases, the required annual quota growth rate would exceed the growth in demand for the quota, leading to the de facto elimination of quota restrictions even before those categories were totally released via integration.<sup>9</sup>

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<sup>5</sup> Multi-fibre Arrangement and the Agreement on Textiles and Clothing [www.foei.org/trade/activistguide/mfa.htm](http://www.foei.org/trade/activistguide/mfa.htm)

<sup>6</sup> Agreement on Textiles and Clothing - chapter 14

<sup>7</sup> Multi-fibre Arrangement and the Agreement on Textiles and Clothing [www.foei.org/trade/activistguide/mfa.htm](http://www.foei.org/trade/activistguide/mfa.htm)

<sup>8</sup> Bhattacharya and Rahman, 2002.

<sup>9</sup> For example, if the annual growth rate for a quota is fixed under a bilateral agreement at 6%, it will have to be increased by 16% for the first three years of ATC (i.e. annual growth rate will be  $6\% \times 1.16 = 6.96\%$  in 1995, 1996 and 1997); 25% for the next four year (i.e. annual growth rate will be  $6.96\% \times 1.25 = 8.70\%$  in 1998, 1999, 2000 and 2001); and 27% for the last three years (i.e. annual growth rate will be  $8.7\% \times$

## **Tariffs and Regional Trade Agreements**

Although quotas end at the end of 2004 under terms of the ATC, tariffs established within the ornate system of bilateral apparel and textile agreements between countries will remain for a long time. Tariff agreements are then overlaid by an equally complex set of regional trade agreements that provide participants with full or partial relief from their partners' standard tariff rates on certain products under certain conditions.<sup>10</sup> Furthermore, these pacts may include provisions whereby imported garments meeting specific criteria do not count against an exporter's quota. As a result, particular supplier nations with duty free or quota free benefits may enjoy a substantial competitive advantage over competitors excluded from similar arrangements.

For the U.S., the North American Free Trade Agreement (NAFTA) is the most widely known regional treaty. Signed in 1994, NAFTA has eliminated quotas and tariffs on most apparel moving between member countries, provided the products were assembled from yarn originating in a member country.<sup>11</sup> Equally important is the Caribbean Basin Trade Partnership Act (CBPTA), enacted in 2000. The 24 beneficiary countries (see Appendix I) can also receive duty free and quota free access to the U.S., this time provided that garments are constructed strictly from U.S. yarns and textiles. As will be discussed later, this qualification has vital implications for the American textile sector. A third example is the African Growth Opportunity Act (AGOA) of 2000, which closely resembles the CBPTA in structure and aims to encourage investment in 36 sub-Saharan nations (Appendix I). Besides these and other regional treaties, the U.S. has engaged in separate bi-lateral agreements with Israel, Jordan and others that ultimately provide some combination of duty or quota relief to producers in these partner nations.

The EU, for its part, has its own complex web of trade agreements. Like the U.S. the greatest benefits seem reserved for nations in close proximity to the European market

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1.27 = 11.05% in 2002, 2003 and 2004). See Agreement on Textiles and Clothing - Article 2 Paragraph 13 & 14

<sup>10</sup> See Claire Chiron, "An Overview of Apparel and Textile Quota, Tariff and Trade Agreements," Harvard Center for Textile and Apparel Research, Working Paper, available at [www.hctar.org](http://www.hctar.org) for a detailed look at the trade agreements dictating tariff and quota rules for textile and apparel entering the U.S.

<sup>11</sup> This type of criterion is known as "yarn-forward", stipulating that each value added step, beginning with the creation of yarn forward to weaving, cutting and sewing, must be conducted in a NAFTA country. In the case of man-made fibers, the qualifying rule of origin for a garment is fiber-forward.

and the world's under-developed regions. Of particular note are three arrangements illustrating this, all of which provide duty free and quota free access to the EU apparel market: the Euro-Mediterranean Partnership, which involves twelve Mediterranean and Middle Eastern nations (Appendix II); the Stabilization and Association Agreement,<sup>12</sup> which includes free trade terms for five western Balkan nations; and the 2001 Everything but Arms Initiative, benefiting the 50 Least Developed Countries (Appendix II).

### **The Special Case of China**

When China sought to become a WTO member in the late 1990s, one of the major issues in contention in the “accession” agreement was apparel and textiles. A set of conditions apart from the ATC was negotiated regarding the phase out of quotas from China. Although the overall ATC timetable applies to China, several features of the 1997 US/China bilateral textile agreement differ.

First, the agreement set the quota growth at an average of 1% annually (much lower than the growth rates for non-released categories under the ATC). This meant in effect that when China became a WTO Member in December 2001, even with the catching up of the accelerated growth rates from the phases that had already occurred, quota for products only increased slightly in the period before 2005. Indeed, based on the same rules as above, the quota growth rate will increase to merely 1.16%, 1.45% and 1.84% at each stage respectively (Tse and Ip 2002). The second difference concerns the presence of more extensive “safeguard” measures between the US and China that provides the US with rights to re-impose quotas under specified circumstances. Under the separate Memorandum of Understanding between the U.S. and China, a bilateral consultation mechanism remains in affect for four additional years beyond the end of quotas for WTO countries (through December 31, 2008).<sup>13</sup> This safeguard mechanism allows the U.S. to seek to extend quotas with China for specific goods where the elimination of such

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<sup>12</sup> All apparel and textile exports from participating countries enter the EU duty and quota free, except for textiles from Serbia and Montenegro on which tariffs still apply. (See Appendix II for a list of beneficiary countries.)

<sup>13</sup> Both countries initialed the Memorandum of Understanding regarding China's accession to the WTO on February 1, 1997.

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restrictions would result in "...market disruption, threatening to impede the orderly development of trade between the two countries..." (USITC 1999: 8-12). These safeguard provisions have already been invoked a number of times, most recently in regard to an alleged "surge" of imports of bras.<sup>14</sup>

### **III. The Structure of Global Sourcing**

#### **The Textile and Apparel Industry Today**

From 1989 to 2003, apparel imports to the U.S. rose from \$21B to \$61B, now representing about 60% of all apparel sold in the U.S. Figure 1 chronicles U.S. apparel consumption over the last fifteen years from both foreign and domestic producers. It should be noted that an additional \$5.2 billion of apparel was produced domestically but exported to countries throughout the world.<sup>15</sup> Figure 2 presents the national sources of the \$61 billion worth of apparel imported to the U.S. in 2003. The drivers for sourcing will be discussed below, but it is worth pointing out here both the national diversity of import sources, and also the concentration in certain areas, particularly Mexico, so-called Caribbean Basin nations (a grouping that also includes Central America) and China and Asian sources.

Not surprisingly, the growth in apparel imports has been accompanied by a steady reduction in both U.S. employment and output within the apparel and textile sectors (see Table 3). From the period 1989-2002, textile production in real dollar output terms declined by an average of 3.3% per year and apparel production by about 3.4%. Employment declined even more rapidly during those periods for both textile and apparel, reflecting both shifts towards domestic production of higher value products and increases in productivity (particularly for the textile industry). Despite these declines, a large number of workers remain employed in both industries, leaving much at stake as the dynamics of the global textile and apparel market change on January 1, 2005.

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<sup>14</sup> Neil King and Dan Morse, "Bush Sets Quotas on Some Imports of Chinese Goods," *Wall Street Journal*, 11/19/03.

<sup>15</sup> Office of Textile and Apparel, International Trade Administration, Export Market Report (available at <http://otexa.ita.doc.gov/scripts/exphist.exe>). A total of \$10.5 billion of textile products were exported by the U.S. in the same year.

## **Sourcing Decision Makers**

Discussion of the future of apparel and textile industries often focuses at this national level of trade flows. But these flows reflect decisions of private actors along supply chains (retailers, and producers of textiles and apparel) that operate within the restrictions of national and international trade and other public policies. One must understand how private decisions lead to observed flows of garments in order to forecast the post-2005 market.<sup>16</sup>

Making sourcing decisions in the global apparel market is a daunting task. Due to factors including language and custom barriers, communications hurdles, and the sheer number of producers scattered across the world, U.S. retailers have had to change the way they approach the world market. Some large retailers have established their own buying offices overseas to administer the outsourcing of their private label products. Others work with large and sophisticated independent sourcing agents to handle this intricate task.

Most American manufactures of branded or private label apparel products have developed contacts in apparel exporting countries. Some U.S. companies have opened plants offshore that they own jointly with local owners. Most often they seek indigenous cut and sew contractors, or they go to organizations that provide completed apparel products, the so-called full package providers. There are currently very few other nations' branded apparel products that are exported into the U.S. market. For every Giorgio Armani one might think of there are more brands such as Levi, Lee, Wrangler, and private labels such as Brooks Brothers, Lands' End and L.L.Bean. It is tempting to think of clothing from any of the last six as American, and apparel with the Armani tag as Italian. However, although the design and merchandising of the product is likely to be American or Italian, the actual garments are often sewn outside of the U.S. and Italy.

The evolution of one of the foremost sourcing firms illustrates changes in the underlying drivers of sourcing patterns. Li & Fung (Trading) Ltd. of Hong Kong is one

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<sup>16</sup> A study from 1993 by the U.S. Customs Service analyzing the top 100 apparel importers found that 48 percent of top importers were retailers; 22 percent designers; and about 20 percent U.S. based manufacturers. The remaining group were made up of wholesalers and other intermediaries not involved in either design, marketing, or production decisions (Feenstra 1998; Gereffi 1999). Wholesale intermediaries declined further as a group in the supply chains with the rise of lean retailing (Abernathy *et. al.* 1999).

of the largest international sourcing agents, acting as the link between its customer base (major retailers and apparel companies) and an international supply network.<sup>17</sup> Li & Fung was founded in 1906, originally as an exporting agent of porcelain and silk from China. Following World War II, it began to focus on export of garments, toys, and other manufactured goods. As an important element of its garment exporting business, the company gained expertise in buying and selling quotas from Asian markets for shipment into the U.S. in the 1970s and 1980s. As a buying agent and broker in quotas, it established relationships with more than 2000 Asian suppliers and links forward in the supply chain to manufacturers and retailers. In the late 1980s and 1990s, the company took advantage of its network of Asian suppliers and its growing facility with logistic management to offer U.S. retailers an efficient means of sourcing products in Asian nations through the auspices of Li & Fung (Fung 1998). With the growth of new methods of retailing (see below) and greater pressure from other competitors (intermediaries as well as retailers establishing their own sourcing footholds), its logistics capacity became a central element of the company's business, and evinced by its 2003 annual report which describes its core business as "...managing the supply chain for high volume, time sensitive goods."

