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IFPRI Discussion Paper 00720

September 2007

The Impact of the Central America Free Trade Agreement on the Central American Textile Maquila Industry

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INTERNATIONAL FOOD POLICY RESEARCH INSTITUTE

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ABSTRACT

While the Central America Free Trade Agreement (CAFTA) remains a hotly debated issue in all five Central American countries that are part of the treaty, most discussions are based on preconceived opinions rather than grounded in research-based results. The point of departure of the paper is that the provisions in the agreement concerning the textile maquila industry are likely to have a significant impact on household welfare, despite the already existing preferential access of textile maquila exports to the U.S. market under the rules of origin set by the Caribbean Basin Initiative (CBI) and the U.S.–Caribbean Basin Trade Partnership Act (CBTPA). What CAFTA does for maquila production in Central America is to make permanent and expand the liberalized rules of origin (granted temporarily and unilaterally by the United States and likely to be revoked in 2008) for inputs to the maquila industry. Therefore, to assess the true impact of the maquila provisions in CAFTA, we need to compare the situations without CAFTA or the CBI/CBTPA with the situation that includes CAFTA, instead of the situations before and after CAFTA.

The objectives of the paper are to analyze the likely impacts of CAFTA on the apparel value chain in Central America; assess the bottlenecks and constraints to productivity growth in the apparel industry; and identify the requirements for continuing success in the value chain. In researching the paper, we made use of a variety of methodologies, including literature review, Internet sourcing, field visits, and personal interviews with key players in the sector in all five Central American CAFTA countries. We also used computable general equilibrium (CGE) models and combined these with microsimulations based on household surveys, in order to quantify the likely effect of the maquila provisions in CAFTA on economic growth, employment, and poverty. The results suggest that, depending on the country, the maquila provisions in CAFTA add between 0.01% and 1.4% to annual economic growth and between 0.005% and 1.4% per year to employment of particularly female unskilled labor. As a result and depending on the specific country, the rate of total poverty is likely to fall by between virtually zero (Costa Rica) and 0.73% (Honduras) per year relative to a situation without CAFTA's maquila provisions.

However, the model-based analyses do not take account of the fact that the quota system for textiles and clothing (the so-called Agreement on Textiles and Clothing, or ATC) expired January 1, 2005, greatly improving the access of China and other low-cost exporters to the U.S. market. Although China has so far voluntarily restricted its apparel exports to the U.S. market, in the longer term market share will increasingly go to countries with the highest comparative advantage. The qualitative analysis in the paper suggests that a survival strategy for the Central American maquila industry should consist of two main elements. First, and in order to make maximum use of the liberalized rules of origin under CAFTA, countries should increasingly move toward full-package production instead of pure assembly. Second, identification of market niches that demand higher-quality apparel produced by firms that respect socially responsible production conditions and are able to deliver fast responsiveness is a crucial means by which the Central American textile industry can develop a comparative advantage vis-à-vis Asian suppliers, needed to survive in an increasingly competitive export market.

Keywords: apparel industry, CAFTA, Central America, CGE model, maquila

1. INTRODUCTION

On May 28, 2004, the five countries of the Central American isthmus (i.e., Costa Rica, El Salvador, Guatemala, Honduras, and Nicaragua)—and later on August 5, 2004, the Dominican Republic—signed the free trade agreement with the United States commonly referred to as the Central America–Dominican Republic–United States Free Trade Agreement (CAFTA-DR, or "CAFTA" in the remainder of this paper). Having thus far been ratified by all the countries except Costa Rica, the agreement entered into force March 1, 2006, between the United States and El Salvador, April 1, 2006, for Honduras and Nicaragua, and July 1, 2006, for Guatemala. As is typically the case with free trade agreements, CAFTA has been seen as both a growth opportunity for its seven signatories and a potential threat to vulnerable sectors in each of the countries, as those sectors become (generally gradually) exposed to increased competition.

In Central America, the textile and clothing sector (often referred to as *maquila*) is the most important industrial and nontraditional export sector.[1] It has been responsible for most of the growth of manufactured exports and foreign exchange earnings, as well as for most of the employment generated, since the late 1980s. Because relatively modern technology can be adopted at relatively low investment cost, the sector has become a typical first rung on the industrialization ladder in many developing countries. This characteristic has led the apparel industry to evolve into a sector of great opportunities but also great risks, as the industry needs to be able to adjust quickly to shifting market conditions.

The point of departure of this paper is that despite its importance in the national economies of Central American countries, past growth in the maquila sector has not always been the result of strong comparative advantages and strong competitiveness, but rather the result of preferential market access provided by the United States, following strict rules-of-origin requirements. Given that CAFTA contains a large number of provisions that are directly relevant to the textile trade between the United States and Central America, the objective of the paper is therefore to assess the possible impacts of CAFTA on the apparel value chain, including the cotton, yarn, cloth, accessories, and apparel sectors in Central America. In addition, the paper tries to assess the bottlenecks and constraints to productivity growth in the apparel industry and the resources and capabilities needed to succeed in the value chain. In researching the paper, we made use of a variety of methodologies, including literature review, Internet sourcing, field visits, and personal interviews with key players in the sector. We also used mathematical models to assess the likely macroeconomic and poverty effects resulting from the impact of CAFTA on the maquila industry.

[1] The one exception is Costa Rica, where Intel, a leading producer of computer chips, is by far the most important nontraditional export firm.

Although the paper focuses on the potential impact of CAFTA, which could bring benefits to Central American producers, the end of the Multi-Fiber Agreement and its successor (the Agreement on Textiles and Clothing, or ATC) has simultaneously led to increased competition—and is likely to do so even more in the future, potentially having an equal if not greater negative impact on the industry than the expected positive impact of CAFTA. Therefore, we give special attention to the challenges brought about by the expiration of the ATC since January 1, 2005, and the links with the CAFTA agreements.

The remainder of the paper is organized as follows: the next section provides a discussion of the origin and importance of the maquila industry in Central American countries, followed by a detailed description of the value chain. The various existing international trade agreements that shape the Central American maquila industry are discussed in Section 4, with special attention to CAFTA. Section 5 describes the current situation in the maquila industry, separately for each of the Central American CAFTA signatory countries. In Section 6 we summarize the results of simulations carried out with country-level CGE models regarding the impact of CAFTA on the maquila industry in terms of a range of macroeconomic indicators, such as gross domestic product (GDP) growth, employment, wages, balance of payments, and so forth, as well as in terms of its effect on poverty. The final section is reserved for concluding remarks.

2. ORIGIN AND IMPORTANCE OF THE MAQUILA INDUSTRY IN CENTRAL AMERICA

In formal terms, the term *maquila* can be defined as a system of production, generally undertaken through subcontracting, through which semicompleted, intermediate supplies and imported raw materials are transformed through processes that in many cases have added value, and whose final products are generally sold abroad. Besides a high degree of export orientation, maquila is generally characterized by high labor intensity and little vertical integration. In Central America, the term *maquila* is often used as a near synonym for the apparel industry,[2,3] and in this paper we will adhere to that convention.

Origin of Maquila

The maquila industry in Central America has developed relatively recently, dating back only to the late 1980s: for example, the average firm in Guatemala is less than 12 years old, and in Nicaragua the maquila industry started in 1992. The origin of capital invested in the textile maquila industry in Central America varies by country. In Honduras, Guatemala, and Nicaragua, investment is largely Asian, the majority of which is Korean (e.g., 66% in Guatemala, according to Anonymous [2004]). In Costa Rica, however, investment is largely American, and in El Salvador about two-thirds of investment in maquila is from national sources. The region's relative political stability has been important to investors, but the main draw has been preferential access programs granted by the United States, such as the Caribbean Basin Initiative (CBI) and the U.S.–Caribbean Basin Trade Partnership Act (CBTPA).[4]

About 90% of maquila production in the Central American region is concentrated in Guatemala, Honduras, and El Salvador (Lorenzana 2005). Maquila production in Nicaragua is growing rapidly, whereas in Costa Rica the industry is experiencing a decline because of export diversification and because Costa Rica has not yet ratified CAFTA.[5] Honduras has specialized in circular knit,[6] largely due to CBTPA preference programs that provide tariff benefits to apparel made from regional cloth composed of U.S. yarn. El Salvador also produces circular knit textiles, besides large amounts of flat weave textiles.

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[2] The exception is Costa Rica, where maquila is mostly associated with the electronics industry (especially Intel; see footnote 1), which is far more important in Costa Rica than the apparel industry. However, in this paper we use the term *maquila* to refer to the apparel industry in Costa Rica as well.

[3] At times in this paper we also use the word *maquila* to refer to the factory where the actual clothes assembly is done.

[4] See Section 4 for a description of these and other international trade agreements affecting the maquila industry.

[5] As a result, maquila exports in the first two months of 2007 were 14% lower than in the same period of 2006 ($66 million versus $77 million).

[6] The term *circular knit* refers to a production process that is initiated in the U.S. textile sector with the spinning, yarn processing, design, and often also the cutting of the cloth. The greatest levels of automation are achieved in these stages, which are therefore relatively labor extensive (and capital intensive). The rest of the process is relocated, through contracting or installing plants, in countries that undertake the assembly and finishing of the apparel (clothing stage). These phases are not as easily automated and are thus more labor intensive. The finished clothing is then sent back to the United States for further distribution and retailing.

Guatemala produces significant amounts of knit cloth but is also the largest producer of flat weave, providing 55% of the region's total supply.

Importance of Maquila Exports

Despite its relatively recent origins, maquila has quickly become a leading export in every Central American country except Costa Rica (Table 1). Honduras depends on textile maquila for more than three-quarters of its total export value, and in Nicaragua maquila accounts for nearly half of total export value. Even in Guatemala and El Salvador maquila is responsible for about a third of total export revenue. CAFTA countries' maquila exports are mostly to the United States and overwhelmingly consist of apparel (as opposed to yarn or fabric). The top CAFTA supplier of textiles to the U.S. market (in square-meter terms) is Honduras, which ranks fourth worldwide after China, Mexico, and Bangladesh (it ranks 10th in terms of value). El Salvador, Guatemala, Costa Rica, and Nicaragua rank respectively 9th, 16th, 20th, and 24th in square-meter terms and 15th, 11th, 21st, and 20th in value terms.

All the countries except Nicaragua saw exports decrease in 2005–2006 compared with 2004–2005, mainly as an effect of the expiration of the Uruguay Round Agreement on Textiles and Clothing, or ATC (see Section 4).

Importance of Maquila Employment

The clothing industry tends to be labor intensive, and maquila therefore is a major provider of employment, often involving relatively young people from rural areas who previously had few or no income opportunities other than their own household or the informal sector. An estimated 80% of these are women (ITC 2006), given a general belief that women are more dexterous and those younger women have better eyesight, whereas men typically work in cloth cutting.

Typical maquila wages are only high enough—as one maquila manager admits—to bring workers "from misery to poverty." Salaries include a minimum salary and a quantity-based incentive bonus, which in Nicaragua, for example, typically ranges from about 2,000 to 2,800 cordobas per month, equivalent to about US$120–165. However, many earn less during a "trial period," after which workers become eligible to earn more. When maquilas change styles of clothing, employee salaries, which are tied to productivity, temporarily drop as workers learn the new styles. When styles first change, many workers start off earning a level that is very close to the minimum salary level. One maquila manager estimated that styles change approximately once per month, and it takes a typical worker about a week to return to levels of productivity achieved before the change.

Table 1. Importance of Textile Maquila in Central America

Country	Maquila exports to U.S.(10^6 USD)	Change from year before (%)	Growth rate, 1995–2002 (%)	Imports of maquila inputs from U.S.a (106 USD)	Total export value (106 USD)	Maquila exports to U.S. as a % of total exports	Maquila employment ('000 persons)	Maquila employment/total employment in manufacturing (%)	Approximate number of maquila firms
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Costa Rica	478.6	–6.7	1.3	450.9	8610	5.6	13	8	40
El Salvador	1445.4	–18.2	193.8	205.7	4301	33.6	87	20	250
Guatemala	1717.1	–14.2	150.0	453.6	4608	37.3	142		500
Honduras	2461.8	–9.9	174.2	45.5	3066	80.3	129	27	200
Nicaragua	753.6	11.5	502.7	35.8	1653	45.6	60	30	70

Sources: (1) through (3): IDS (2006); (4): Morley (2006); (5): World Bank database; (7): INCAE (2004), except for Costa Rica, which is CATECO (Camera Textíl Costarricense, see www.textilescr.com); (8): IADB (2005); (9): Hernández et al. (2006), except for Costa Rica, which is CATECO.
Note: Data in (1) refer to June 30, 2005–June 30, 2006; data in (4) refer to 2002; data in (6) are those in (1) stated as a percentage of total exports in 2004; data in (7) through (9) refer to 2003, except for the Costa Rica data, which refer to June 2005–June 2006.
[a] Total imported inputs for maquila are approximated as the sum of the imports in SITC codes number 26 (textile fiber), number 65 (which includes, yarn, thread, and fabrics), and number 84 (clothing).