By 2001 the company had an estimated 7500 suppliers in about 40 countries around the world. In recent years as more and more U.S. manufacturers have turned to full package providers to help them with sourcing problems, Li & Fung and other sourcing agents have moved into an even-more expanded list of services including: product development, raw material sourcing, production planning, factory sourcing, manufacturing control, quality assurance, export documentation, and shipping consolidation. Perhaps indicative of the next step of evolution, the company recently entered a licensing agreement with Levi Strauss & Co. in which they will design, manufacture and market men's tops for the U.S. market under various Levi's<sup>®</sup> labels, including Levi Strauss Signature<sup>™</sup> branded jeans to U.S. mass marketers.

Sourcing choices arise from the drivers of profitability: cost considerations related to acquiring factors of production balanced against factors affecting revenue, including

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<sup>17</sup> For background, see Loveman, and O'Connell 1996; Fung 1998; Tanner 1999; Hagel and Brown 2001.

pricing, marketing, and distribution. In large part, these lead private actors to weigh familiar issues of labor, material, and shipping costs as well as costs related to tariffs and the presence of quotas in selecting sources. However, as will be demonstrated, modern supply chain dynamics are adding factors to this traditional list regarding which party will hold the sizeable inventory risk.

### **Labor, Material and Shipping Costs**

Because apparel manufacturing is labor intensive, wage rates are clearly a major factor in sourcing decisions. This gives an immediate competitive advantage to producers in developing countries, including China and India. This advantage, however, is not reserved for Asian countries alone, as Table 4 demonstrates. Many African nations, including Madagascar and Kenya, have among the world's cheapest work forces, but are not major competitors in exporting apparel to the U.S. Mexican labor, in contrast, is much more expensive, yet retains a very prominent place in this market.

Given the fact that not all apparel products require the same amount of labor, the benefit arising from low wages is magnified on labor-intensive products. This can be seen in comparing labor costs across different types of garments and sources of production. Table 5 compares the factor costs associated with producing two types of garments: a single pair of men's jeans and a cotton ring spun T-shirt. We compare the cost of production in Mexico, the Caribbean, and Coastal China for each case.

Allowing for differences across the producers in terms of wages and productivity (labor cost per garment), China's low wage rate still leads it to have the lowest cost associated with cutting, assembling and finishing the garment relative to the other two cases.

Of course, labor costs alone do not determine the total cost of an apparel product landing on U.S. shelves. A second factor cost highlighted in Table 5 is the price of procuring fabric. In fact, this expenditure may be even more responsible for variation among different supply sources than labor, as it is for jeans. Clearly, producers in close proximity to cotton textile manufacturers have an advantage over those far away. For example, it is more costly to utilize American denim in Columbian jeans factories than in

Mexican shops. Furthermore, nearness to inexpensive textiles is an even greater advantage. China, for example, which has a growing cotton textile industry of its own, is able to secure lower cost fabric than its competitors using U.S. fabric.

Shipping cost is the final major factor cost associated with apparel imports. Proximity to retail markets in the U.S. or EU matters in this elementary regard, at the very least. (Later it will be shown how it matters even more for other reasons.) Although the \$.05 per garment difference between shipping a pair of jeans from Mexico rather than China may at first seem insignificant, it may not always be so, especially in the case of inexpensive products where the difference represents a meaningful percentage of the product's overall cost.

So after considering the labor, material, and freight, it is easy to suggest that countries like India, China and their neighbors could grow to dominate the U.S. market once quotas no longer restrict them. This seems even more plausible for products such as dresses, where the cost variation is especially large. Despite the distance from the U.S., any shipping cost disadvantage is quickly erased for these producers through the combination of low wages and inexpensive fabric from local textile makers. This is not the whole story.

### **Direct Policy Costs**

The total cost for a pair of jeans landing on U.S. soil does not end with the components listed in Table 5. In fact, the policy costs enumerated in Table 6 can often comprise the largest cost differentials among producers. In the jeans example, duty and quota charges account for 46% of the total landed cost of from a coastal Chinese producer in 2003.

The first policy cost illustrated in Table 6 arises from quotas. Each nation determines the method for distributing the quotas it has available given its bilateral agreements with trading partners. The methods for doing so vary across different countries (Krishna and Hui Tan 1998). For low wage countries with excess capacity, quota volume into the lucrative U.S. or EU markets becomes a source of revenue as well as opportunity to attract additional companies seeking sourcing opportunities. As a

result, global manufacturers seeking to fill U.S. retailer orders from a producer in China pay substantial fees for acquiring quota. In other words, quotas on constrained product categories become a tax on goods headed to the U.S. market.<sup>18</sup> As a result, for the jeans in Table 6, Mexico and Nicaragua inherit the mantle of low cost supplier from China due to their preferential treatment through NAFTA and the CBPTA, respectively.

Although quota-related costs will drop out of the equation after January 1, 2005,<sup>19</sup> it is worth reiterating that tariffs will remain in place. Table 6 makes it clear that this second policy-driven expense can also be influential, as duty rates on U.S. bound apparel can reach as high as 30%. This can provide a considerable advantage to countries covered by regional trade agreements like those discussed earlier which reduce or eliminate this expense. In the case of jeans presented here, even without quota costs, Mexico pulls to within 1% of China because of its membership in NAFTA. For T-Shirts, the \$0.29 duty that applies to Chinese imports dramatically changes the analysis. This same pattern would be recognized in the total cost supplier comparisons for a significant number of apparel products. Furthermore, because most of the countries partnered in U.S. trade agreements come from the Western Hemisphere, the net effect of the current U.S. tariff structure is a shift in market share toward Mexico, the Caribbean Basin and South America for the many products fitting this cost profile. Likewise, European imports of these same products will likely originate in neighboring Mediterranean countries or least-developed nations such as Bangladesh. Again, this factor will not disappear on January 1, insuring that many products will continue to be supplied according to current trends, and that products from more proximate sources will remain competitive.

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<sup>18</sup> This raises a potential problem for the Chinese government which stands to lose, according to our estimates, around \$1 billion annually in hard currency once quotas are lifted. This loss of revenues have led some to speculate that there will be pressure to find alternative sources of dollars and other international currency to compensate for the loss in revenues. The recent announcement by the Chinese government of the imposition of an export tax (see below) in part may arise from this motivation.

<sup>19</sup> The Chinese government announced in December 2004 that it will impose an export tariff on textiles and apparel products after expiration of quotas. When implemented, the new tax will add additional policy-related costs to Chinese exports. It is unclear at this point how much it will raise costs relative to those associated with the costs of purchasing quotas under the former system.

## **Lean Retailing and Replenishment**

The factor costs and policy costs described thus far once may have been the only forces driving international retailers' and manufacturers' sourcing decisions. As the role of the manufacturer in the supply chain has changed, though, so too has his objectives. Many of these changes have been customer driven; that is to say, retailers are undergoing revolutionary changes of their own, and in turn, demanding more from their suppliers.

Modern retailers no longer have warehouses full of apparel products ready for the selling floor. Rather they have become "lean retailers" owning just the products on the selling floor. As a result, suppliers' warehouses and distribution centers act in many ways as virtual warehouses and distribution centers for the retailers. At least once a week, most often on Sunday evening after the weekend sales are known, retailers have their computer inventory system order replenishment products from their suppliers. Products are ordered at the stock keeping unit (SKU) level. For example, an order will be placed with a manufacturer for a specific number of their men's jeans of a given style, color, fabric weight and finishing treatment, waist size and inseam length. The order goes to the manufacturer's computer and is generally received on that Sunday evening. The retail order requires that the jeans be placed in identified cartons for each of the retailer's stores, and the order is to be delivered to the appropriate retailer's distribution center by Wednesday of the same week. The cartons must be identified with the appropriate bar codes identifying the specific store to which it is to go. The jeans must be floor-ready, that is, they must be ready to be placed on the retailer's floor with appropriate price marked as they are taken from the packing carton. In all likelihood the jeans will not be touched from the time they are placed in the shipping container at the manufacturer's distribution center until they arrive at the store ready to be placed on a table for sale on Thursday morning. In fact, the outside of the carton will be touched only when truck trailers are loaded and unloaded. The sorting from supplier's trailer to trailer destined for specific stores is fully automatic.

The processes and the paperwork associated with the products must be completely understood by the manufacturer and the retailers and conform to well known industrial

standards.<sup>20</sup> These added services place significant new costs on suppliers, in essence shifting risk from retailers backwards onto their suppliers (Abernathy et. al. 1999).

For the supplier, this evolving role in the supply chain has led to an increased focus on inventory carrying costs and risks, and manufacturers making global sourcing decisions have begun to account for these expenses (Abernathy et. al. 2000). Table 7 carries forward the ongoing jeans and T-shirt examples from Tables 5 and 6 by including these modern factors. For this comparison, we use total landed cost *less quota cost* as the basis of comparison since we are concerned about the post-2005 period. First, consider men's jeans, where the typical Mexican, Caribbean and Coastal Chinese supplier will have lead times of three, five, and eleven weeks, respectively. Assuming shipments arrive at the manufacturer's distribution center from all three candidates with the same or nearly the same frequency, the variation in cycle time will surface in three important operating metrics.

The most obvious of these is the work-in-process inventory (WIP), which increases with the lead time on a direct basis. WIP costs are carried by the supplier and represent capital tied up in the production process itself. Given the low capitalization of many apparel suppliers, the consequences of large amounts of WIP can be substantial.<sup>21</sup> As a result, the associated WIP carrying costs for sourcing the Chinese producer will be nearly three times those incurred when using the Mexican producer (\$.11 per garment for Mexico versus \$.30 for China).

Next, when planning safety stocks necessary for insuring against inevitable fluctuations in demand, a longer cycle time translates into larger finished-goods inventories (FGI). To illustrate this, consider the branded jeans manufacturer supplying products to a number of retail outlets, where from week to week, demand may vary from expected volumes. Depending on the producer's lead time, special orders aimed at replenishing a particularly popular SKU may or may not arrive in time for the manufacturer to achieve the negotiated fill rates with the retailer. So to assure high service levels, the manufacturer is forced to hold FGI in amounts adequate to service

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<sup>20</sup> For further details on lean retailing, see Abernathy, et al. 1999.

<sup>21</sup> As in other aspects of supply chain relations, these costs are born increasingly by organizations upstream of retailers and branded apparel companies.

these fluctuations. In other words, longer cycle times equate to delayed responsiveness to the market, which ultimately necessitates higher safety stocks. Hence, a decision to contract the Chinese producer in Table 7 means keeping two or three additional weeks worth of FGI than if the western suppliers were chosen.

Inventory-at-risk is the final operating metric to reflect the variance in cycle times. Unlike WIP cost and FGI cost, it does not easily translate to the total cost buildup in Table 7.<sup>22</sup> But the potential costs represented by inventory at risk are considerable, perhaps larger than many of the more direct costs. This is because the possibilities of unanticipated product obsolescence or cancellation at any time during a product life-cycle, means that the current inventory, or some part of it, must be sold at a deeply discounted level or, in the worst case, may never be sold at all. A sudden drop in the demand for a line of goods means that a supplier faces liquidating 15 or more weeks of product, simply because it cannot “turn off the tap” of supply instantaneously. For the decision-making manufacturer who stands to lose in this situation, lower inventory-at-risk is an added incentive to choose the shorter-cycle producers in Mexico or Nicaragua.

In the comparative analysis in Table 7, the value at risk for a supplier of jeans is substantial. For example, if a retailer’s weekly order of 10,000 units of a specific line of jeans is abruptly terminated, the manufacturer is left holding \$650,000 of inventory that must be liquidated if sourced from Mexico versus \$1.42 million if sourced from China.

For a manufacturer or sourcing agent seeking producers of jeans bound for the U.S., the sourcing decision may seem ambiguous when looking only at factor costs. As the example suggests, the preferred producer for this product does not surface until the impact of proximity is taken into account by determining the work-in-process and finished-goods inventory costs, as well as the inventory at risk. What may have gone unnoticed, though, are the specific characteristics of jeans that played such a vital role in this result.

The above discussion highlights the importance of taking product characteristics into account when projecting future sourcing patterns. More specifically, a product’s fashion content, which is highly correlated with its level of replenishment, is a very influential factor in manufacturers’ production decisions. For fashion products like the

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<sup>22</sup> This problem is discussed at length in Abernathy *et. al.* 2000. See also Bouhia and Abernathy 2004.

dress, the decision will lean more heavily on factor and policy costs. This means low wage nations, and especially those with access to inexpensive textiles, have the potential for major market gains when quotas are removed. On the other hand, for replenishment products, it would seem that producers in close proximity to the world's major markets are on solid footing even without the lowest wage rates. Not surprisingly, these trends are already being reflected in current international sourcing patterns.

#### ***IV. Implications for post-2005 sourcing patterns***

##### **Apparel**

The forgoing argument implies that the prospects for apparel sourcing into the US and EU markets will be driven by two sets of forces. For products with single seasons and limited prospect for replenishment such as dresses, womens' blouses, and fashion sensitive clothing in general, traditional cost factors, and the continuing cost of tariffs will frame sourcing decisions. For these goods, the world after 2005 will change dramatically for those countries whose garment industry depended on quota-driven advantages (for example as a low-cost portal for quota-constrained suppliers), or whose cost advantages were only somewhat above the costs of purchasing quotas. For these countries, the end of quotas implies the kind of head-to-head competition implied by the conventional wisdom, albeit along a broader set of factors than just labor costs. For example, quota-constrained producer nations like India, already successful in the market due to lower combined manufacturing and policy costs, stand to expand market share.<sup>23</sup>

For products where retailers and suppliers seek ongoing replenishment—either throughout the year (men's jeans) or within a season, direct costs related to labor, textile inputs, shipping, and tariffs are balanced against the costs associated with lead times, inventory, and their attendant risks. As such, proximity of suppliers matters too, and

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<sup>23</sup> Of course, there are other factors affecting sourcing decisions. These include quality of the basic fabric (e.g. cashmere), specialization in production and design (e.g. Italian suits), and certain highly skilled sewing details (e.g. complex stitching patterns). These characteristics tend to arise from historic specialization not easily replicated. We focus on more generic factors.

post-2005 sourcing decisions may shift less—or in different ways—than predicted by the common wisdom.

The clothing produced in U.S. and EU markets are composed of a mix of replenishable and non-replenishable products. Although the level of replenishment required by retailers varies across segments (mass merchants demand a higher level of replenishment, albeit for a more narrow product mix than department stores for example) Figure 3 provides an indication of the extent and variety of replenishment products for different types of apparel for a major U.S. department store in 2000.

A comparison of the replenishment content of all garment products shipped for major sources of production provides evidence consistent with the importance of replenishment products for sources of production more proximate to the U.S. and E.U. markets. The top twenty sources of men's jeans for the U.S. and the EU in 2003 are dominated by more proximate sources of supply (Tables 8(a) and 8(b)). As predicted, the list of U.S. partners is dominated by Mexico, which enjoys beneficial policy position through NAFTA (no tariffs) and the closest proximity. Additionally, a number of regional CBPTA countries play a major role. China is well down the list, and its focus for the category seems to be on more fashionable styles as evidenced by its higher unit cost (\$ per dozen). Bangladesh tops the EU list of suppliers, parlaying its very low wage rate with its preferential tariff treatment as a least developed nation. Yet a high number of Mediterranean nations also make the list. Finally, the very different composition of apparel sources for jeans into the US and EU market is telling, implying that the decisions leading to current sourcing patterns are balancing a much wider set of factors than lowest manufacturing costs.

A similar story can be seen for sourcing of T-shirts into the U.S. and EU markets (Tables 9a and 9b). The top 4 sources of T-shirts into the U.S. market, comprising 60 percent of all imports of that category, are in proximate nations (Honduras, Mexico, El Salvador and Dominican Republic). A number of nations with comparable or lower unit prices for T-shirts (Bangladesh, Egypt, Thailand) fall low in the list of sources even though they were not quota constrained for that product category. The EU list is dominated by both Asian sources of production (particularly Bangladesh that has preferential tariff treatment) as well as regional producers like Turkey, and Morocco.

In contrast, consider sourcing for dresses. Fashion items, which are expensive to produce and not typically replenished, would presumably have similar supply patterns into both the U.S. and EU. This is due to the fact that factor costs play a large role and the inventory and risk considerations are non-discriminating. Tables 10(a) and 10(b) support this assertion. For the US, none of the proximate nations that dominate the men's jeans list appear in the top 10 of sources for cotton dresses, and many countries that do not even appear in Table 8(a) appear near the top of 10(a) (e.g. India and Sri Lanka). The national sources of cotton dresses into the EU look more similar to those supplying jeans. The overlap between US and EU sources is far greater here, reflecting the dominance of more traditional drivers.

Figure 4 incorporates our measures of product-level replenishment into estimating the total value of 2003 U.S. imports of replenishable apparel from various regions. As we would predict, Mexico and the CBI provide a far higher amount of replenishable products (over \$4 billion) than China (\$1.3 billion) or other low cost Asian producers. Similarly, while about 22 percent of all apparel sources from Mexico and CBI nations is replenishable, less than 10 percent of products sourced in China or other Asian nations have this characteristic. Since these factors will still prove important after quotas are lifted, rapid shifts in sourcing to Asian and other low wage but distant nations are unlikely. As lean retailing practices take greater hold in Europe, the benefits from replenishment will also tend to favor products sourced in the low wage regions on the continent and from countries in the Euro-Mediterranean Partnership – countries primarily bordering the Mediterranean Sea.

## **Textiles**

The fate of the textile industry is closely tied to apparel.<sup>24</sup> Concern over the effects of lifting quotas has as much or more to do with the vulnerability of the U.S. textile industry as it does apparel.

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<sup>24</sup> It is not, however, as directly linked today as it once was. Textile products are inputs for three very distinct industries: apparel, home furnishing, and industrial uses, each using roughly one-third of annual textile production. Home furnishing industry includes sheets, towels, carpets, and related products. Industrial applications represent a varied set of uses from biotechnology applications (cardiac stents) to

For the portion of the U.S. textile industry that supplies apparel, the shift towards Mexico and the CBI has been very beneficial. This can be seen in the trade figures on textile exports from the U.S. to Mexico and Caribbean nations versus U.S. textile exports to countries in Asia such as China and Bangladesh.<sup>25</sup> Figure 5 compares U.S. textile exports as a percentage of apparel imports from a variety of countries. For Mexico and the CBI, this percentage is high (over 40 percent for Mexico and close to 30 percent for CBI countries like Honduras and El Salvador). In contrast, U.S. textile exports to China are less than 2 percent of the value of imported apparel items sourced there and Bangladesh even lower. The economic benefit to the U.S.-based textile sector arising from a garment imported from Mexico or Honduras is therefore far greater than if sourced in China (see Feenstra 1998 for further discussion of this issue).