Wages can be kept relatively low largely due to an excess supply of labor. In Nicaragua, for example, approximately 40 to 50 people line up every Monday outside the larger maquilas, while smaller assembly firms in search of labor often find workers by going to the larger tax-free zones (the so-called *Zonas Francas*). Nicaraguan maquilas report that of those who apply, typically about half eventually secure long-term work. Experience, sewing tests, and general dexterity tests are used to cull applicants. All applicants must present an identification card, a police record, and a health certification, which although they cost only the equivalent of several dollars could serve as barriers to potential workers.

Workers who have achieved long-term employment may quit for various reasons, but distance from the maquila appears to be the most common reason. In Honduras, even workers who use two buses to commute to work do not lose a significant portion of their daily wage to do so, which suggests that the time loss is the more important factor in leaving the maquila. In Nicaragua, however, the commuting cost can also play a large role in a worker's decision to leave. Those earning about 80 cordobas (equivalent to about US$5) per day—a low salary for the industry—and commuting through two bus rides may pay 20 cordobas (about US$1.25) for the daily, round-trip commute. In addition, the country's frequent transportation strikes often complicate the commute. Such strikes typically stop bus service for a week at a time and recently have been occurring as often as once every two months.

Although the maquila sector is often criticized for low employee wages, poor labor conditions found in some maquilas have been more problematic, since they have led to (temporary) boycotts of certain apparel brands by consumers in the United States. An industry source in Nicaragua reported that the revelation of poor labor conditions is currently the biggest problem among the 12 Korean-owned maquilas in that country and has been one of the main causes behind canceled contracts in recent years. Some U.S. retailers have their own systems in place to ensure that labor conditions are acceptable. Most large retailers that undertake such monitoring return every few months to inspect the plants. If the plant is not up to standards, it is to be corrected by the second visit several months later or the third visit at the latest. If the maquila still does not meet the regulations and standards, typically by the third visit, orders may be canceled. After conditions are met, the retailer will return less frequently, usually only once or twice per year to ensure that agreed-upon standards are maintained.

The Worldwide Responsible Apparel Production (WRAP) organization provides independent monitoring and certification of compliance with a set of basic labor standards. A growing number of Nicaraguan maquilas are becoming WRAP certified. Most maquilas in Honduras believe WRAP certification increases orders from clients, and certified firms report that it has helped secure more business. Honduran maquilas report that over the past few years clients have begun to ask for such proof of satisfactory labor conditions, and WRAP certification seems more and more to be becoming a requirement for all maquilas. Although WRAP does incur a cost to the firm—not only for certification but also in raising factory conditions—it is generally regarded as good business as retailers have become concerned that negative press coverage against certain brands does affect sales.

3. STRUCTURE OF THE MAQUILA INDUSTRY AND APPAREL VALUE CHAIN

An accurate description of the *value chain* in apparel production is difficult given the heterogeneous nature of the maquila sector. The maquila industry ranges from mass production of low-quality and/or standard garments to complex, high-quality fashion items. The former category is largely concentrated in export processing zones in developing countries, whereas the latter category is produced in industrialized countries—although even high-end items are increasingly being outsourced to lower-cost producers that are in proximity to a major export market. While simple T-shirt production may involve less than 10 steps, men's blazers, for example, can require as many as 100 operations.

In general terms the maquila industry value chain in Central America refers to an integrated production network where basic assembly operations (mostly cutting and sewing of materials sent from U.S. plants) are undertaken and the final product is exported mostly to the United States, frequently under tariff and quota preferences. Formally, the maquila industry can be divided into the following specialized activities that can be considered stages in the value chain (Figure 1 and Obando and Cortés 2002):

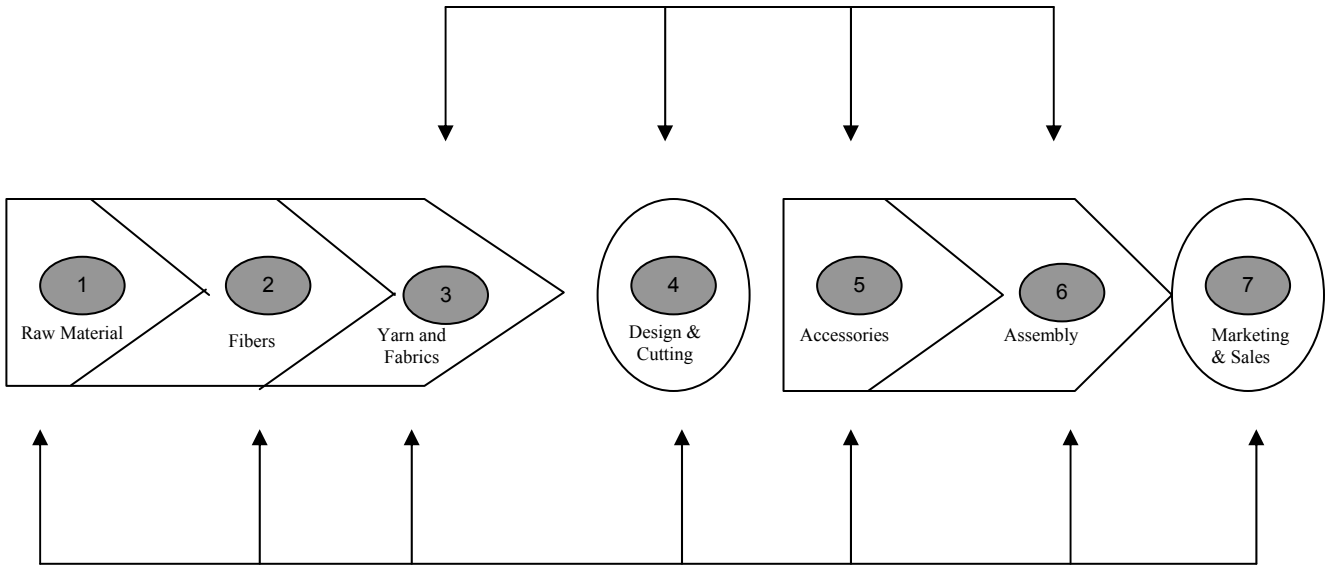
- preparing fibers for spinning;
- spinning fibers into yarns;
- processing yarns into fabrics;
- design and cutting the cloth;
- sewing the cloth into finished garments (assembly); and
- finishing the item (with accessories), labeling, packaging, and so on.

Dyeing of the cloth can be undertaken at the fiber, yarn, fabric, or finishing stage. The downstream steps in the value chain of maquila (particularly sewing and finishing) tend to be more labor intensive, and less capital and knowledge intensive, which explains the tendency for those steps to be outsourced to countries with low labor costs. In addition, the scale of operations tends to decline in downstream stages—a larger number of relatively small and medium-sized firms are generally involved in apparel assembly. The finished apparel is sent to the final consumer markets (in the case of textile maquilas in Central America the final market is most often the United States) through commercialization and distribution (marketing) networks, which for the most part are controlled by large retailers or brand-name companies, which also capture much of the final value of the apparel (Figure 2).[7] In the remaining parts of this section we provide a short description of each of the stages of the maquila value chain. The latter exhibits a clear tendency toward increasing vertical integration, where multinational companies (e.g., Wal-Mart, Target, Sears, GAP, JCPenney, Sara Lee Co., Liz Claiborne, VF Corporation) control the

[7] For example, according to Parada Gómez (2004) a pair of GAP jeans that costs about $6.00 to produce in Nicaragua is sold for $34.50 in GAP stores in the United States.

chain and where subcontracting (instead of own production) of the production stages has become the norm, with the multinationals focusing on design, financing, and (especially) marketing and distribution of apparel.

Figure 1. Stages in the Maquila Value Chain



Sources: Condo (2004a) and Parada Gómez (2004).

Fiber Processing

In Central America, virtually all fibers are imported. Natural fibers, which provide the raw material for yarns, include principally cotton (production of which virtually disappeared in Central America after the 1980s even though a cautious comeback seems in the making—see Section 5) but also wool and other animal hair, silk, and ramie. Mainly because of the capital-intensive nature of the production process, cotton fibers tend to be manufactured into textile or at least into yarn at origin (see below). The term *man-made fibers* (MMFs) refers to synthetics such as polyester, nylon, and acrylic as well as artificial fibers such as rayon and acetate. Over the past few decades, synthetic fibers have gained on natural fibers, and as of 2003, cotton represented only 41% of the fibers market (down from 55% in 1970; see Parada Gómez 2004), whereas all synthetics as a group accounted for 53% (World Bank 2004).

Yarn Spinning, Textile Weaving, and Textile Finishing

The various fibers discussed above are processed into yarns. Some MMFs and silk fibers are made into filament, whereas cotton, wool, animal hair, and other MMFs are spun into yarn. These yarns are then used in woven or knit textile production. Although yarn spinning, textile weaving, and textile finishing are three distinct processes in the maquila value chain (Figure 2), in some cases, when sufficient capital is

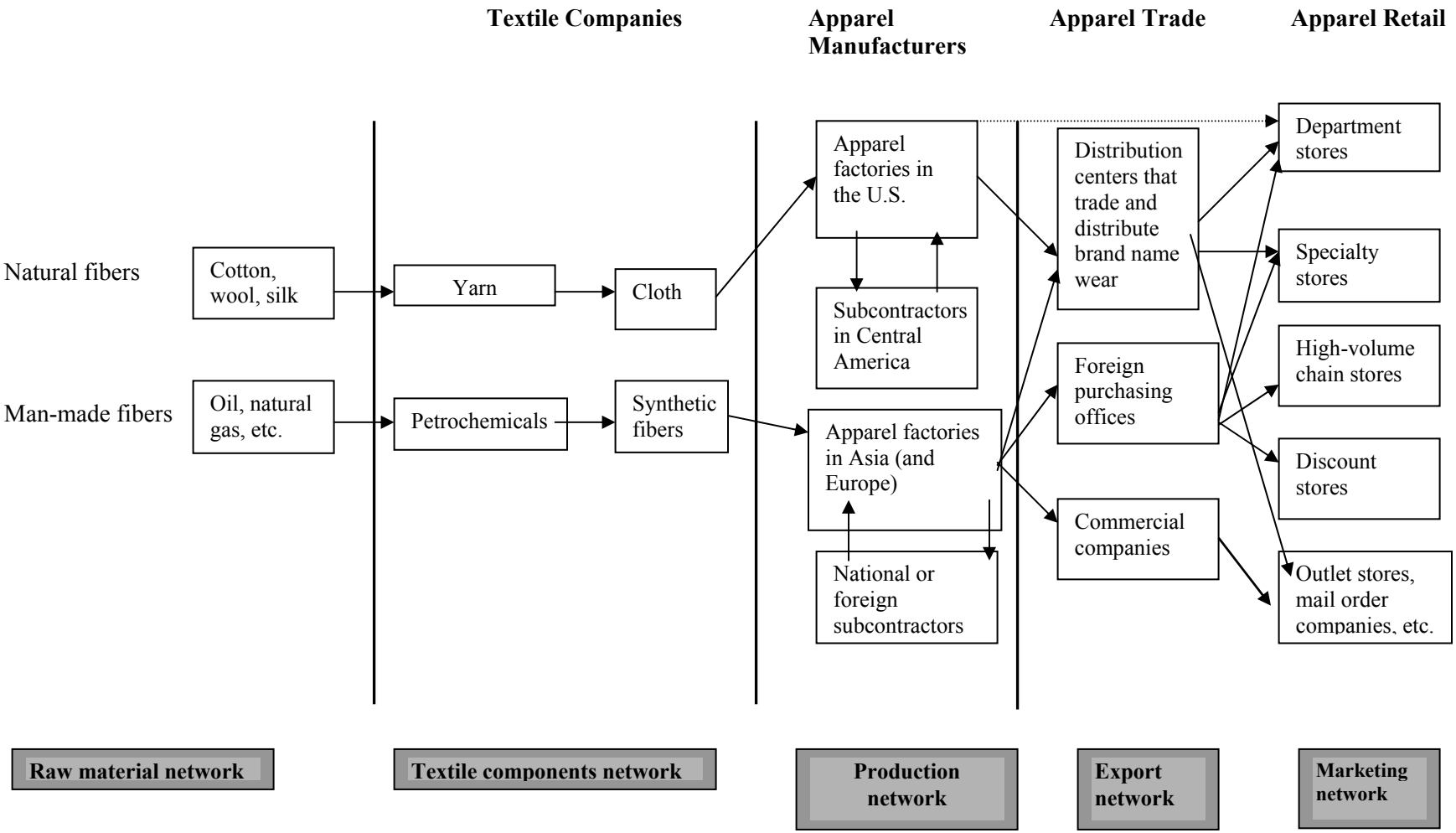
available, they take place in the same plant. In fact, some refer to the "textile industry" as consisting of the yarn-spinning, fabric-weaving, and fabric-finishing steps.