The use of U.S. textiles by suppliers working out of Mexico, Central America, and the Caribbean reflects as we have argued throughout the choices of private actors operating within the bounds of public policies and institutions. It is reflective of public policies such as the terms of the Caribbean Basin Partnership Trade Act that requires as a quid pro quo for duty-free entrance into the U.S. market that products sewn in Central America and the Caribbean utilize American textiles. But it also arises because of the proximity, quality, and cost of US textile products that have made U.S. an attractive source for Mexico even though under NAFTA duty-free treatment would be granted if textiles originated in Mexico. The continuing effects of regional trade agreements reducing relative tariffs and proximity advantages mean that significant demand for US products should remain in the medium term, providing that both apparel and textile providers take continuing advantage of the proximity premium. Equally, the backward linkage from apparel to textiles means that regional trade policies (e.g. the Central American Free Trade Act) may be especially important for that sector after 2005.

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large scale construction applications such as the tent-like structures used as roofing for the Denver International Airport. Our late colleague John T. Dunlop liked to quip, textile applications in this area ranged from teabags to airbags to body bags. See Abernathy et. al. 1999, chapter 11 for a complete discussion.

<sup>25</sup> Based on U.S. Department of Commerce value of imported textiles, SITC 65 (see the appendix for information on the underlying data). The fall in textile employment in the US during the 1990s is often mistakenly ascribed to the same factors that reduced US apparel employment. In fact, the textile industry as well as for other major end users experienced growth in production over this period, and much of the employment reduction arose from technological changes and increasing capital intensity of production. See Abernathy, Dunlop, Hammond, and Weil (1999), Chapters 11 and 12.

A further implication of these trade figures is the longer term opportunity for Mexico to further expand its textile sector. Along with increasing Mexican investment in textile production, many major U.S. textile companies have moved capital there. Yet the obstacles to developing a high quality, technologically advanced textile sector are much more substantial than for apparel. Textile production is a far more capital intensive process requiring development of infrastructure, electricity, water, and the management of sophisticated manufacturing processes.<sup>26</sup> Thus, the development of a major textile sector in Mexico and its attendant effects on the U.S. industry will occur over a longer period of time.<sup>27</sup>

## **V. Conclusion**

The sourcing decisions facing textile and apparel manufacturers are more complicated than commonly acknowledged. With expanding free trade, there are more potential producers. With consumers demanding more variety, more fashion, more product access and lower prices, pressure on suppliers to search for new sources of supply will only increase. Finally, modern retail and distribution strategies place the risk arising from added variability of product demand further up the supply chain, forcing suppliers to balance the direct costs of sourcing against the indirect consequences of being left “holding the bag” of inventory.

The ultimate impact of the removal of quotas on the global network of firms supplying the US and European markets rests on volitional choices taken by private

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<sup>26</sup> There is evidence that managerial problems are increasingly affecting the performance in apparel and textile production in Mexico. For example, a top executive of one of the largest U.S. textile manufacturers told us that it was managerial capacity that was the primary limitation to the growth of the Mexican textile sector in the next decade. More generally, the advantages arising from Mexico’s geographic proximity to the U.S. consumer market can be undermined if suppliers cannot provide short lead times and reliable deliveries to retail distribution centers. If lead times increase and the reliability of shipments decrease, Mexico will become increasingly subject to competition from nations that can provide similar performance at lower cost. For a recent account of resurgence in activity among Mexican “maquiladora” producers, see Malkin 2004.

<sup>27</sup> It is less clear that the CBI nations will be able to develop a textile sector in the near term for several reasons. First, the NAFTA parity in tariff treatment for the CBI still requires use of textile products manufactured in the U.S. (unlike NAFTA where there is no such precondition for apparel imported from Mexico). Second, capital constraints are more substantial in the CBI nations than in Mexico. Finally, the CBI apparel manufacturers currently in operation have specialized primarily in assembly. There is therefore less experience in the management of more complex apparel manufacturing than one finds in Mexico, limiting the supply of skilled managers for textile operations.

players along the supply chain and public entities in developed and developing nations. Rather than a preordained future driven by inexorable forces, we believe that informed choices taken at the private and public level powerfully affect those who will win and lose in the next decade.

## **Private Choices**

We have argued that the competitive strategies and choices of retailers, apparel manufacturers, and textile producers will have a major impact on the location of production for different types of products. The continuing importance of logistic connections between the manufacturing and distribution of clothing mean that supply chains will reflect a blend of considerations regarding factor prices, transportation costs and increasingly adjustments to the risks associated with sourcing products in different locations. As supply chain decision-makers adopt better means of pricing these risks as has happened in other markets, it will play an even larger role in sourcing activities. The fact that innovative firms like Li & Fung have brought risk considerations into their core strategies is indicative of this latter trend.

With the elimination of quotas, survival of the remaining-- but still sizeable-- apparel sector in US and EU markets depend on using the benefits of proximity from a design, marketing, and production point of view to respond to increasingly volatile market demand. The persistence of apparel production in Southern California cannot be explained away by low wages arising from slack enforcement of labor standards (Weil 2005), but arises from the responsiveness of those firms that have survived. Yet the pressures to find new means to further expand the advantages from proximity are significant and will intensify. This requires new means of restructuring the way that networks of contractors manage supply chain risks (see Tan and Gershwin 2004; Bouhia 2005).

Textile manufacturers that supply regional and US apparel producers have survived by a combination of the preferential treatment of domestic fabrics and through investing in technology at the spinning, weaving, and finishing steps of production thus allowing them to achieve some of the highest productivity and quality in the world. In

addition, many producers have developed significant brand recognition, creating distinctive products such as Polartec®. Survival will require further progress in these areas as well as further improving their responsiveness to US retailers and consumers.

Similarly, the apparel industries in Mexico, Central America, and the Caribbean will only maintain their position—even with tariff advantages—by continually improving the advantages arising from proximity. The quantity of shipments from Mexico and to a lesser extent from CBI nations has decreased since 2002, arising from the US recession, trade-related impacts of the 9/11 attacks, and some substitution from other countries. It may also reflect, however, the lack of improvement in short cycle responsiveness among Mexican suppliers. Intrinsic advantages arising from physical proximity can be lost if those producers do not adjust manufacturing, information, and distribution practices to allow them to be responsive.

The private choices facing developing nations are therefore more complex than suggested by the common wisdom. Bair and Gereffi (2001, 2003) advocates that Mexico and other developing nations should focus on the design and marketing phases of apparel operation as a critical step towards survival. Although this strategy is very tempting, particularly because (as they point out) a great deal of the profits captured by the supply chain occur at the design and marketing end, it is not clear that they will successfully wrest these functions from retailers and major brands for this very reason. Instead, we believe that Mexican suppliers in Torreon and elsewhere will need to be able not only to provide the full package of product and services demanded by their powerful customers, but also do so in a manner that is sustainable for the companies. This is far from simple: We have seen many US firms whose domestic operations were undermined as much by factor prices disadvantages as they were from their incapacity to manage risk effectively. Opportunities for countries in Eastern Europe, North Africa, and Turkey for taking advantage of proximity advantages into the EU require similar types of competitive strategies and adjustments.

The impact of replenishment and risk shifting in supply channels also alters the traditional role apparel and textile industries can play in developing nations. Apparel and textile sectors remain attractive industries in terms of economic development. But assuring the success of those industries has become more complex. It will be difficult for

many nations with inadequate infrastructure, distant location from major consumer markets, or political (or even climactic) instability, will be at a considerable competitive disadvantage for many apparel products, even if they have low wage rates. Further, for those categories of apparel where replenishment is not a major factor in sourcing, the presence of a large number of countries with extensive apparel capacity means more intense competition among these nations for a smaller market of non-replenishment products. Together, these forces will make the future of apparel industries reliant solely on low wages as the source of competitive advantage (e.g., Bangladesh) increasingly bleak and vulnerable to the removal of quotas.

### **Public Choices<sup>28</sup>**

“The death of distance is exaggerated. Trade costs are large, even aside from trade-policy barriers and even between apparently highly integrated economies.” (Anderson and Wincoop 2004, p. 691; See also Evans 2003).

Trade costs consist of transport, border-related, local distribution costs that stand between foreign suppliers and final users. Many of these are directly affected by explicit public policy (tariffs, exchange rate systems like pegged currencies) as well as implicit policies such as investments in transportation infrastructures, the efficiency, variability, and integrity of administrative mechanisms affecting trade relations, and regulations affecting flows of goods.

National public policies will therefore continue to have a major impact on a quota-free trading system. For nations hoping to expand their capacities, public policies that impact the links between their markets and US, EU, and other major consumer markets will be critical. For example, the port infrastructures in Bangladesh suffer from problems arising from physical geography, climatologic uncertainty, and enormous

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<sup>28</sup> We do not deal in this essay with the highly significant issue of public policies dealing with the employment dislocations arising from trade. The diffuse benefits and concentrated costs arising from quota elimination require public policy choices regarding how the resulting employment dislocation and sectoral adjustments are handled. They also raise the equally important set of questions regarding how gains from trade are shared between labor, capital, and communities. Analytic judgments regarding the way that underlying forces shape the flow of trade (our concern in this essay) and evaluation of how to redress the distributional impacts of those flows are distinct. We address those questions elsewhere (e.g. Weil 2005).

administrative problems. Bangladesh's long term viability as a source of apparel and textiles rest on the adoption of public policies that appreciably lower trade costs associated with the administrative problems (including a significant problem of the integrity of those processes) and investments in infrastructures that dramatically reduce the time required to move goods in and out of the country. Movement along these lines have been very limited in the view of a number of analysts (Rahman 2002; Bhattacharya and Rahman 2002).

Regional trade policies will also be important sources of public choices after 2005. Tariffs will remain in place for the foreseeable future. In fact, despite the reduction of tariffs that are part of the WTO, the end of quotas will further reduce national interest in removing those tariffs. Because they will continue to represent significant costs (see Table 6), regional agreements that provide tariff relief for signatory countries like NAFTA, CBTPA and AGOA for the US and the Euro-Mediterranean Partnership for the EU will remain important instruments of public policies. Proximity effects further raise the ongoing benefits that may arise from regional arrangements.<sup>29</sup>

We have cited our skepticism about the conventional wisdom throughout this essay. Although traditional factors and the ending of the quota system will impact the sourcing of products, we believe that mainstream predictions miss the mark in several respects. Replenishment considerations arising from the new economics of distribution and production channels explain an important portion of the shifts in sourcing over the past decade. As lean retailing becomes even more widespread and suppliers more sophisticated in thinking about managing risk, replenishment considerations will factor even more heavily into sourcing decisions. This will make the countries with proximity more competitive for those goods where replenishment is important, and will subject those countries competing along traditional lines to greater competition over a smaller set of apparel products. As these economic factors will not disappear in 2005--indeed, they will intensify-- this driver of sourcing location will persist.<sup>30</sup>

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<sup>29</sup> The use of safeguard and circuit breaker provisions (particularly with China) will have short- to medium-term impacts on the location of production (take material from policy paper and place it here). Finally, the role of the WTO in a quota-less world will be important.

<sup>30</sup> Even the most sophisticated efforts to forecast the post-2005 impacts have left out the replenishment dynamic. The USITC models of the effects of China's accession to the WTO on U.S. apparel production

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and employment are indicative. The USITC models are run at the aggregate rather than commodity level. This undermines the models' ability to capture the types of changes described here since they have their primary impact through the *composition of products* sourced from different countries. The USITC report indirectly acknowledges this problem: "Finally, the simulations reflect the assumption that the purchasers' willingness to substitute imports for domestic production remains constant throughout the 12-year period [1998-2010]. This may not be the case. For example, if domestic producers were to shift production to specialized sub-sectors, imports could become less viable substitutes and, as a result, purchasers would be less responsive to changes in import prices." (USITC 1999, p. 8-20).

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**Table 1: ATC Phase Out Quantity Volumes**

	<u>Starting date</u>	<u>Percent of member's 1990 physical volume trade to be quota-free</u>	<u>Cumulative percentage quota-free</u>
Phase 1	1/1/1995	16%	16%
Phase 2	1/1/1998	17%	33%
Phase 3	1/1/2002	18%	51%
Phase 4	1/1/2005	All quotas eliminated	100%

Source: *Agreement on Textiles and Clothing*, Article 2, paragraphs 6 & 8

**Table 2: Top 10 MFA Categories by 2003 U.S. Import Value, with Integration Phase\***

<u>MFA Quota Category</u>	<u>Code</u>	<u>2003 Import Value (\$Bil)</u>	<u>ATC Phase</u>
Women's & Girls' Cotton Trousers, Slacks, Shorts	348	\$ 6.26	4
Women's & Girls' Cotton Knit Shirts & Blouses	339	5.67	4
Men's & Boys' Cotton Knit Shirts	338	5.18	4
Men's & Boys' Cotton Trousers, Slacks, Shorts	347	5.12	4
Cotton Underware	352	2.46	4
Women's & Girls' Knit Shirts & Blouses of Man-Made Fiber	639	2.16	4
Other Cotton Manufactures	369	2.09	Various*
Men's & Boy's Cotton Shirts, Non-Knit	340	2.08	4
Babies' Garments & Clothing Accessories	239	1.96	2
Other Apparel of Man-Made Fiber	659	1.89	4

\* A single phase out stage does not necessarily apply to every 10 digit HTS-coded product in a particular MFA Quota Category. For example, consider category 369, "Other Cotton Manufactures". This includes a wide arrange of products from "Cotton Table Linens" (Phase 2) to "Travel, Sports, and Similar Bags with Outer Surface Cotton". (Phase 3)

Final draft: Not for quotation or reproduction.

**Table 3: U.S. Employment\* and Output in Constant Dollars<sup>†</sup> in Textile and Apparel, 1989-2002**

Year	Textiles		Apparel		Total	
	Workers (000)	Output (Bil USD)	Workers (000)	Output (Bil USD)	Workers (000)	Output (Bil USD)
1989	576	\$ 47.4	997	\$ 55.6	1,573	\$ 103.0
1990	495	43.8	952	53.3	1,447	97.1
1991	483	42.5	928	52.4	1,411	95.0
1992	481	44.0	929	55.1	1,410	99.1
1993	481	44.6	909	55.5	1,390	100.1
1994	481	46.1	885	55.7	1,365	101.8
1995	472	45.8	836	54.9	1,308	100.7
1996	446	44.0	766	53.1	1,212	97.1
1997	439	45.1	721	51.6	1,160	96.7
1998	428	43.4	664	48.6	1,092	92.0
1999	399	40.2	576	45.6	975	85.7
2000	385	37.3	519	42.7	903	80.0
2001	336	31.8	451	37.6	787	69.4
2002	303	30.5	381	35.7	684	66.2
CAGR						
1989-2002	-4.8%	-3.3%	-7.1%	-3.4%	-6.2%	-3.3%
1995-2002	-6.2%	-5.6%	-10.6%	-6.0%	-8.9%	-5.8%

Source: Bureau of Labor Statistics

\* Wage and Salaried Employees, including self-employed

† Output in Constant 1989 Dollars

**Table 4: 2002 Average Hourly Labor Cost in Apparel Manufacturing (U.S. Dollars, Including all benefits and/or social charges)**

<u>Country</u>	<u>Apparel</u>	<u>Textile</u>
	(Current U.S. dollars)	
Indonesia	0.27	0.50
Madagascar	0.33	na
Kenya	0.38	0.62
India	0.38	0.57
Bangladesh	0.39	0.25
Pakistan	0.41	0.34
Sri Lanka	0.48	0.40
Haiti	0.49	na
China - Inland	0.68	0.41
Philippines	0.76	na
Egypt	0.77	1.01
Jordan	0.81	na
China - Coastal	0.88	0.69
Thailand	0.91	1.24
Nicaragua	0.92	na
Colombia	0.98	1.82
Mauritius	1.25	1.33
South Africa	1.38	2.17
Malaysia	1.41	1.16
Honduras	1.48	na
Guatemala	1.49	na
El Salvador	1.58	na
Dominican Republic	1.65	na
Mexico	2.45	2.30
Costa Rica	2.70	na
Israel	na	8.17
Taiwan	na	7.15
Hong Kong	na	6.15
Korea	na	5.73
Turkey	na	2.13
Peru	na	1.63
United States	8.89	11.73

**Source:** Data for U.S. sectors from U.S. Bureau of Labor data for the foreign textile industries compiled from Wern International Management Consultants, "Spinning and W Labor Cost Comparisons 2002," Reston, VA; and data for apparel industries compiled from Jassin-O'Rourke Group "Global Competitiveness Report: Selling to Full Package (New York, NY), Nov. 2002.

**Table 5: Comparison of Suppliers' Factor Costs (to U.S.) for Men's Jeans and Cotton Ring Spun T-Shirt**

	<i>Single Pair of Men's Jeans</i>			<i>Cotton Ring-Spun T-Shirt</i>		
	Mexico	Nicaragua	Coastal China	Mexico	Honduras	Coastal China
Garment Producer / Exporter	Mexico	U.S.	China	Mexico	U.S.	China
Fabric Source	Mexico	U.S.	China	Mexico	U.S.	China
Total Fabric Cost per Garment	\$3.80	\$4.23	\$3.24	\$1.05	\$1.10	\$1.03
<i>Fabric Price/Linear Yard (incl. Shipping)</i>	\$2.50	\$2.78	\$2.08	\$0.96	\$1.01	\$0.92
<i>Fabric Yield/garment (Linear Yds.)</i>	1.5	1.5	1.6	1.1	1.1	1.1
Trim Cost per garment (incl. Pocketing/Thread)	\$1.05	\$1.10	\$0.87	\$0.19	\$0.19	\$0.17
Wage Rate	\$2.45	\$0.92	\$0.88	\$2.45	\$1.48	\$0.88
Labor Cost (Cut, Make, Finish)	\$2.35	\$2.17	\$1.94	\$0.44	\$0.43	\$0.36
Profit per Garment	\$0.72	\$0.75	\$0.61	\$0.17	\$0.17	\$0.16
FOB Cost	\$7.92	\$8.25	\$6.66	\$1.85	\$1.89	\$1.71
Shipping Cost per Garment	\$0.04	\$0.07	\$0.09	\$0.03	\$0.03	\$0.04
Total Manufacturing & Shipping	7.96	8.32	6.75	1.88	1.93	1.75

**Source:** Estimates based on Jassin O'Rourke Group. 2002.

**Table 6: Comparison of Suppliers' Total Landed U.S. Cost for Men's Cotton Jeans, Cotton Ring Spun T-Shirt and Dress**

	<i>Single Pair of Men's Jeans</i>			<i>Cotton Ring-Spun T-Shirt</i>		
	Mexico	Nicaragua	Coastal China	Mexico	Honduras	Coastal China
Garment Producer / Exporter	Mexico	U.S.	China	Mexico	U.S.	China
Fabric Source	Mexico	U.S.	China	Mexico	U.S.	China
Manufacturing & Shipping Cost per Garment	\$7.96	\$8.32	\$6.75	\$1.88	\$1.93	\$1.75
Relevant Trade Agreement	NAFTA	CBPTA	None	NAFTA	CBPTA	None
2003 Quota Cost	0.00	0.00	4.00	0.00	0.00	2.17
2003 Duty Cost into U.S.	0.00	0.00	1.80	0.00	0.00	0.67
2003 Total Landed Cost	\$7.96	\$8.32	\$12.55	\$1.88	\$1.93	\$4.59
Duty Cost into U.S. (Absent Quota Cost)	\$0.00	\$0.00	\$1.12	\$0.00	\$0.00	\$0.29
Total Landed Cost (Absent Quota Cost)	\$7.96	\$8.32	\$7.88	\$1.88	\$1.93	\$2.04

**Source:** Estimates based on Jassin O'Rourke Group 2002 and data on current tariffs.

\* The U.S. tariff on men's and boys' blue denim jeans is 16.6% of the landed value, and 16.5% for cotton T-Shirts.