Developed countries have incorporated equipment that is generally faster and more labor efficient in production, which has enabled them to remain competitive in yarn spinning. However, China and India are competitive in standard products, even though producers in both countries are using relatively older equipment. More or less the same holds for textile production, which is also relatively capital intensive and often has high import shares. The lead time in the sector is quite long, and the high capital intensity of the industry results in relatively large minimum orders. Even though some of the richer and/or larger countries such as Hong Kong, China, and India rely mainly on locally produced inputs for textiles as well as clothing, it has proven difficult for most Central American countries to establish a textile industry and create backward linkages to the local economy. As noticed in the previous section, currently little yarn and textile is produced in Central America—the region still relies heavily on imports for its apparel production.

Another reason maquilas purchase very little cloth from Central American producers is because the client (retailer) frequently chooses the textile mill and there is no ability to negotiate cloth sourcing, especially when very specific cloth is needed. Nevertheless, the extent to which maquilas are required to source textile from specific firms varies greatly. Some maquilas find that retailers generally specify a source but are flexible if cloth samples are sent before assembly is undertaken and their quality is approved. Smaller maquila firms frequently cite a need to depend on textile mills chosen by their retailers for cloth sourcing, since larger retailers are able to negotiate lower prices. CAFTA's effect on projected cloth sourcing also varies widely by firm, although most express openness to sourcing cloth from Central America due to CAFTA benefits.

However, some working in the industry cite price, quality, and other reasons for the lack of interest in textile produced in domestic and regional mills. Although both price and quality are frequently cited, the high cost of Central American cloth is more frequently listed as the main reason that cloth is purchased outside the region. Maquila managers also cite the region's inability to consistently provide cloth of an exact color and a high rate of errors as additional reasons that cloth is imported from outside the region. In addition, Central American textile mills often do not produce the exact type of cloth required to meet garment specifications. Denim and twill cloth is produced in Central America, but a much wider variety of textures is produced in Asia.

Figure 2. Networks in the Maquila Value Chain



Source: Based on Gereffi and Memedovic (2003).

As a result, garments produced in Central America are mostly composed of fiber, yarn, and textile from the United States (particularly in El Salvador and Honduras, in order to take advantage of preferential access; see Section 4) or Asia. Maquilas in Nicaragua and Guatemala source their inputs primarily from Asia but also from the United States. Whereas the main goal of most Asian-owned plants is to circumvent U.S. quotas rather than take advantage of preferential access (and therefore they primarily source from Asian countries), U.S.-owned plants (particularly those located in Nicaragua) have consistently reported sourcing from U.S. mills, suggesting that previously existing ties to businesses from an investor's originating country or region may also affect cloth sourcing.

Textile Cutting and Apparel Assembly

In textile cutting and apparel assembly, the production technology referred to as the *progressive bundle system* is commonly used and has remained largely unchanged for decades. The cloth is cut, organized by parts of the garment, tied into bundles, and then sewn together. Each worker specializes in one or a few operations. Because the assembly step is the most labor-intensive operation in the garment production, it continues to be the operation most likely to be allocated to low-wage (mostly developing) countries, including the CAFTA countries in Central America. Within the apparel assembly sector, the following categories can be distinguished:

- *Make* (or *pure assembly*)—involves only the stitching together of the pre-cut item, which is typically imported; this category is also referred to as circular knit (see also footnote 5).
- *Cut and make*—involves cutting the cloth and sewing the apparel item together.
- *Cut, make, and trim*—involves *cut and make* and as well as trimming the item with accessories such as buttons and zippers.

In the past, maquila plants in Central America were overwhelmingly involved only in the making, or pure assembly, of the garment. Retailers (most often multinational companies) purchased thread used for sewing, accessories, and cloth; cut the cloth to be assembled; and sent these inputs to the maquilas for assembly. Although assembly is still the most commonly found type of maquila operation in Central America, the sector is increasingly moving toward *full-package* (or *ready-to-use*) production—which involves the maquila sourcing and purchasing all inputs used in the production of the garment.

Full-Package Production

Full-package production typically involves purchasing all inputs, cutting and assembling the cloth, attaching accessories, undertaking any additional finishing such as ironing, packaging the garments, and

sometimes shipping the garments to the client. Such full-package services, which are the rule in Costa Rica and are becoming more common in Honduras and Guatemala, are more and more being demanded by retailers, as it allows them to focus resources on marketing and final retailing, which represent the largest part of the final value of the garment. Mexico's experience suggests that trade liberalization is important for this upgrading toward full-package production to take place, and indeed there are preliminary signs that CAFTA may be stimulating vertical integration in the Central American maquila industry (see Section 5).

In full-package production the client pays for the whole value of the apparel, rather than just the valued added in the country where the maquila is located. To the extent that supplies are locally sourced, this may lead to an increase in the traditionally few forward and backward linkages of the maquila industry to the rest of the economy. Generally, however, specialized activities are increasingly global and the location decision of each activity is made based on costs, quality, reliability of delivery, access to quality inputs, and transport and transaction costs. The presence of a textile industry in a country stimulates full-package production; currently Guatemala has the most developed textile industry in the region, with El Salvador, Nicaragua, and Honduras trying to catch up. As a result, after Costa Rica it is Guatemala that is furthest along the road of transforming its maquila industry toward full-package production.

Because about half of a typical garment's final value is tied to design and retailer branding, clients are increasingly demanding full-package services so that they may focus efforts on design and retailing. However, provision of full-package service can be risky. With assembly, second-quality garments known as *seconds* allow the maquila to sell garments with a higher rate of errors to the client at a lower price. With full-package services, seconds are typically not accepted and an entire order can be rejected if errors surpass a specified level. In addition, cancellation of certain cuts, styles, or sizes is common in apparel production. In pure assembly, cancellations represent a loss for the maquilas in terms of labor costs invested, but in full-package production, maquilas also lose their resources invested in these inputs. A potential solution to the risk problem in full-package production would be to explore risk sharing with partners. Philip Van Houston Company, for example, takes on the risk of purchasing the cloth by owning the cloth used in some of its apparel production until the cloth is cut, at which point the ownership and risk are transferred to the maquilas.

Capital constraints are widely recognized as one of the biggest obstacles to full-package production, particularly for smaller firms. Capital constraints also prevent the purchase of machinery that could help to make maquilas more competitive. Some are aware of investments that would allow them to produce for customers that have specific requirements—such as metal detectors to prevent needles being left behind in children's and infants' clothing—yet they lack the capital to make the necessary investment.

Investment in new equipment could in some cases contribute to faster production, which would make firms more competitive.

Although the capital constraint is typically suggested to be the largest constraint to the development of full-package services in Central America, punctual delivery is also an issue for full-package services and for the apparel industry more generally. In fact, some cite delays in the arrival of inputs as the greatest constraint to successful full-package services in Central America. Short delivery times are becoming increasingly important as retailers move toward ordering smaller, more frequent batches of clothing. Smaller batches require new orders to arrive at stores more quickly as items sell out during a season. However, retailers are increasingly demanding smaller quantities to avoid the need to discount unsold items. Because sales often represent large losses for retailers, the trend is increasingly toward smaller but more frequent orders.

Under normal shipping conditions, maquilas report that an order from Asia typically takes four to seven weeks longer to reach the United States than one from Central America. The speed at which apparel can be delivered to the United States depends largely on input delivery speed. When sourcing cloth and accessories from Asia to Central America, transportation alone takes approximately four weeks, whereas shipments between Nicaragua and Honduras, for example, take only several days. The step in the production process that is reported to take longest is cloth production. Stocking warehouses with textile is risky because of uncertainty regarding the types of cloth that will be required for future orders. Maquilas can improve fast response by depending on forecasting of colors and fashions that are expected to be important in the upcoming season, so that cloth can be manufactured ahead of time. Speed to market can also be improved by increased communication between the shelf of the retailer and the factory, to communicate the need for replenishment when a specific style, size, or color of garment is about to be sold out, through point-of-sale technology.

Increased Central American integration would also improve delivery times in the region, since the various processes involved in apparel production are spread among different countries. Within each country, cooperation among existing maquilas could help the sector obtain higher numbers of full-package orders. This would allow firms to work together to distribute an order that is needed quickly. By spreading the order among several firms, as a group they could achieve the delivery time demanded by the U.S. retailer and also continue producing previously scheduled orders.

Another obstacle to rapid delivery is posed by the shifting nature of the apparel industry. Retailers are increasingly requesting a larger number of styles and apparel items that require a larger number of operations. Additional styles and operations make production less efficient, and maquilas report losing clients due to an inability to deliver the increasingly complex orders on time. Production can be improved by updating to the newest manufacturing methods, from line to module production, for example.

Apparel firms and accessories firms report that CAFTA has slowed delivery time because of the additional origin certification now required for the import of apparel to the U.S. market. Some even resort to bribery to move articles more quickly through customs. The simplification of administrative processes, through automated processes where possible, would help improve delivery time. Employing personnel at customs who deal specifically with businesses in the *Zonas Francas* would speed up the process, since specific regulations apply to exports produced in those zones. Firms can also improve the speed of shipments by training staff to serve as brokers who approve shipments.

While rapid delivery is important to the development of the sector (when clothes are delivered late, typically a fine must be paid), poor quality can cause an entire order to be canceled. Quality problems, which lead to costly rejects, typically are not related to problems with machinery, but rather are the result of insufficiently trained workers. For this reason, training of personnel is the most important step that can be taken to improve garment quality and thus minimize the chance of orders being rejected. The PROCINCO training program provided through the Honduran Manufacturers Association is widely used throughout the industry and could be used as a model for the region.

Retailing

The apparel industry is very much *buyer* (or *demand*) *driven.* The U.S. retail sector, the major export market for Central American maquila, has become increasingly concentrated, implying more buying power for the retailer and thus increased bargaining power toward suppliers. Although retailers can demand lower prices from maquilas, they also can frequently use their bargaining power to secure low-priced cloth for the maquilas producing their apparel.

Customer demand drives retailer demand, and increasingly information regarding decisions on patterns, colors, and material flows directly from retailers to textile plants. Buyers are also increasingly requesting complete packages that go from design to sourcing of raw materials and delivery of finished garments. A series of logistics and business services are necessary to ensure a smooth flow of goods, information, and payments. *Lean retailing* has become possible due to technologies such as bar codes, uniform product codes, electronic data interchange (EDI), and data processing as well as distribution centers and common standards across firms. Bar code equipment allows the retailer to collect point-of-sale information and thus continuously monitor which garments are selling and which are not and keep track of inventories, so that the supply of garments can be adjusted to consumer tastes as buyer behavior–based information becomes available. Such adjustments require more frequent supplies of garments in smaller quantities, as opposed to the traditional stocking of the store before the season and (costly) clearance sales at season's end. EDI and data processing programs supply a direct and sometimes

automated exchange of information between retailers and suppliers, so that the appropriate size, color, and style of garment can be replenished.

More and more, traditional wholesalers and storage facilities are being replaced by distribution centers, which enable replenishment orders to arrive quickly to stores. Unlike wholesale storage buildings, distribution centers usually have a smaller floor area (but are much more capital intensive) and the apparel is moved through automated processes. A container is routed to a station with workers only if the information on its bar code does not match the purchasing order. The information processing system also processes financial information.

Finally, it is important to point out that ensuring compatible standards in all the links of the value chain is crucial for guaranteeing an optimal integration of flows of information, goods, and payments. Bar codes obviously play a crucial role here, but simple technologies, such as placing apparel on hangers so that it can go straight from the truck to the shop floor, are important.

4. INTERNATIONAL TRADE AGREEMENTS AFFECTING THE MAQUILA INDUSTRY

CBI/CBERA

To better understand the significance of CAFTA for the Central American maquila industry and to develop an appreciation for what it can and cannot do, it is important to understand its predecessors. The provisions of CAFTA depart from the relevant conditions of previous trade agreements between the United States and the five Central American countries. Those five countries are part of the Caribbean Basin Initiative put into effect January 1, 1984. The CBI granted trade preferences and other benefits to the countries of the region by the Caribbean Basin Economic Recovery Act (CBERA) enacted by the U.S. Congress in 1983.

The CBERA granted unilateral preferential treatment (duty-free or lower than applicable preferential tariffs) to many products imported into the United States from 24 countries in the Caribbean Basin designated as beneficiaries. However, textiles and apparel, even though exempted from the worldwide quota system then in force, were not given special tariff-free access to the U.S. market under the CBERA; rather, they remained subject to the so-called Multi-Fiber Agreement (MFA),[8] which ruled from 1974 to 1994 and permitted certain countries to impose quantitative restrictions (quotas, not tariffs) on textile and clothing imports (including cotton, wool, and man-made fibers) in case the latter were considered a threat to their own domestic industries.[9] There was, however, one important exception under the CBERA: under the so-called Special Access Program (announced in 1986 and referred to as "807A") they were exempted from the MFA provided they were produced from inputs produced in the United States.[10]

Under the Special Access Program, apparel items that qualified were imported under preferential quotas called *guaranteed access levels,* rather than counting toward regular quotas. This new program applied to garments made from cloth that were produced and cut in the United States and then assembled in Caribbean Basin countries (which include the Central American countries). Yarn used in weaving or

[8] The MFA, established in 1973 under the then General Agreement on Tariffs and Trade (GATT), subjected international trade in textiles to discriminatory quantitative restrictions through an elaborate quota system put in place to protect domestic textile industries in the United States, Canada, the European Union, Austria, Finland, and Norway. While some nations with strong political ties to developed countries benefited from preference agreements that raised their quota levels or eliminated them, many developing countries suffered from severely restricted market access.