**Table 7: Inventory Carrying Costs and Risk**

Garment Producer / Exporter Fabric Source	<i>Single Pair of Men's Jeans</i>			<i>Cotton Ring-Spun T-Shirt</i>		
	Mexico	Nicaragua	Coastal China	Mexico	Honduras	Coastal China
	Mexico	U.S.	China	Mexico	U.S.	China
Total Landed Cost Less Quota Cost Relevant Trade Agreement	\$7.96 NAFTA	\$8.32 CBPTA	\$7.89 None	\$1.88 NAFTA	\$1.93 CBPTA	\$2.05 None
Average Cycle Time (in Weeks)	4	5	11	3	5	11
Inventory Carrying Cost Rate	18%	18%	18%	18%	18%	18%
WIP Inventory Carrying Cost	\$0.11	\$0.14	\$0.30	\$0.02	\$0.03	\$0.08
Finished-Goods (FG) Inventory (in Weeks)	4	5	6	3	4	5
FG Inventory Carrying Costs	\$0.11	\$0.14	\$0.16	\$0.02	\$0.03	\$0.04
Total Cost	\$8.18	\$8.60	\$8.35	\$1.92	\$1.99	\$2.17
Value of Apparel at Risk (Dollars/Weekly Single Unit Demand)	\$65	\$86	\$142	\$11	\$18	\$35

*Source:* Landed cost estimates based on O'Rourke 2002. Cycle time, inventory cost, WIP and apparel risk estimates based on HCTAR models (see Abernathy *et. al.* 2000; Bouhia and Abernathy 2004).

<b>Table 8(a): Top 20 Exporters to U.S. in Men's and Boys' Denim Jeans* (2003 Volume)</b>					<b>Table 8(b): Top 20 Exporters to EU in Men's and Boy's Denim Jeans (2003 Volume)</b>				
#	Country	Volume # (000 Doz)	Value (\$000)	Unit Price (\$ per Dz)	#	Country	Volume (000 Doz)	Value (€000)	Unit Price (€ per Dz)
1	Mexico	10,309	\$ 993,344	\$ 96	1	Bangladesh	2,449	€ 115,940	€ 47
2	Costa Rica	1,169	68,697	59	2	Turkey	1,674	240,129	143
3	Guatemala	1,082	113,602	105	3	Pakistan	1,417	86,235	61
4	Colombia	801	73,304	92	4	Tunisia	1,072	156,286	146
5	Honduras	694	35,060	50	5	Morocco	661	74,109	112
6	Cambodia	509	44,479	87	6	Malta	588	66,569	113
7	Nicaragua	508	34,137	67	7	Poland	501	71,816	143
8	Dominican Rep.	487	45,447	93	8	Hong Kong	386	40,805	106
9	Hong Kong	449	63,681	142	9	Romania	254	36,783	145
10	Lesotho	400	28,360	71	10	Mauritius	202	17,296	86
11	Egypt	397	28,391	72	11	Myanmar	182	8,377	46
12	Vietnam	375	23,446	63	12	Hungary	166	22,607	136
13	South Africa	349	23,433	67	13	Egypt	149	15,116	101
14	Philippines	316	30,828	97	14	U.A.E.	148	7,226	49
15	El Salvador	305	30,758	101	15	Cambodia	135	11,076	82
16	Russia	264	14,189	54	16	Indonesia	128	9,809	77
17	Canada	209	33,590	161	17	Malaysia	126	7,747	62
18	China	176	23,629	134	18	Macao	117	12,586	108
19	Pakistan	161	10,710	67	19	Thailand	110	8,938	81
20	Mauritius	130	13,593	105	20	China	93	9,102	98
<b>Sub-Total</b>		<u>19,091</u>	<u>\$ 1,732,677</u>	<u>\$ 91</u>	<b>Sub-Total</b>		<u>10,559</u>	<u>€1,018,550</u>	<u>€ 96</u>
<b>Pct of Total</b>		92%	93%		<b>Pct of Total</b>		95%	95%	

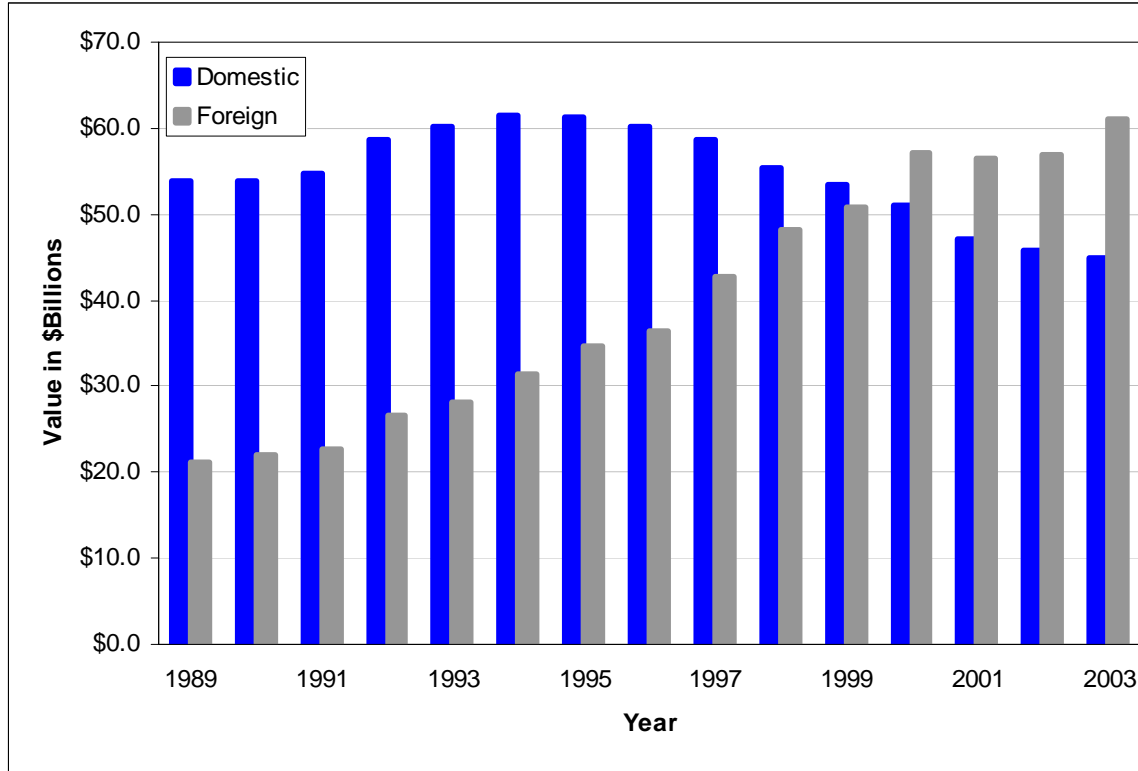
\* HTS Codes 6203424010 and 6203424035. Aggregated together, there is a perfect correspondence to the EU 8 digit CN code 62034231, which is represented at right.

\* Bangladesh does not have sufficient weaving capacity to supply all of the denim needed for their jeans exports to the EU and must pay a duty on those garments not to have undergone two stages of production in the country.

<b>Table 9(a): Top 20 Exporters to U.S. in T-Shirts, Singlets &amp; Other Vests of Cotton, Knitted or Crocheted (2003 Volume)</b>					<b>Table 9(b): Top 20 Exporters to EU in T-Shirts, Singlets &amp; Other Vests of Cotton, Knitted or Crocheted (2003 Volume)</b>				
#	Country	Volume (000 Doz)	Value (\$000)	Unit Price (per Dz)	#	Country	Volume (000 Doz)	Value (€000)	Unit Price (per Dz)
1	Honduras	39,098	\$ 606,700	\$ 16	1	Bangladesh	42,674	€ 628,390	€ 15
2	Mexico	32,203	703,916	22	2	Turkey	31,408	1,286,193	41
3	El Salvador	26,668	349,022	13	3	India	7,887	258,238	33
4	Dominican Repu	9,260	159,259	17	4	Morocco	7,784	189,166	24
5	Haiti	4,107	62,620	15	5	Mauritius	5,631	205,348	36
6	Guatemala	4,072	104,000	26	6	China	4,173	165,200	40
7	Canada	3,959	142,189	36	7	Hong Kong	2,980	127,274	43
8	Jamaica	3,812	52,516	14	8	Tunisia	2,775	96,621	35
9	Vietnam	2,626	60,584	23	9	Pakistan	2,741	57,310	21
10	Turkey	2,312	75,396	33	10	Romania	2,573	72,207	28
11	Pakistan	1,992	47,860	24	11	Egypt	2,374	58,866	25
12	Bangladesh	1,929	28,708	15	12	Syria	1,748	29,756	17
13	Peru	1,882	73,735	39	13	SriLanka	1,653	48,385	29
14	Russia	1,845	30,535	17	14	Indonesia	1,585	52,349	33
15	Brazil	1,765	31,730	18	15	Thailand	1,470	43,790	30
16	Hong Kong	1,373	39,978	29	16	U.A.E.	1,433	27,970	20
17	Egypt	1,215	20,276	17	17	Hungary	1,139	28,862	25
18	China	1,104	35,740	32	18	Macao	1,079	41,347	38
19	Turkmenistan	1,089	11,018	10	19	Honduras	1,049	14,436	14
20	Thailand	1,053	20,077	19	20	Bulgaria	936	26,640	28
<b>Sub-Total</b>		<u>143,362</u>	<u>\$2,655,859</u>	<u>\$ 19</u>	<b>Sub-Total</b>		<u>125,094</u>	<u>€3,458,349</u>	<u>€ 28</u>
<b>Pct of Total</b>		91%	87%		<b>Pct of Total</b>		92%	91%	