[9] The quota system under the MFA effectively operated as an export tax on apparel exported to the United States.

[10] The earliest preferential trade program, referred to as "807 Regular" or "807," provided reductions in the duty charged on garments imported into the United States, provided that they are assembled outside the United States using fabric components that were formed and cut in the United States. Garments that did not increase in value or improve in condition other than by assembly and other minor operations "incidental to assembly" were considered qualifying. Further processing operations that are common in apparel production such as garment bleaching, dyeing, stone washing, and acid washing, however, were considered beyond incidental, and would disqualify the item. Under 807, if these conditions are met, the *U.S. components* in the garment are allowed to enter duty-free. In these cases, duty is calculated as the full value of the garment minus the value of the U.S. components. Often referred to as 807 garments, these imports are categorized under the subheading 9802.00.80 of the Harmonized Tariff Schedule of the United States.

knitting the apparel's cloth (as opposed to yarn used in forming the cloth) could be from any country and still qualify under 807A. However, non-U.S.-origin trimmings were permitted only up to a limit of 25% of the value of all components. Although operations such as garment bleaching or dyeing, stone washing, and acid washing disqualified apparel from 807 duty benefits, items remained eligible for Special Access (807A) quota treatment. For qualifying imports, tariffs were charged only on the value added in the CBI region.

In the 1970s and 1980s, U.S. apparel producers actively used 807 and 807A to outsource apparel assembly to countries with lower labor costs in Mexico and the Caribbean Basin.[11] However, the items were still subject to quotas, and quotas were imposed on more categories over time. In the case of Guatemala and El Salvador, quotas are still in place on 340/640 items: men's and boys' cotton/MMF woven shirts. In addition, quotas are still in place for Guatemalan 347/348 items (cotton breeches, trousers, and shorts) and Guatemalan 351/651 items (cotton/MMF nightwear and pajamas), including 807 garments.

The identical trade and tariff treatment of textiles from both Mexico and the Caribbean Basin countries granted by the United States under the CBERA changed in 1990 with the passage of the Caribbean Basin Economic Recovery Expansion Act (CBEREA). That act reduced tariffs for the Caribbean Basin countries by 20% over a five-year period with a 2.5% floor. Thus between 1990 and the implementation of the North American Free Trade Agreement (NAFTA) in 1994, Central America enjoyed significant advantages over Mexico because of lower U.S. tariffs. However, until January 1, 1995, textile exports from both Central America and Mexico were still subject to the MFA agreement.

NAFTA, which entered in force January 1, 1994, changed the position of maquila in Central America. An unintended side effect of the agreement was the virtual elimination of the initial advantages of CBEREA beneficiary countries over Mexico, because Mexican products now entered the United States duty-free as well as quota-free. To make matters worse for the Central American maquila industry, Mexican producers were not subject to the restrictive rules of origin on intermediate inputs. To offset this unintended and unfavorable effect of NAFTA on Central America, in 2000 the U.S.–Caribbean Basin Trade Partnership Act (CBTPA) was passed. CBTPA beneficiary products include all textile and apparel products (as well as a number of other products) that were granted the same duty-free access to the U.S. market and liberalized rules of origin granted to Mexico under NAFTA (often referred to as "NAFTA parity"; see Anonymous 2005).

[11] It would be a mistake, however, to argue that low labor costs are the only reason for outsourcing: increased openness of the Central American economies and favorable tax incentives the Central American countries offer to foreign investors also play a role.

CBTPA

The United States–Caribbean Basin Trade Partnership Act provided a number of important opportunities for beneficiary countries in the textile and apparel sector. While the 807 program permitted the entrance—without duties or quotas—of apparel assembled in the region, if the cloth is made in the United States and produced from U.S. yarn, the so-called 809 program extended the 807 program and provides free trade of apparel sewn in the CBTPA region with fabric that was made from American thread and with fabric that was produced and cut in the United States (807A+) *or the region* (809+). In practice, the CBTPA has provided a big impetus to the growth of the maquila industry in all of the Central American countries. It is important to note, however, that the benefits of the CBTPA would be available during a transition period from October 1, 2000, until either September 30, 2008, or the date that the Free Trade Area of the Americas, which is still under negotiation, enters into force. As explained below, the Central American countries decided not to wait until the expiration of the CBTPA but rather to make most of its provisions permanent under CAFTA. In view of the CBTPA's importance as a basis for the CAFTA negotiations regarding maquila, Appendix A provides further details.

ATC

Although this paper looks primarily at the impact of CAFTA on the maquila industry in Central America, the expiration on January 1, 2005, of the Uruguay Round Agreement on Textiles and Clothing (ATC) is likely to have the largest long-term impact on textile and apparel production in the region in the near to medium-term future. As of January 1, 1995, the MFA was succeeded by the ATC.[12] The ATC, which came into force as the World Trade Organization (WTO) was established in 1995, provided for a gradual increase of textile quotas. Rather than an extension of the MFA, the ATC was intended to integrate textiles and apparel into the multilateral trading system (the General Agreement on Tariffs and Trade [GATT] 1994) in four steps over a 10-year transition period. In the first stage, starting January 1, 1995, major textile- and apparel-importing countries integrated products totaling 16% of their total volume of textile and apparel trade in 1990. Stage two, exactly three years later, integrated an additional 17%, while stage three, which took place exactly three years after stage two, integrated 18%. Stage four on January 1, 2005, was the date set for the final integration of the remaining 49% of total volume of textile and apparel trade, subjecting the sector to the general rules of GATT.

The ATC required articles from each of four categories—tops and yarns, fabrics, made-up textile articles, and apparel—to be integrated at each stage. However, it allowed countries great flexibility in

[12] During the Uruguay Round, WTO members signed the Agreement on Textiles and Clothing, effective in 1995, which established multilateral rules and subjected the textiles trade to the basic WTO principles of nondiscrimination and national treatment. The agreement mandates that WTO members implement the ATC over a period of 10 years, from January 1, 1995, to January 1, 2005.

choosing which goods to liberalize, and unrestricted products were integrated during stage one and stage two, basically rendering both stages not commercially meaningful. In the third step, Canada, the United States, and the European Union chose products similarly—all integrated textile and apparel items for which quota utilization was very low (most had 0% to 50% utilization rates). This description of stages one, two, and three shows the significant impact of stage four. Not only was 49% of total volume set to be integrated in 2005, but stage four also marked the year of the integration of the most "sensitive" articles.

While in theory developing countries were supposed to favor implementation of the ATC (i.e., the gradual phasing out of textile and clothing quotas), many countries (including those in Central America) were concerned that the removal of quotas would actually harm their maquila industry since the ATC makes the outsourcing of apparel assembly in less-developed countries less attractive. More important, however, once quotas are removed completely, Central American countries would lose their relative advantage obtained through the CBTPA and market share would go to countries with the highest comparative advantage in textile production. Comparative advantage is determined not only by the cost of labor (which assumes particular importance in the circular knit production in which the Central American countries tend to specialize) and the price of raw materials, but also by factors such as timeliness, geographic location, and percentage rejects. Since China has the cheapest labor and arguably one of the strongest textile industries in the world, its accession into the WTO in December 2001 and the end of the ATC have left CAFTA countries wondering what will happen to their maquila industries in the future (Condo 2004b).[13] Simulations carried out with the GTAP model (in which Central America is included as one single region), which are largely driven by changes in relative prices and cost competitiveness,[14] suggest that part of the increase in China's market share in the United States will come at the expense of Central America, and much more so in the case of clothing than textiles (Nordas 2004).

Indeed, the end of the integration process greatly benefited many low-cost Asian countries that had been exporting under quantitative restrictions. Chinese producers have proven to be the strongest competitors once ATC phases three and four eased restrictions on the country's exports to the U.S. market. In 2001, upon joining the WTO, China joined other countries in the opportunity to take advantage of increasingly quota-free textile and apparel markets. Between 2001 and 2003, China's market share of the total value of U.S. apparel imports jumped from 13.7% to 40.2%. Between 2001 and 2002 alone, the benefits of recent WTO membership combined with the beginning of phase three caused China's total exports of textile products to the United States to jump by 125%. Nearly all of this growth was in products that had been freed from quota restrictions—those articles increased by 260%.

[13] When China became a member of the WTO in 2001, it did so under special terms that allowed importing countries to impose short-term "safeguards" on Chinese goods until 2013 if they could show those goods to be causing "material injury" to domestic producers. Separate measures for textiles allow safeguards to be imposed whenever imports threaten "market disruption."

[14] That is, the GTAP simulations do not capture changes in technology and the influence of factors such as timeliness and distance, which may well prove crucial for conserving market shares of Central American producers (see also Section 5).

With the final phase of quota eliminations, Chinese textile exports to the United States increased by 64% in the first half of 2005 (Mesquita Moreira 2006). That caused the U.S. government to invoke a textile safeguard provision intended to protect domestic industries that China had accepted upon joining the WTO in 2001. Under that provision, a temporary 7.5% limit was immediately imposed, and in November 2005 the United States and China reached a longer-term bilateral agreement to be implemented that will hinder China's full access to the U.S. market until December 31, 2008. Quotas are applied to 34 products and will allow exports to grow by a maximum of 10% in 2006, 12.5% in 2007, and 16% in 2008. Although this final agreement will restrain Chinese textile exports to the United States, it will do so only in the short run. For other countries that export to the United States (including Central America), the "safeguard" tariffs placed by the United States on Chinese textile goods as a mitigating measure for market disruptions provide no more than a three-year window (until 2008) to take advantage of the quota-free trading environment and win precious market share in the United States and the EU before China can fully compete.

Table 2. Percentage Shares of Different Countries in U.S. Textile and Clothing Imports

Country	2003	2004	2005b
China	14.9	17.2	25.1
India	4.3	4.6	5.3
Mexico	10.8	9.9	8.7
CAFTA countries[a]	11.6	11.0	10.0

Source: Based on data of the U.S. International Trade Commission.
[a] Includes the Dominican Republic.
[b] January–September.

In a survey done by ASIES in Guatemala immediately after the expiration of the ATC, many apparel firms claimed reduced orders but little impact on prices. Indeed, it seems that the net effect of the expiration of the ATC has been positive for Asian exporters (particularly China and India) but negative for Central America and Mexico (Table 2). The latter have lost market share in the United States, which has especially hurt apparel producers who face difficulties competing with Asian countries. Textile producers in Central America have suffered less because raw material sourcing is shifting somewhat from the United States to Central America (and Mexico), but the net effect is still negative.

CAFTA

As a result of the January 1, 2005, expiration of the ATC, bilateral and multilateral trade agreements increased in importance, and indeed the CAFTA negotiations (which began in 2002 and concluded in 2004) have put much emphasis on trying to consolidate the gains for the Central American countries achieved under the CBTPA (see Appendix A for details on the CBTPA and Appendix B for a comparison

between CAFTA and the CBTPA). Such gains concern in particular the tariff rate concessions agreed under the CBTPA. As a result, the bottom line of the provisions in the CAFTA agreement for maquila production is that they consolidate the (unilateral and temporary, and therefore revocable) preferential plans provided by the United States through the CBTPA, which, like the CBI/CBERA, is scheduled to expire in 2008. In particular, CAFTA makes permanent the liberalized rules of origin for inputs to the maquila industry granted temporarily under the CBTPA, in this way providing CAFTA countries a continuation of the preferential treatment for apparel assembled in Central America from regional or third-country (non-CAFTA) cloth. This preferential treatment included in the CBTPA entitles some apparel produced in Central America to be imported into the United States at reduced or zero tariff rates even when produced with non-American cloth, as long as American yarn had been used in cloth production (see the "Exceptions to rule of origin" row in the table in Appendix B). In addition, and explained in more detail below, CAFTA extends the benefits granted by the CBTPA by expanding on the CBTPA's limited benefit for regionally made fabrics, which applied only to knit apparel.

This is a very important achievement for Central American maquila producers, the more since during the early stages of CAFTA negotiations, many U.S. apparel companies and retailers asserted that the decision to continue, eliminate, or expand apparel assembly in Central American maquilas depended largely on the details of CAFTA, given the largely negative impact of the 2005 quota elimination. Many argued that the net outcome for the sector would hinge upon the extent of preferential agreement granted to apparel assembled in CAFTA countries from regional fabrics or fabrics from third countries such as Mexico or Asia. In this sense, the results of the CAFTA negotiations have been positive for the Central American maquila industry since they resulted in a number of provisions that represent an extension of already existing (but temporary under the CBTPA) privileges and together counteract the negative effects of the expiration of the ATC and provide some relief from the resulting increased competition from Asian countries, especially China.

In particular, CAFTA allows for a number of regional and third-country fabrics, but subject to limitations, as follows (see also Appendix B):

First, there is the *yarn forward* rule of origin which first appeared in NAFTA.[15] To obtain duty-free treatment, this requires that the fabric of the component of a garment that determines its classification must be woven or knit in CAFTA countries. In addition, that fabric must be woven or knit from yarn that was produced in CAFTA countries and assembly must also take place in the region. In other words, if all processing from the yarn forward in the value chain takes place in the United States or any other CAFTA country, the textile or apparel product will generally qualify as an *originating good* and therefore qualify for duty-free treatment. In practical terms, knit apparel enters the United States tariff-free if the fiber,

[15] Although the yarn forward concept was borrowed from NAFTA, there are areas in which NAFTA and CAFTA differ. Wool products from all Central American CAFTA countries, for example, are originating if they are *fabric forward* (instead of yarn forward), which allows the yarn to be from any country (see Appendix 2).

yarn, cloth, and sewing thread are from the United States or CAFTA countries and the cut and assembly takes place in CAFTA countries. In this way, CAFTA changes the original U.S. yarn requirement of the CBTPA into a U.S. or regional yarn requirement. It also lifts the prohibition on dyeing and finishing of fabrics.

This rule applies to about 90% of Central American apparel that is currently exported to the United States. However, large quantities of Central American apparel exports to the United States have been able to compete only due to quota restraints on Asian exporters. It is not necessarily true that 90% of exports from the Central American region will enter under the yarn forward rule in future years, since the types of apparel products exported to the United States will need to shift to remain competitive with increasing competition from low-price apparel produced in Asia.

Second, there is the so-called *single transformation* rule of origin. Garments made of silk, linen, and other yarns and fabrics that generally are not produced in the United States or any other CAFTA country are subject to a more lenient single transformation rule. This rule allows a garment to maintain its status as an originating product, provided that the cutting and sewing take place in a CAFTA country. Fabric and yarn from any origin does not affect the item's ability to qualify. The single transformation rule also applies to brassieres of any fabric as well as boxer shorts and pajamas. This rule simplifies the rules under which these garments were able to enter the United States under the CBTPA and is another example of NAFTA parity.

Third, CAFTA contains a set of new rules concerning the component that determines a garment's classification. Typically, the fabric forming a garment's outer shell is the component that is deemed as giving the item its *essential character*—and determines the classification of the final garment. Originally, tariff shift rules (i.e., the origin rules applicable to textile and apparel) were to apply only to this main component, whereas other fabric seen as *incidental* to the garment could be of any origin. However, in April 2006, El Salvador, Honduras, and Nicaragua agreed to a last-minute deal with the United States that required pocket linings to be formed and finished in the region in order to qualify under CAFTA. In exchange for this concession, Honduras was assured that certain men's shirts will be subject to a single transformation rule of origin. El Salvador was assured that CAFTA's single transformation rule will apply to women's and girls' MMF suits (category 644), cotton coats (category 335), and infant dresses. Nicaragua's Tariff Preference Level (TPL), described in detail below, was increased for wool sport coats, and this TPL change will benefit only Nicaragua. However, all CAFTA countries will benefit from the other concessions gained in exchange for the pocket linings change. On the other hand, all changes still await the required formal approval by the U.S. Congress and each of the other CAFTA countries' governments.

This set of new rules under CAFTA, which requires only the main component and pockets to be originating, eliminates the need for a trimmings rule, as is found in the CBTPA. While the CBTPA allows

apparel to include only limited foreign articles—up to 25% of the value of all components—CAFTA generally allows unlimited foreign accessories such as snaps and buttons. In addition, a so-called *de minimis* rule is part of CAFTA and establishes that up to 10% of a garment's weight (up from 7% under the CBTPA) can be composed of nonoriginating (non-CAFTA or third-party) fabrics or yarns without losing originating status. And certain fibers, yarns, and fabrics have been designated as being in short supply under a so-called *short supply* rule. Since items in these categories are not available "in commercial quantities in a timely manner" from any CAFTA countries, a textile or apparel product that contains any of these short supply inputs will be treated as an originating good. Even though short supply rules also existed under the CBTPA, CAFTA extends the list of items included and also establishes an "improved" process for adding new items to the list.

Fourth, there are the Tariff Preference Levels (TPLs, or temporary preferential access quotas) for Nicaragua and Costa Rica. The TPLs basically relax certain rules of origin:[16] in the Nicaraguan case, if apparel made of cotton or MMF is cut or knit to shape and assembled, it qualifies as originating, even if the fabric or yarn is not from the CAFTA region. Up to 100 million square meter equivalents (SMEs) of apparel would be allowed to enter the United States annually free from rules-of-origin restrictions for the first 10 years after CAFTA takes effect (i.e., April 1, 2006).[17] This is the equivalent of about 75% of Nicaragua's current third-party input use. Originally, this amount was to taper by 20 million SMEs annually after the first five years. In late 2005, it was decided that in exchange for the extension of 100 million SMEs for a full 10 years, Nicaragua must import equal amounts of SMEs of U.S. fabric. Costa Rica obtained a two-year (with a possibility of extension) TPL for 500,000 SMEs for tailored wool apparel that would enter the U.S. free from rules-of-origin restrictions at a tariff level equivalent to 50% of the tariff applied for most-favored nations. Since Costa Rica has yet to ratify CAFTA, it is not clear when this two-year period will start.

Fifth, a so-called *accumulation* rule with Mexico and Canada for woven garments allows some Canadian and Mexican inputs (especially yarn) to be used in regionally produced apparel without disqualifying the apparel from duty-free benefits (i.e., they count as domestic inputs). However, accumulation is capped at 100 million SMEs per year. The cap, which is to be tied to growth in CAFTA trade, can increase up to 200 million SMEs. Sublimits within the 100 million include caps on certain types of apparel.

Finally, tariff benefits are available immediately after CAFTA takes effect, and benefits (with the exception of TPL provisions) will be retroactive to January 1, 2004. Such benefits will be available to all producers in the region, including U.S. yarn spinners and fabric producers. In principle this allows for

[16] Of course, in the case of Costa Rica the TPLs will be activated only once the country ratifies CAFTA.

[17] The quota is expected to disappear after 10 years by declining 20% as of the fifth year of CAFTA implementation. However, maquila exports to the United States would thereafter continue to benefit from the tariff applied under the TPL for export companies that operate out of a *Zona Franca.*

refunds of duties for apparel imports that would have met rules of origin if CAFTA had been in effect. However, questions have been raised in Costa Rica and Guatemala regarding whether this retroactivity is constitutional in those countries.

Trade preferences in general, and particularly the liberalization of the rules of origin through the CBTPA and now CAFTA, have turned out to be a big stimulus for a transformation of the Central American maquila industry from pure assembly of clothing from imported inputs to full-package production. Production of intermediate textile products such as yarn, thread, and fabrics is increasing throughout the region, and some countries (Honduras, El Salvador, Nicaragua) are also reporting renewed cotton plantings. Table 3 shows the rapid decline after 2000 of the proportion of intermediate inputs coming from the United States: domestic suppliers apparently were able to successfully move back up the supply chain, thus increasing dramatically the domestic content of maquila exports.

Another result from the CBTPA (and one expected to be further strengthened under CAFTA) has been an increasing concentration of Central American maquila exports toward the United States. The United States is an important export market for all Central American countries, and maquila exports account for very large shares of individual countries' total exports to the United States—for example, in El Salvador and Honduras, maquila exports in 2003 accounted for about 80% of their total exports to the United States, even though the share is only 18% in the case of Costa Rica. In this respect it is important to emphasize that even though with the expiration of the ATC the U.S. apparel market is no longer protected by quotas (at least in theory), the completion of the ATC does not mean the end of tariffs. Therefore the continued preferential access of Central American countries to the U.S. market through the CAFTA agreement is essential for maintaining their comparative advantage in this market. An econometric analysis by Hernández et al. (2006) shows that these preferential margins are to a considerable part responsible for the success of Central American maquila exports to the United States. Moreover, given that the end of the ATC may eventually result in average export price reductions of the order of 20%, it is imperative that countries that enjoy such (nearly always temporary) preferential access use this opportunity to improve their competitiveness.

Table 3. Intermediate Imports to Maquila from U.S. as % of Maquila Exports to U.S., and Exports of Maquila to U.S. (10^6 US$)

Year	Costa Rica		Guatemala		Honduras		Nicaragua		El Salvador	
	Intermediate imports/exports	Exports	Intermediate imports/exports	Exports	Intermediate imports/exports	Exports	Intermediate imports/exports	Exports	Intermediate imports/exports	Exports
1989	62.2	337.9	81.6	138.2	74.7	88.8			97.6	43.8
1990	58.0	397.4	73.0	203.2	75.3	116.0			81.1	56.2
1991	62.1	453.9	63.7	350.9	64.7	201.7		1.3	71.4	93.7
1992	60.1	607.1	72.9	477.9	55.5	377.2		3.6	57.5	171.7
1993	61.2	671.9	78.7	573.9	50.1	522.1	55.0	11.5	50.9	259.7
1994	63.5	704.7	78.0	623.6	52.5	666.3	34.0	29.7	46.6	411.8
1995	62.0	777.9	78.9	714.1	52.6	956.0	23.0	76.5	51.4	600.3
1996	72.0	722.0	77.9	831.6	59.7	1267.6	19.0	146.1	48.0	740.1
1997	70.7	869.1	71.4	1001.8	56.3	1725.4	21.0	186.6	49.1	1078.0
1998	76.3	839.7	61.5	1183.7	62.4	1946.1	20.0	237.4	53.4	1198.9
1999	60.9	846.6	40.1	1280.2	55.0	2243.6	21.0	284.1	42.9	1360.7
2000	41.3	846.8	7.0	1545.2	0.9	2463.3	4.0	345.8	5.3	1640.9
2001	39.7	791.0	6.0	1677.5	0.8	2485.7	3.0	390.6	6.1	1671.2
2002	36.7	747.2	14.9	1727.0	0.8	2556.3	3.0	445.8	5.0	1712.7

Source: Based on Table 10 in Morley (2006).

5. CURRENT SITUATION AND TRENDS IN THE MAQUILA INDUSTRY IN THE CENTRAL AMERICAN CAFTA COUNTRIES

Although CAFTA opens opportunities for the Central American region, the experience of Mexico suggests that a free trade agreement and proximity to the United States alone are not sufficient to remain competitive, particularly given the increased competition from Asian countries with developed clusters and supported by factors such as inexpensive labor. This is especially relevant for El Salvador and Honduras since both countries traditionally rely heavily on CBTPA duty-free benefits and less on U.S.-cut fabrics (807). Instead, they use more of the 809+ provision (which requires U.S. yarn but allows the use of cloth cut in the region) or regional fabric provisions.[18] Guatemala and (particularly) Nicaragua, on the other hand, show less reliance on CBTPA benefits, showing an ability to compete even without duty-free advantages.

On the other hand, before the expiration of the ATC both El Salvador and Guatemala were not always able to fill quotas in some categories, and therefore do not seem to have restrained production in these categories, begging the question how competitive they are without quotas. In any case and with or without quotas, the average U.S. tariff rate on imported clothes is 17%. Although there is an incentive to source from countries with tariff preferences, a lack of tariffs not always compensates for the great advantages Asian producers have in costs, especially in those areas in which the region has focused its production. Quota removal could lead to an oversupply and significant drop in world prices. Thus far, however, Central American countries have been fairly successful in maintaining their market share in the United States (Table 4), but then it should be realized that this may be to a significant extent due to the bilateral agreement accorded between the United States and China that will restrain Chinese exports until 2008. What will happen after 2008 is anybody's guess, but what does remain clear is that given the substantial wage differences between Central America and China,[19] Central American countries would be hard pressed to compete on production costs[20] alone and therefore must develop those characteristics that make them competitive: efficiency, quality, dependability, speediness of supply, and flexibility.

[18] Even though Costa Rican exports also rely heavily on CBTPA benefits, its maquila industry already experienced a lengthy adjustment process in the 1990s. See "Costa Rica" in this section for more details.

[19] According to IADB (2005), the average hourly wage in maquila operations (including benefits) in China is US$0.88 (but only $0.48 according to INCAE [2004]), as opposed to $0.92 in Nicaragua, $1.48 in Honduras, $1.49 in Guatemala, $1.58 in El Salvador, and $2.70 in Costa Rica, respectively. These figures compare with hourly labor costs of about $18 and $16 in textile operations in the United States and Canada, respectively (Parada Gómez 2004).

[20] A 2001 study by the Apparel and Footwear Association compared total cost up to shipment of a shirt that takes 20 minutes to cut, sew, and finish and is destined for the U.S. retail market. The least to most expensive countries in which to produce were: China ($1.12), Nicaragua ($1.50), Dominican Republic and Honduras ($1.70), Guatemala ($1.80), El Salvador ($1.85), Costa Rica ($2.00), Mexico ($2.20), and the United States ($5.00).