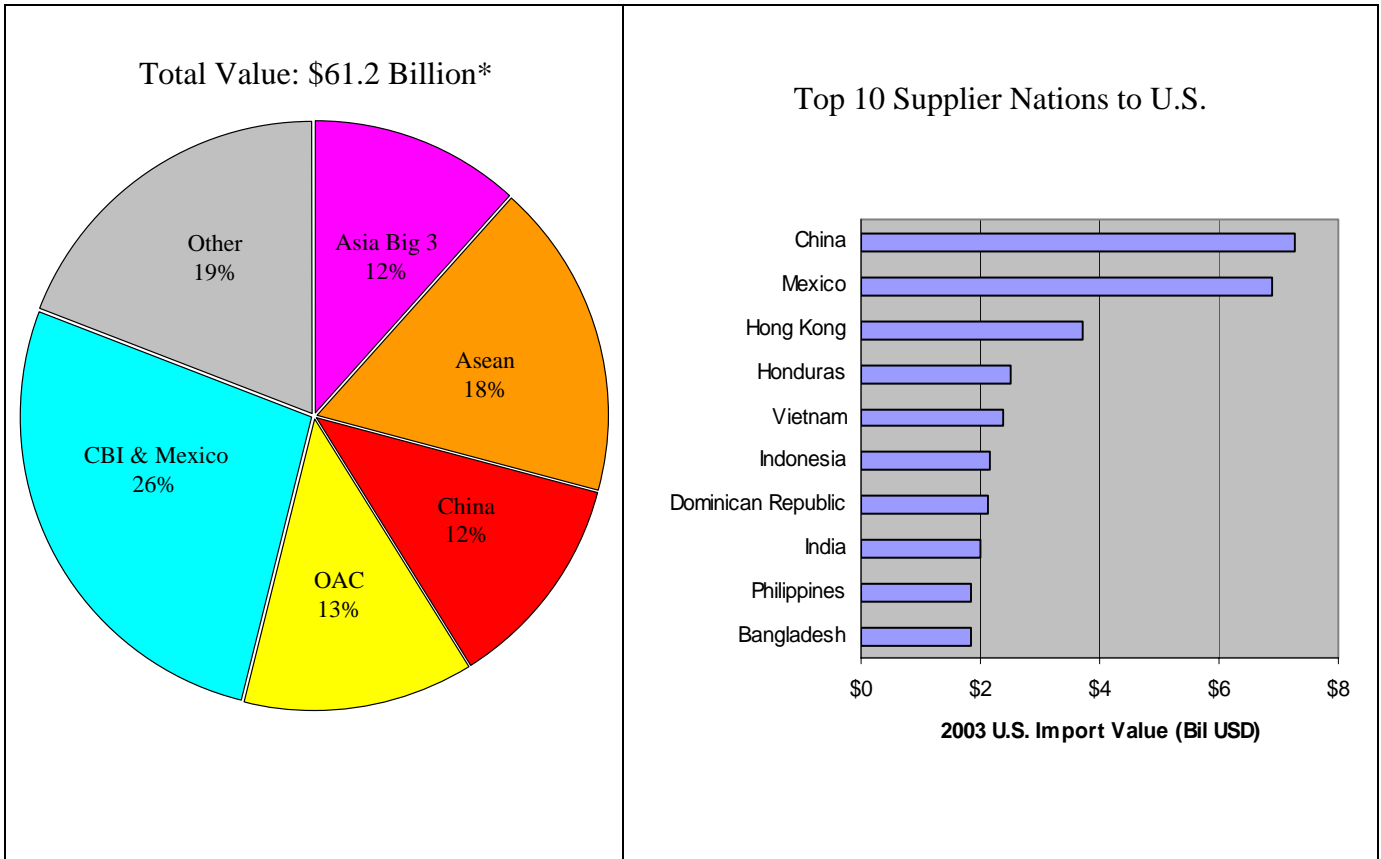
<b>Table 10(a): Top 20 Exporters to U.S. in Women's &amp; Girls' Cotton Dresses, Not Knitted or Crocheted (2003 Volume)</b>					<b>Table 10(b): Top 20 Exporters to EU in Women's &amp; Girls' Cotton Dresses, Not Knitted or Crocheted (2003 Volume)</b>				
#	Country	Volume (000 Dz)	Value (\$000)	Unit Price (per Dz)	#	Country	Volume (000 Dz)	Value (€000)	Unit Price (per Dz)
1	India	551	\$ 39,915	\$ 72	1	India	856	€ 47,743	€ 56
2	Philippines	491	29,220	60	2	Morocco	227	20,118	89
3	Bangladesh	319	14,564	46	3	Hong Kong	202	16,214	80
4	Sri Lanka (Ceylon)	288	17,847	62	4	Germany	175	20,208	116
5	Thailand	164	8,668	53	5	Turkey	169	15,657	93
6	China	164	22,130	135	6	Bangladesh	156	5,966	38
7	Indonesia	146	8,975	62	7	Tunisia	150	14,905	100
8	Pakistan	134	3,999	30	8	China	133	11,217	85
9	Vietnam	126	5,734	46	9	Belgium	131	11,850	91
10	Hong Kong	121	16,364	135	10	France	97	16,166	167
11	United Arab Emirates	84	4,535	54	11	Romania	73	8,514	117
12	Cambodia	83	5,093	61	12	Sri Lanka	72	3,818	53
13	Mexico	57	3,787	67	13	Italy	61	18,488	305
14	El Salvador	32	2,671	83	14	Pakistan	60	2,303	39
15	Qatar	30	1,313	44	15	Netherlands	58	7,583	131
16	Macau	27	3,022	111	16	Spain	51	8,833	175
17	Nepal	27	1,086	40	17	Thailand	46	2,502	55
18	South Africa	24	1,223	52	18	Macao	45	3,740	83
19	Taiwan	22	2,728	121	19	Indonesia	39	2,663	67
20	Turkey	22	1,681	75	20	Portugal	38	5,001	133
<b>Sub-Total</b>		<u>2,912</u>	<u>\$ 194,554</u>	<u>\$ 67</u>	<b>Sub-Total</b>		<u>2,835</u>	<u>€ 243,490</u>	<u>€ 86</u>
<b>Pct of Total</b>		93%	88%		<b>Pct of Total</b>		87%	84%	

**Figure 1: U.S. Apparel Consumption, by Producer**



**Figure 2(a): 2003 U.S. Apparel Imports, by Regional Market Share**

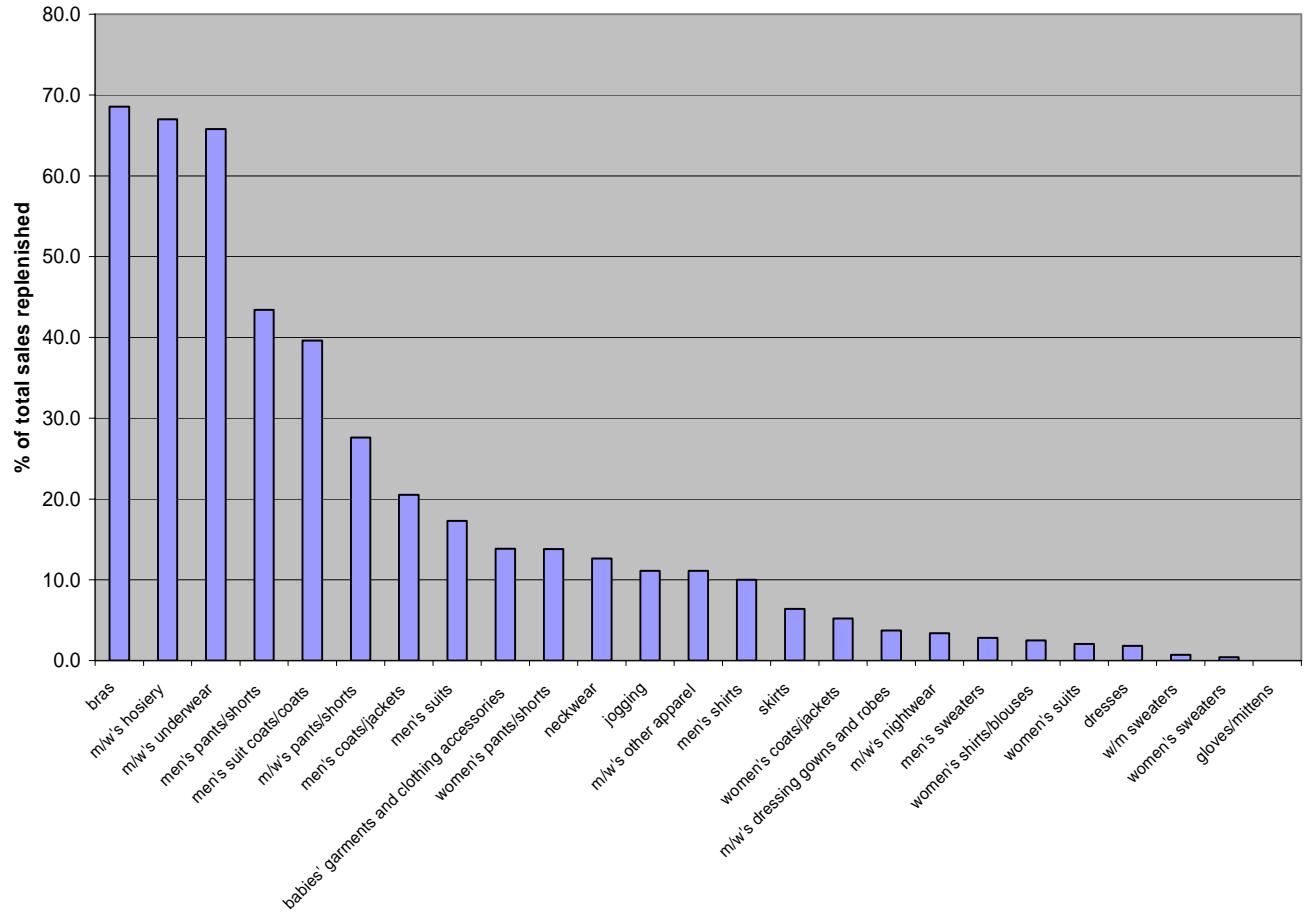
**Figure 2(b): Top 10 Apparel Exporters to the U.S., 2003**