Table 4. Market Participation of the 20 Largest Exporters of Textile and Clothing in the U.S. Market

Rank	Country	1996	Country	2000	Country	2004	Country	2005
1	China	13.3	Mexico	14.6	China	16.0	China	25.1
2	Hong Kong	10.4	China	10.5	Mexico	10.3	Mexico	9.1
3	Mexico	9.9	Hong Kong	7.6	Hong Kong	5.8	India	4.5
4	Taiwan	4.8	**Honduras**	4.1	**Honduras**	4.1	Indonesia	4.0
5	Dominican Rep.	4.5	Dominican Rep.	4.0	Vietnam	3.8	Hong Kong	4.0
6	Philippines	3.9	South Korea	3.8	Indonesia	3.6	**Honduras**	3.8
7	South Korea	3.8	Indonesia	3.5	India	3.4	Vietnam	3.6
8	Indonesia	3.5	Taiwan	3.3	Dominican Rep.	3.1	Bangladesh	3.1
9	Italy	3.3	Bangladesh	3.3	**Guatemala**	2.9	**Guatemala**	2.7
10	India	3.3	Philippines	3.2	Bangladesh	2.8	Dominican Rep.	2.6
11	**Honduras**	3.3	India	3.1	Thailand	2.7	Thailand	2.6
12	Thailand	2.8	Thailand	3.1	South Korea	2.7	Philippines	2.5
13	Bangladesh	2.7	Canada	3.0	Philippines	2.7	Sri Lanka	2.3
14	Sri Lanka	2.7	**El Salvador**	2.7	**El Salvador**	2.6	**El Salvador**	2.3
15	Canada	2.5	Italy	2.6	Italy	2.4	Cambodia	2.2
16	**Guatemala**	2.1	**Guatemala**	2.5	Sri Lanka	2.3	Italy	2.2
17	Macao	2.0	Sri Lanka	2.5	Canada	2.2	Canada	1.8
18	**El Salvador**	1.9	Macao	1.9	Taiwan	2.2	Pakistan	1.7
19	**Costa Rica**	1.9	Turkey	1.8	Macao	2.1	South Korea	1.6
20	Malaysia	1.7	Pakistan	1.6	Cambodia	2.1	Jordan	1.5

Source: Based on Table 9 in Hernández et al. (2006).

El Salvador

Currently, El Salvador's maquila industry still mostly consists of pure assembly operations and has very limited ability to source fabric—many textile maquilas in El Salvador do not even have cutting departments. Despite a growing tendency in the maquila chain in El Salvador toward increased vertical integration with improved access to yarn factories and knit fabric (and eventually more full-package production; see Jerez 2005 and Gatchell et al. 2005), currently most textiles still are imported as domestic cotton producers meet less than 10% of Salvadoran textile producers' demand. Cotton production, which had disappeared in the early 1990s, returned to El Salvador in 2004. Even though the country is the largest cotton producer in the region, production remains small. On the other hand, the Salvadoran government plays an active role in trying to revive the cotton chain through financial and technical

assistance and crop insurance, and it helped establish the Cotton Corporation Ltd. (COPAL), which is in charge of cotton processing and marketing and has links with most cotton growers. As a result, area under cotton cultivation increased from 2,100 hectares in 2004–2005 to nearly 4,000 hectares in 2005–2006.

The regional directory lists 16 cloth-producing firms, 12 of which focus on knit cloth production. Currently, however, these firms together supply only 5% of the industry's total demand for cloth. The directory also lists 179 apparel assembly firms, of which 32 work in full-package production. The majority of these firms work in *Zonas Francas.* In addition, there are 66 moderately developed accessories firms in El Salvador that produce threads, embroidery, elastic material, and other accessories.

During the past five years or so, El Salvador has more or less maintained its position and market share in the U.S. import market. However, unless some drastic measures are taken, that may well change in the future since the biggest negative factor affecting El Salvador's future competitiveness in the U.S. apparel market is its heavy dependence on U.S. preferential treatment. The country has hardly been forced to compete in the (after the ATC expired) increasingly free global market for apparel.[21] Thus, there is a clear need to diversify maquila production, reduce dependence on preferential treatment, and move toward full-package production. Another negative factor for the apparel industry is labor costs, which are considerably higher in El Salvador than in most Asian countries. In addition, El Salvador's (and also other Central American countries') location advantage in speed to market is diminishing as Asian producers improve shipping times. The serious security situation in El Salvador is another reason for concern.

On the more positive side, most apparel buyers are well aware of production risk and therefore never source from one country only. This means that El Salvador may try to compete with Asian suppliers as a second-best source, through credibly reassuring buyers that Salvadoran-made goods have minimal reputation risk. There is an obvious and essential role for the public sector in this respect in terms of developing and implementing a workplace standards monitoring program through which El Salvadoran apparel can earn a distinctive label in the world market.

Honduras

Honduras remains the main exporter of apparel volume in Central America, and its sales represent the lion's share of the country's total export value (Table 1). Honduras specializes in knitted products, particularly men's and boys' cotton knit shirts, cotton knit blouses, and girls' and women's underwear. Almost two-thirds of U.S. apparel imports from Honduras are made of cotton. The country imports the

[21] The fact that until April 1, 2006, El Salvador was the only country that had ratified CAFTA also contributed to decreases in garment exports because it made it harder to source the cloth and accessories from elsewhere in Central America—which would allow its finished products to enter the U.S. market duty-free.

majority of its supplies for cloth production (thread, cloth) from the United States. As a result of this, 89% of U.S. apparel imports from Honduras qualify as duty-free (versus an average of 52% for the entire CBERA region, 2003 data).

Just like El Salvador, Honduras is trying to take advantage of CAFTA by moving away from assembly toward full-package production, but the latter is not yet widespread in Honduras: of the 159 apparel assembly plants operating in Honduras, only about one-third are to some extent involved in full-package production. Yarn used in textile for Honduran apparel is still largely imported from the United States and typically spun from American fiber. However, several firms that currently spin yarn in Honduras plan to expand production since domestically produced yarn will qualify. Although there has been recent interest in purchasing yarn from El Salvador, yarn-spinning firms have not been able to meet demand from Honduran maquilas.

As is the case in most Central American CAFTA countries, the Honduran maquila sector has difficulty competing with Asian exporters largely due to higher labor costs and relatively expensive inputs (cloth alone is estimated to account for about 45% to 55% of production costs). The apparel value chain in Honduras is still weak in cloth and yarn—according to the regional directory there are only eight clothing factories operating in Honduras, and all of them specialize in knit fabric. The current scarcity of domestically produced cloth acts as a serious limitation on further expansion of full-package production. However, at least two firms plan to begin producing yarn and cloth in Honduras during 2007, and at least one intends to manufacture woven fabric. In addition, several of the older cloth firms have recently been expanding production—and the overall quantity of cloth produced in Honduras is increasing. The cloth sector is expected to increase to 10 to 15 firms in 2007, but in the meantime Honduran textile mills are reaching full capacity and maquilas report that the lack of domestically produced cloth has become an obstacle to the development of full-package production. Some U.S. retailers have traditionally demanded that maquilas buy cloth from U.S. firms, but maquilas are increasingly unable to do so as textile mills continue leaving the country. The decreasing availability of American textile, along with CAFTA, has led to increased interest in Honduran (as well as Nicaraguan and Guatemalan) cloth.

The country's moderately developed accessories sector consists of 31 factories producing packaging, labels, buttons, zippers, and elastic material but a large share of accessories still needs to be imported from abroad. Foreign accessories firms typically have distribution centers as well as customer service representatives in Honduras and each of the other Central American countries, and some also have warehouses in Honduras. Stocking accessories in warehouses can improve the speed at which apparel is assembled, but some types of accessories such as trims and zippers need to have very specific color matches, which makes holding stocks practical only for very basic colors such as black and navy.

Accessories firms report a need to invest in additional machinery, since the number of styles requested has been increasing over time.

An important constraint on the further development of full-package production in Honduras is that its domestic cotton production is currently very limited. The future of cotton growing in Honduras is uncertain, partially due to strong opposition from shrimp producers in the Southwest, who are concerned that the pesticides used in cotton cultivation would damage their livelihood through water pollution.

The worsening security situation in Honduras is also reason for concern: along with El Salvador and Guatemala, the country is experiencing increased problems with violent crime. Honduras has one of the highest homicide rates in the Americas, and these murders are largely concentrated in Tegucigalpa and San Pedro Sula, which is where many maquilas are located. In addition, risk of theft is so high that may maquilas prohibit transporting apparel goods at night—between 6:00 p.m. and 6:00 a.m. Some clients pay for insurance required because of the problem with robberies. Typically, the transportation company pays and passes this extra cost along to the client, who then pays more for transportation. Theft thus increases costs as well as slows delivery speed.

Factors positively affecting the competitiveness of the Honduran maquila industry include relatively short end-to-end logistics time: time needed to deliver a container of apparel from Honduras to the United States could be up to three weeks shorter than a shipment from a typical Asian supplier. Relatively low wages (at least compared with those in Costa Rica, Mexico, and the United States) and good facilities in free export zones are important assets as well. As a result of these positive factors, Honduras has been able to considerably strengthen its position in the U.S. import market during the past five years (Table 4). But as in the case of El Salvador, an important factor affecting Honduras's future outlook in the U.S. apparel market is its heavy dependence on U.S. preferential treatment. Even though many tariff preferences have been locked in with CAFTA, it remains to be seen whether the country can compete with Asian suppliers without the preferential treatment. Several smaller maquila operations are closing, while larger maquilas continue to survive in the sector. It is thought that the expiration of the ATC will eventually lead to increasing co-investment between U.S. and Honduran investors, and larger firms are expected to survive competition with China due to closer, more direct relationships with U.S. retailers.

As noted above, the apparel value chain in Honduras is weak in cloth, and to develop the full-package production capacities that will be important to remain competitive, a focus on the development of cloth and yarn production in the country should have high priority. Throughout Central America, the maquila industry will also need to prioritize a shift into higher-value-added products. In Honduras, the dominance of T-shirt production suggests that investment in machinery for screen printing would be an appropriate way to add value to apparel that is currently produced. Expanding into additional operations

such as embroidery, which is popular on children's T-shirts and nightwear, would be another way to produce higher-value products. Services such as screen printing and embroidery require additional machinery, but also additional labor for the sorting, separating, tagging, and labeling, as well as additional investment capital.

Finally, and unlike in El Salvador, the Honduran government has not been directly involved in any kind of specific support for the maquila industry. However, the Honduran Manufacturers Association (Asociación Hondureña de Maquiladores, or AHM) attracts firms to Honduras and provides various forms of support, for example, by arranging a forum to discuss the details of CAFTA. The PROCINCO worker training program is one of the AHM's most widely recognized forms of support, and approximately 85,000 employees in 140 maquilas have participated in the program. PROCINCO provides training sessions for managers as well as employees working on the production floor. All workers in the maquila sector, as well as those in related industries such as accessories firms, are eligible to participate, and up to this point the training has been provided without charge. The AHM is considering charging for future courses, but maquila managers consistently report willingness to pay for further training if necessary, due to immediate production improvements resulting from past training.

Guatemala

The maquila industry in Guatemala dates back to the late 1970s. The country has the most developed and vertically integrated maquila industry and is the leader in full-package production in the Central American region. Some estimates put the percentage of maquila production that is full package at 75% to 80%. It can be argued that Guatemala together with Nicaragua (see next section) are the only countries in Central America that have been able to develop a market in the United States without relying entirely on trade preferences.

Yet even though Guatemala has well-developed cloth-producing, apparel assembly, and accessories sectors—and therefore a large part of maquila production in Guatemala also includes the cutting and finishing steps, besides the traditional assembly—the country has no domestic cotton industry and imports all of its cotton, mostly from the United States. The regional directory lists 50 cloth-producing firms, with strong production in both knit and woven fabric. The regional directory also lists 231 apparel firms, of which currently about 60 work in full-package production. Guatemala has developed the most complete accessories sector in the region: 260 firms offer accessories and services such as thread, packaging, embroidery, labels, buttons, and zippers. Although synthetic fiber and thread production can be found in Guatemala, the majority of the supplies of these products come from abroad. Guatemala also imports large quantities of Asian fabric, even though apparel made with Asian fabric does not qualify for tariff preferences in the U.S. export market.

Maquila exports represent close to 40% of the country's total export value. About two-thirds of Guatemala's apparel production is in two broad categories: knit cotton shirts and blouses (43%) and cotton trousers and shorts (24%) (Anonymous 2004). Particularly among firms that are funded by Asian capital (which are the majority), there has been movement toward production of apparel that does not necessarily take advantage of tariff preferences. This is illustrated by quota use for all apparel categories combined, which has steadily declined from 86% in 2000 to 41% in 2004. Looking toward more regional operation, the Regional Center for Quality Control of the Textile Industry Association was recently opened to grant quality certifications.

Factors negatively affecting the competitiveness of the Guatemalan maquila industry include relatively high electricity costs, which complicate the establishment of a competitive textile production industry, making its maquila industry fully dependent on imported cotton; slowness in custom procedures; and increased competition from China and other countries due to quota elimination and the possibility of other free trade agreements between the United States and other apparel-exporting countries. But it is important to note here that the "China threat" would have been even more serious without CAFTA.

On the positive side, Guatemala has the most developed cluster and full-package production system in Central America, the highest degree of product diversification, and less reliance on more expensive U.S. cloth in order to qualify for preferential treatment. Guatemalan maquila labor is relatively well trained, which is partially a result of the activities of the Technical Institute for Training and Productivity (INTECAP). Of all textile maquila producing countries in Central America, Guatemala probably has moved ahead furthest with the vertical integration that the industry in the region now desperately needs for long-term survival with the end of restrictions on Asian producers. In this respect and just as in the case of El Salvador, Guatemala may try to compete with Asian suppliers as a second-best source, through credibly reassuring buyers that Guatemalan-made goods comply with international standards regarding labor rights and environmental stewardship.

Nicaragua

Begun around 1992, the maquila sector in Nicaragua is currently one of the faster growing maquila industries in the world and is responsible for close to half of Nicaragua's total exports (Table 1). As is the case in Guatemala, Asian investors in Nicaragua have chosen to import supplies and fabrics, even when that disqualifies the apparel from preferential tariff treatment in the United States. As a result about two-thirds of the sector's input supplies are imported from Asian countries such as Taiwan, Korea, and Hong Kong, with the remainder imported from the United States.

As in other Central American countries, cotton growing in Nicaragua is currently very limited, even though there are plans to revive domestic cotton production. Cotton was previously an important crop in Nicaragua, but declining cotton prices along with pest problems and diseases caused the crop to disappear completely until recently. However, two varieties of cotton, Fiber Max (FM) 966 and Fiber Max (FM) 958, require fewer applications of insecticide and appear to be suitable to conditions in Nicaragua. These are known varieties in the United States, where together they account for about 25% of cotton grown. A return to cotton production could be particularly beneficial in areas where currently peanuts are produced and which face increasingly serious pest problems. Alternating peanuts with cotton would be one of the best ways to eliminate such pest problems.

Whereas pest problems may be overcome by introducing new varieties of cotton, a lack of access to potential markets represents a serious obstacle to the crop's resurgence. Since February 2005, El Salvador has blocked cotton imports from Nicaragua due to a pest, pink bollworm (*gusano rosado*), that El Salvador claims is present in Nicaragua but not in El Salvador. Discussions between the two countries' governments are under way to resolve the dispute. If El Salvador continues to block Nicaraguan cotton, finding investors is expected to be difficult. For this reason, Bayer Crop Science has asserted that it will not move forward with a program to provide subsidized inputs to potential cotton producers, allowing them to grow small test amounts, unless El Salvador grants Nicaragua access to its markets. Until that time, other markets in the Dominican Republic, Mexico, and the United States need to be explored.

Another serious obstacle to the cotton sector in Nicaragua is the lack of yarn manufacturers within the country. Cotton gins have not been used in Nicaragua since 1996 because of the small amounts of cotton grown in the country. Although there is a cotton gin that could be used in Nicaragua, it has been estimated that about 2,000 hectares of cotton would need to be grown for the use of the gin to be profitable. Currently the yarn for textiles used in Nicaraguan garments is mostly produced in Asia and the United States. Lingering concerns over the fluctuation of international prices and fear that pink bollworm would also threaten new FM varieties prevent investors from returning to cotton in Nicaragua. This in turn negatively affects the sector's ability to reach the critical mass necessary for profitable use of the cotton gin. Cotton supporters in Nicaragua have also asserted a need for clear policies to support the development of the cotton agro-industry chain similar to the policies in El Salvador and including credit to producers, insurance programs protecting producers from natural disasters, and a technical commission with representatives from government, the private sector, and research institutions.

Currently only one textile-producing firm and two fabric firms (producing woven cloth) are operating in Nicaragua; however, a third fabric company planning to produce 2.5 million yards of woven cloth expects to begin operations in 2007. The source of yarn for this new Nicaraguan fabric production is still uncertain: some informants suggested that China, other Asian countries, the United States, and

Morocco are among the countries being considered. From among those meeting the required fiber characteristics, the company plans to choose the supplier that can provide yarn at the lowest price.

With the exception of one firm that produces thread, there are no firms producing accessories in Nicaragua. However, like in Honduras, firms producing accessories such as buttons, snaps, hooks, loops, trims, and woven labels do have in-country representatives to provide essential services to the maquilas when there are problems with orders. Accessories providers cite a focus on quality and service as the most important characteristic contributing to a firm's success. Samples of accessories are often sent before the order to ensure that client specifications have been met. As with other inputs, maquilas source accessories according to price and quality but in some cases obtain accessories regionally to obtain certification of origin that qualifies garments for preferential treatment. But the scarcity of domestically and regionally produced accessories can slow delivery time for garments. Accessories firms report that production of accessories unavailable in stock can take from 7 to 14 days, and an additional 7 days to ship by air to the maquilas.

The regional directory lists 35 apparel assembly firms (but this number is said to be growing) of which 12 undertake full-package production. The rather weak vertical integration and insufficient cluster development in the maquila industry in Nicaragua can partially be attributed to the relatively young age of the industry in the country. Moreover, cluster development may well be further delayed due to the TPLs granted to Nicaragua under CAFTA (discussed in Section 4), which allow third-country yarn and cloth if equal amounts of U.S. cloth are imported. Even though preferential access granted through the TPL provisions in CAFTA make the country less vulnerable to the expiration of the ATC, the late addition of a *one-for-one* requirement forcing every unit of nonoriginating cloth in Nicaraguan garments to be matched by a unit of originating cloth makes production using nonoriginating cloth less attractive. One industry expert estimates that U.S. cloth would need to be no more than 40% more expensive than Asian cloth for TPLs to be beneficial. Since U.S. cloth can be up to 40%-50% more expensive than Asian cloth, the one-for-one requirement greatly reduces the benefits of the TPLs for the Nicaraguan apparel sector. Nevertheless many maquila firms still express interest in using TPLs. Many of those currently sourcing at least some textile from the U.S. have expressed plans to increase usage of American textile to 50% in order to take advantage of TPLs. But the final usage of TPLs is likely to depend on the government's decision regarding how TPLs will be managed to ensure compliance with one-for-one requirements. Firms may be held accountable for purchasing one unit of originating cloth for every unit of nonoriginating cloth, but the government of Nicaragua is also considering a per-garment charge. Managing TPLs in such a way that one-for-one is met will be a challenge for the industry—and fines for noncompliance are under negotiation.

Besides the TPLs, there exist a number of other positive factors that probably are more important in helping to increase Nicaragua's competitiveness in the U.S. apparel market. The country is least dependent on preferential access of all countries in the region: before CAFTA, about 73% of Nicaragua's apparel exports to the United States did not qualify for duty-free treatment (compared with 52% in the entire CBERA region). Nicaragua has the advantage of very low labor costs (only China has lower labor costs), which is one of the driving forces behind the maquila sector boom. These low labor costs also provide the potential for Nicaragua to be a competitive provider of cotton. The country's proximity to the major U.S. markets (resulting in relatively fast response times) and the lower costs of Asian fabric may enable Nicaraguan exports to compete successfully with Asian producers such as China and India, even after paying U.S. duties (in case Asian cloth is being used). Finally, and unlike elsewhere in the region, the security situation in Nicaragua is such that it does not act as an impediment to attract qualified foreign middle management.

Indeed the maquila industry in Nicaragua has done quite well recently: Nicaraguan apparel exports to the United States registered a 20% increase in 2005 over 2004, and another 12% increase in 2006 (until June 30). And this performance is at a time when the CAFTA region as a whole is rapidly losing market share in the U.S. export market: compared with the previous 12-month period, total export value of maquila exports to the United States by CAFTA countries decreased by nearly 13% for the year ending June 30, 2006.

But there also exist a number of factors that negatively affect the competitiveness of the Nicaraguan maquila industry. These include high electricity costs, lack of a large-size vessel port on the Atlantic coast and the need for improvements at Puerto Corinto on the Pacific Coast (most of Nicaraguan apparel enters the United States through Miami via the Honduran port of Puerto Cortés), insufficiently developed telecommunications services, limited professional services (including limited access to local financing), and political risks and inconsistent government policies over the years that affect the business climate. Compared with its Asian competitors (China in particular), the Nicaraguan maquila industry also suffers from relatively high defect levels and problems with on-time delivery and filling quick-response orders. Regarding the latter and as suggested earlier, some maquilas can overcome this problem by cooperation with other plants. In some cases, several plants may each have the machinery and labor available to produce a fraction of the order. Through increased cooperation and communication among maquilas, plants may be able to distribute production among firms in the case of quick-response orders.

To further develop the Nicaraguan maquila industry in the short term, further development of apparel assembly plants should remain a high priority. By prioritizing the development of apparel assembly in Nicaragua, a larger quantity of apparel production will lead to an eventual demand for more cloth. There is also a need to focus on value-added operations to maintain market share given China's

ability to produce garments at even lower cost. For example, Nicaragua could focus on acid-washing processes, due to the sector's focus on pants and jeans.

But in the longer term, Nicaragua will need to move toward full-package production. Even though some of that is happening already, there exist a number of bottlenecks in the cotton sector that need to be overcome in order for Nicaragua to develop its yarn-spinning and fabric production capacity, needed to expand its full-package production. Insufficient quantities of cotton production hinder the entire sector, because cotton gins—which greatly lower production costs—cannot function profitably unless a certain critical mass is reached. Cotton gins are currently present in the country and represent a resource that could be tapped if sufficient quantities of cotton are grown. Another barrier to cotton production is El Salvador's blocking of cotton imports. This could be overcome through a technical study demonstrating that the pest was limited to Corn Island and is no longer a problem anywhere in the country.

Costa Rica

The situation regarding the maquila industry in Costa Rica exhibits a number of characteristics that makes it different from its sister industries in the other Central American CAFTA countries.

First, the maquila industry's relative importance in the Costa Rican economy is much less than in the other Central American CAFTA countries (Table 1). Both total exports and employment in Costa Rica depend much less on the maquila industry than in those other countries.[22]

Second, the size of the industry has gradually decreased since NAFTA was implemented in 1994—especially during the second half of the 1990s Costa Rica lost substantial market share to Mexico as a result of NAFTA, whose effect was strengthened by the financial crisis in Mexico one year later (the so-called "tequila effect"). This trend has continued in the new millennium, with total maquila export value falling from US$791 million in 2000 to $566 million in 2005. Whereas before 1994 the maquila industry in Costa Rica generated employment for about 40,000 workers, currently about 15,000 people find jobs in the textile maquilas (even though the number of workers employed in firms that produce only for the export market is probably less). Thus Costa Rica already experienced a substantial restructuring and adjustment process of its maquila industry in the 1990s, with only 40 firms remaining today, and this makes its remaining maquila industry less vulnerable to the effects of the expiration of the ATC.

Third, Costa Rican firms see their geographical position toward the United States (where more than 90% of the country's maquila exports go) as a main element of comparative advantage. Most such

[22] On the other hand, employment in textile maquilas is heavily concentrated in a limited number of counties such as Asserrí, Poás, San Ramón, Grecia, and Palmares, where the industry accounts for 78%, 61%, 45%, 42%, and 35% of total employment in manufacturing.

firms have specialized in so-called *short-run production,*[23] which requires rapid response in which they do not have to compete with China. Indeed, it can be argued that Costa Rica is thus far the only country in Central America that has been able to develop exports beyond relatively simple products and to move into quick-response and high-fashion articles, often targeted to niche markets. This has helped the Costa Rican maquila industry to suffer less from the completion of the ATC. Recent export figures for the maquila industry help illustrate this point: whereas the total value of maquila exports from the CAFTA region as a whole to the United States decreased by 13% for the year ending June 30, 2006, compared with the previous 12-month period, Costa Rica's exports decreased by less than 7% (compare this as well with the nearly 15% decrease in Guatemala's exports).

Fourth, and unlike Nicaragua where the TPLs or temporary quotas on a number of items are already in place after the country ratified CAFTA on April 1, 2006 (taking away some of the incentives to move completely toward full-package production), the maquila industry in Costa Rica is nearly entirely full package, despite the fact that the country does not have a cloth industry and sources most textile from the United States. In this sense the term *maquila* may no longer be appropriate for the Costa Rican textile industry, which, one could argue, has evolved from maquila into a logistics industry.