Source: OTEXA

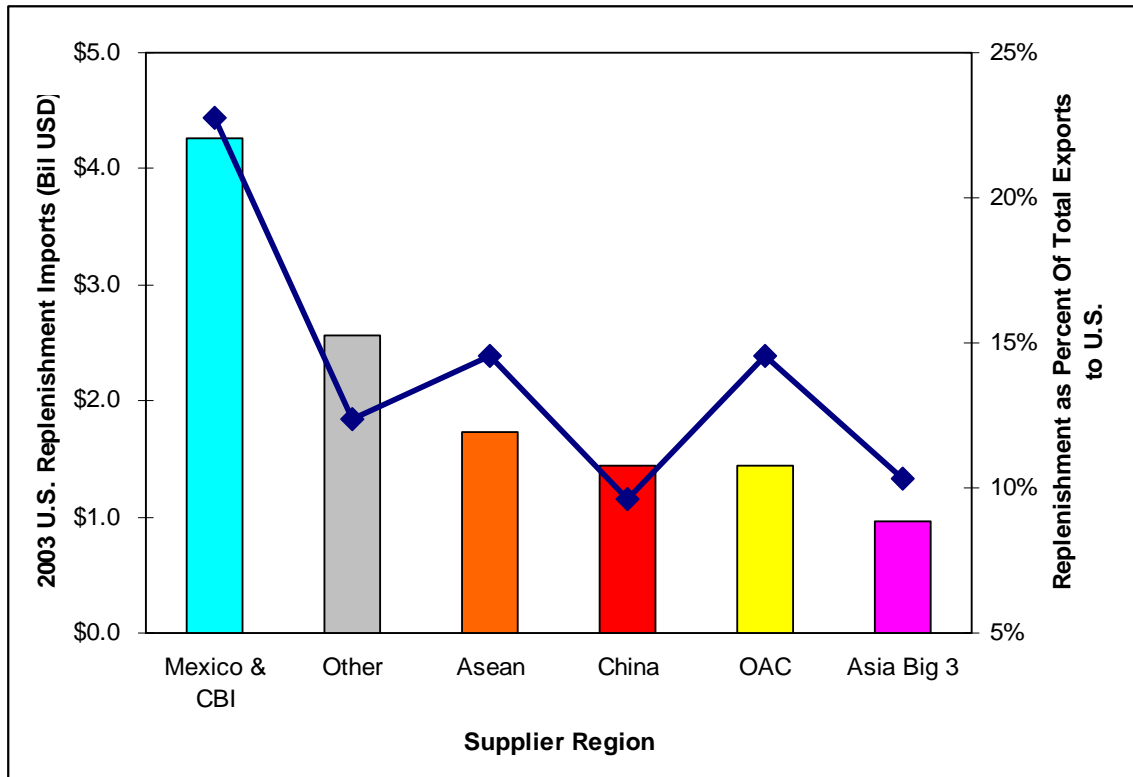
\* Includes only MFA Apparel (i.e., apparel designated in the Multi-Fiber Arrangement)

**Figure 3: Percent of products replenished by major retailer in selected garment product categories**



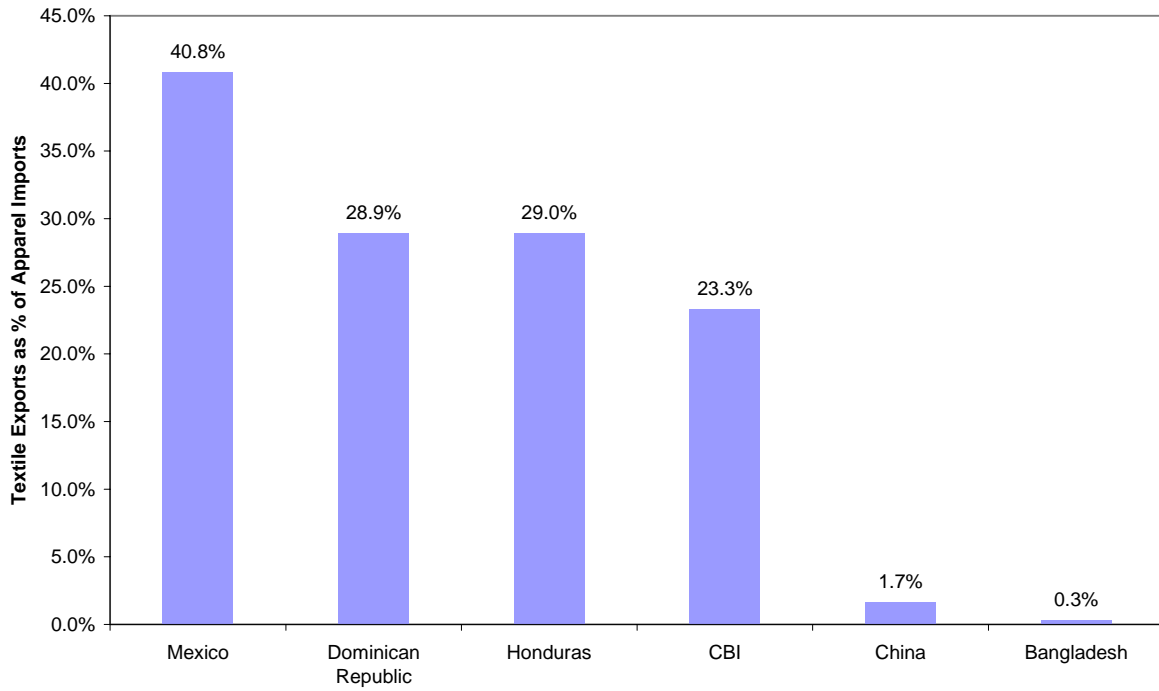
Source: HCTAR analysis of retailer point of sale data, 2001.

**Figure 4: Estimated Value of 2003 Replenishable\* Apparel Imports, by Region**



\* Estimated replenishment value of imports from a particular country is determined as follows: The value of imports in each of the product classes defined in Figure 3 is multiplied by the respective replenishment percentage shown there. These 25 products are then summed together for a total replenishment value (vertical axis on left) and as a percent of total apparel exports from that country / area (vertical axis on right).

**Figure 5: U.S. Textile Exports as a Percentage of U.S. Apparel Imports for Selected Countries, 2002**



Source: OTEXA Website, Data compiled by HCTAR

***Appendix I: Beneficiary Countries of Two Major U.S. Trade Agreements***

<b>Caribbean Basin Trade Partnership Act (CBPTA)</b>	Antigua and Barbuda; Aruba; Bahamas; Barbados; Belize; British Virgin Islands; Costa Rica; Dominica; Dominican Republic; El Salvador; Grenada; Guatemala; Guyana; Haiti; Honduras; Jamaica; Montserrat; Netherlands Antilles; Nicaragua; Panama; St. Kitts and Nevis; St. Lucia; St. Vincent and the Grenadines; Trinidad and Tobago;
<b>African Growth Opportunity Act (AGOA)</b>	Angola; Benin; Botswana; Cameroon; Cape Verde; Chad; Republic of the Congo; Cote d'Ivoire; Democratic Republic of the Congo; Djibouti; Ethiopia; Gabon; The Gambia; Ghana; Guinea; Guinea-Bissau; Kenya; Lesotho; Madagascar; Malawi; Mali; Mauritania; Mauritius; Mozambique; Namibia; Niger; Nigeria; Rwanda; So Tome and Principe; Senegal; Seychelles; Sierra Leone; South Africa; Swaziland; Tanzania; Uganda; and Zambia

***Appendix II: Beneficiary Countries of Three Major EU Trade Agreements***

<b>Euro-Mediterranean Partnership</b>	Algeria; Cyprus; Egypt; Israel; Jordan; Lebanon; Malta; Morocco; Palestinian Authority; Syria; Tunisia; Turkey
<b>Stabilization and Association Agreement</b>	Albania; Bosnia-Herzegovina; Croatia; Macedonia; Serbia and Montenegro
<b>Everything But Arms Initiative (Least Developed Nations)</b>	Afghanistan; Angola; Bangladesh; Benin; Bhutan; Burkina Faso; Burundi; Cambodia; Cape Verde; Central African Republic; Chad; Comoros; Democratic Republic of Congo; Djibouti; East Timor; Equatorial Guinea; Eritrea; Ethiopia; Gambia; Guinea; Guinea Bissau; Haiti; Kiribati; Lao PDR; Lesotho; Liberia; Madagascar; Malawi; Maldives; Mali; Mauritania; Mozambique; Myanmar; Nepal; Niger; Rwanda; Sao Tome e Principe; Samoa; Senegal; Sierra Leone; Solomon Islands; Somalia; Sudan; Tanzania; Togo; Tuvalu; Uganda; Vanuatu; Yemen; Zambia

***Appendix III: Countries included in Regional Segmentations***

<b>Asean</b>	Brunei, Burma, Cambodia, Indonesia, Laos, Malaysia, Philippines, Singapore, Thailand, Vietnam
<b>Asia Big 3</b>	Hong Kong, Republic of South Korea, Taiwan
<b>CBI &amp; Mexico</b>	All nations participating in the CBPTA (see Appendix I) along with: Anguilla; Cayman Islands; Guadeloupe; and Mexico
<b>Other Asian Countries (OAC)</b>	Afghanistan, Azerbaijan, Bahrain, Bangladesh, Georgia, India, Kazakhstan, Kyrgyzstan, Moldova, Nepal, Pakistan, Sri Lanka, Tajikistan, Turkmenistan, Uzbekistan