Finally and on a more negative note, the fact that CAFTA is not yet implemented in Costa Rica has a clear negative effect on the maquila industry. Not only does the delay in approval of CAFTA cause substantial business insecurity, but the fact that Costa Rica does not yet qualify as a CAFTA country already has had a number of repercussions for the industry, which depends for 89% of its total export value on the U.S. market. For example, although the single transformation rule applies to boxer shorts (among other products), as long as CAFTA has not been implemented boxer shorts from Costa Rica do not qualify, which costs Costa Rica about US$10 million a year[24] in import duties payable in the United States. This is because even though Costa Rica is the largest provider of boxer shorts in the U.S. market, without CAFTA they remain subject to a 16.5% import tariff.[25] The same tariff applies to cotton underwear imports, for which Costa Rica is the fourth-largest supplier in the U.S. market. Another example relates to the accumulation-of-origin rule in CAFTA, which without CAFTA does not apply to intermediate products[26] produced in Costa Rica, which in practice often prevents textile plants in other countries from using Costa Rican–produced inputs in their manufacturing process.

[23] As opposed to *long runs,* which involve production of large quantities of relatively simple apparel with a much longer lead time.

[24] Source: Miguel Schyfter, president of the Costa Rica Association of Exporters of the Textile Industry.

[25] Other textile imports from Costa Rica are subject to even higher import duties without CAFTA: for example, blue jeans—28.6%, woolen clothing—28.2%, brassieres—23.5%.

[26] For example, without CAFTA, textile exports from other Central American countries to the United States that use intermediate inputs made in Costa Rica of cotton, wool, or synthetic material are subject to import duties of, respectively, 13.5%, 18.8%, and 18.8%.

6. MACROECONOMIC AND POVERTY EFFECTS OF THE MAQUILA PROVISIONS IN CAFTA

In the previous sections of the paper we have described the current situation in the maquila industry and the changes in treatment under the CAFTA agreement. What is missing from this analysis is a forecast of the likely effect of such changes on the economies of the region. To do that in a formal way one needs to construct a model of the economy with a sectoral decomposition that includes the maquila sector and also incorporates macroeconomic constraints. Computable general equilibrium (CGE) models that do this have been constructed for each of the countries in our study with the exception of Guatemala. In each of the countries simulations have been performed that include the liberalized import conditions for the maquila industry granted under CAFTA. In this section we briefly describe these models and report their results for the maquila simulations. It is important to remember that for maquila the focus of CAFTA is on consolidating the gains for the Central American countries achieved under the CBTPA, that is, making permanent the liberalized rules of origin for inputs granted temporarily under the CBTPA, rather than changing current arrangements.[27] Therefore, for an analysis of the macroeconomic effects of CAFTA through its impact on the maquila industry to be relevant, it needs to compare the situation *with* and *without* CAFTA, rather than *before* and *after* CAFTA. That is what the CGE models are designed to do.

The CGE models used for the simulations are of the recursive dynamic general equilibrium type, in order to incorporate the general equilibrium effects of changes introduced by CAFTA on prices, output, and employment across different sectors of the economy. Analysis of economy-wide effects of trade liberalization measures are especially important for small and relatively open economies such as those found in Central America.

The models are solved sequentially for given values of the capital stock, labor force, tariff rates, and so on.[28] Subsequently the stock variables are updated and the model is resolved for as many periods as desired. The variables and parameters used as linkages between periods are the aggregate capital stock (which is updated endogenously, given previous investment and depreciation), the population, the domestic labor force, factor productivity, export and import prices, export demand, tariff rates, and transfers to and from the rest of the world (all of which are modified exogenously). The dynamic

[27] As discussed before, besides consolidating existing but temporary privileges, CAFTA further liberalizes the rules of origin for a number of apparel products by extending tariff-free access to products wholly produced in CAFTA countries or produced with non-CAFTA fibers.

[28] The standard CGE model has three components. The first shows the payments that are registered in the social accounting matrix, following the same disaggregation of factors, activities, commodities, and institutions shown in the matrix. The second component consists of the equations that represent the behavior of the different institutions present in the model. The third component has the system of constraints that have to be satisfied by the whole system covering the factor and goods markets, the balances for savings-investment, the government, and the current account of the rest of the world. Factors of production include labor (differentiated by skill) and capital. The model contains four institutions (households, firms, government, and rest-of-the-world), all of which can produce, consume, and accumulate capital. For more details see Lofgren et al. (2001).

recursive character of the models is important since it allows comparison of growth trajectories under different policy scenarios. Whereas the individual country CGE models differ somewhat in structure due to differences in the underlying social accounting matrices (SAMs) and other reasons, they all use about the same model closures,[29] which facilitates comparison of the simulation results. A key and common feature of the CGE models is that capital flows to sectors with higher relative profitability in the immediate past period. Hence, in the CAFTA simulations, whereby we impose a trade-policy regime switch that affects relative prices, capital flows to the most profitable sectors in the long run.

Finally, in order to assess the implications of the changes in macroeconomic indicators for poverty, a microsimulation methodology[30] is used. This methodology takes the labor market outcomes (relative remunerations, employment, changes in skill level) from the CGE models for different types of workers and translates them into a distribution of income across households. It does so by making use of a household survey as close as possible to the base year of the CGE to get a base period distribution of the labor force across the households represented in the survey. Then in the first step the labor force is divided among the various skills represented in the CGE model, and rates of unemployment for each are calculated. Then random numbers are assigned to the group that will shrink in size and that group is ranked according to the random numbers. It is assumed that, on average, the effect of the random changes correctly reflects the impact of the actual changes in the labor market. Subsequently the procedure moves down the ranked list of the unemployed until a sufficient number have been found to reach the amount of employment given by the CGE solution.[31] Then, working with the new simulated labor force by type, one repeats the procedure to change the skill or sectoral composition of that labor force. At a final stage, the wage of the new labor force with the composition determined by the CGE solution is changed in accordance with the CGE solution. At this point the new labor force with the new wage structure is reassembled into the households from the base period survey and new levels of household income per capita as well as poverty and income distribution statistics are calculated. Since labor supply and occupation decisions are approximated as largely random processes, the microsimulations are repeated several times in Monte Carlo fashion to enable construction of 95 percent confidence intervals for the indices of inequality and poverty that can be compared across CAFTA and baseline scenarios. For more details regarding the microsimulation methodology, see Ganuza et al. (2002).

[29] Due to a different exchange rate regime, the external closure in the El Salvador model differs from the one used in the models for the other countries.

[30] CGE models can typically specify only a limited number of representative households, which results in insufficient detail regarding changes in the distribution to be able to make robust statements regarding the poverty outcomes. Therefore, the CGE analysis needs to be supplemented by certain assumptions (such as fixed within group distributions) or by a method of microsimulations.

[31] For the assignation of incomes the method resorts to the use of the mean income of the deciles of the distribution to which previously employed workers with identical socioeconomic characteristics pertain.

Honduras

The simulation for Honduras is based on a model developed by Morley and Piñeiro (2007a). This model is solved for 1997 (the base year for the data in the underlying SAM) and then solved recursively year by year until the year 2020. The static solution is generated using the following assumptions regarding model closures and functioning of the labor market and capital market:

Model closures:

- External balance: since Honduras has a flexible exchange rate, foreign savings is fixed.
- Fiscal balance: for the government, the levels of consumption and income taxes are fixed (making government savings endogenous).
- Savings-investment balance: the saving rates of households and government are fixed, which makes total saving and investment positively related to the level of income (and therefore endogenous in the model with total investment determined by total savings).

In the labor markets, there is an excess supply of unskilled and semiskilled labor at a fixed real wage rate. Moreover, within each period labor is mobile across sectors, which means that real wages are equal across sectors for these two types of labor. For skilled labor an upward-sloping supply curve was added, making wages as well as quantities endogenous to the model. The simulations determine the amount of employment of unskilled or semiskilled labor that is consistent with the supply of skilled labor (and capital as well as the other macro constraints).

Capital is fully employed and sector specific, which means that profit rates are free to vary across sectors. The implication is that in the recursive model capital is allowed to move freely between sectors.

In the recursive model, linkages between periods are introduced by solving the static model for one specific year (1997 in the case of Honduras) and then updating the capital stock, population, domestic labor force, factor productivity, export and import prices, and export demand parameters. The updated model is then solved again for the following year and so on. The maquila simulation run with the Honduran model gives us the growth path for the Honduran economy for the period 1997–2020 under the changes in the rules of origin for maquila introduced by CAFTA. This growth path is then compared with the one obtained with the base simulation (under the assumption of no maquila provisions from neither CAFTA nor the CBTPA) in order to assess the impacts of implementing the changes in the maquila scheme introduced by CAFTA.

To model the impact of CAFTA's liberalization of the rules of origin for maquila, the level of intermediate imports to the textile industry is kept constant at the observed level of 1997 prior to the passage of the CBTPA in 2000. Then starting in 2005 these intermediate imports are reduced to the low

levels observed after 2000. This simulation then shows the positive effect of domestically producing a greater share of the intermediate inputs to the maquila industry.

The base simulation, which represents the projection of the economy without CAFTA, projects that the Honduran economy will grow at a relatively slow rate of 3.06% per year from its 1997 base up to 2020 (Table 5). The relaxation of the liberalized rules of origin for maquila increases the annual growth rate of the economy by 1.4%, implying an increase in the level of GDP in 2020 of nearly 38% relative to the baseline simulation. Import substitution in the maquila sector and the resulting increase in employment increase demand and output in all other sectors as well. The effect on employment is also substantial: compared with the baseline scenario without CAFTA or the CBTPA, by 2020 maquila will create an additional 24 million units of employment for males and 4.3 million for females, raising the annual growth rate of employment for both sexes to around 4.5%, an improvement of around 1.4% over the baseline.

The size and growth rate of the capital stock are important determinants of economic growth, and therefore CAFTA's impact on capital formation and return to capital is important. The maquila provisions in CAFTA have a considerable impact on the profitability of capital and its growth rate. Upon adoption of the liberalized rules of origin, which are first incorporated in the model in 2005, the rate of return to capital jumps from 12% to 16%. From there to 2020 the rate of growth of capital increases to 4.5% per year (as opposed to only 3.5% in the baseline scenario). That is enough to bring down the rate of return, but even in 2020 the return is still 30% higher than under the baseline scenario. There is also a much higher level of employment for the unskilled and higher wages for the skilled.

Finally, and in terms of the distributional impact of the maquila provisions in CAFTA between factors of production, it is useful to look at what happens with the relative factor shares of labor (skilled and unskilled/semiskilled) and capital. It turns out that relative to the 1997 baseline, in 2005 the capital share rises. However, the rate of capital formation rises too and therefore drives down the rate of return to capital. As a result, in 2020 the share of capital is still (marginally) higher than in 1997. Thus, the maquila provisions in CAFTA favor capital at the expense of unskilled labor. In other words, the rate of growth of employment, even though quite large, is not as rapid as the growth rate of the economy.

In conclusion, without CAFTA's maquila provisions, Honduras's annual rate of economic growth is likely to be 1.4% lower than with those provisions, while employment for unskilled and semiskilled labor would be nearly 27% less (Table 5). Of course these calculations do not take into account the impact of the expiration of the ATC, which may well dampen the positive impact of CAFTA.

El Salvador

Just as in the case of Honduras, the simulation for El Salvador is based on a recursive dynamic CGE model developed by Morley and Piñeiro (2007b), but in this case the base year for the data in the SAM is 2000. After obtaining the static solution, the model is solved recursively year by year until the year 2020. The static solution is generated using the same closure assumptions as employed in the case of Honduras, with one important exception: since El Salvador dollarized its economy in January 2001, the exchange rate is fixed, which means that foreign savings is the variable that clears the current account balance with the rest of the world. For the recursive model, the same assumptions apply as discussed earlier for the Honduras model.

As was the case with the Honduras model, the El Salvadoran model is used to simulate the growth path for the economy for the period 2000–2020 under the changes in the rules of origin for maquila introduced by CAFTA. This is done by keeping the level of intermediate imports to the textile industry constant at the observed level of 2000 prior to the passage of the CBTPA. Then starting in 2005 these intermediate imports are reduced to the much lower levels observed after the implementation of the CBTPA. The resulting growth path is compared with the one obtained with the base simulation (under the assumption of no maquila provisions from either CAFTA or the CBTPA) to assess the impacts of implementing the changes in the maquila scheme introduced by CAFTA.

The base simulation, which represents the projection of the El Salvadoran economy without CAFTA, projects a rather optimistic growth rate of 4.8% per year from its 2000 base up to 2020 (Table 5).[32] The relaxation of the liberalized rules of origin for maquila increases the annual growth rate of the economy by 0.4%, implying a jump in the level of GDP in 2020 of 9% relative to the baseline simulation, a far smaller increase than in the case of Honduras. Nevertheless, CAFTA's maquila provisions increase the rate of growth of both maquila and nonmaquila commodities, both of which shift more of the production in the country over to unskilled, labor-intensive commodities.

The effect of the maquila provisions in CAFTA on employment of unskilled labor[33] in general, and that of females in particular, is significant. Compared with the baseline scenario without CAFTA or the CBTPA, annual growth rates in employment of urban and rural unskilled female labor are expected to jump by nearly 0.8% and 0.5%, respectively. Due to a contraction of the government sector (decreased consumption of the public sector caused by the savings-investment closure of the model and the sharp

[32] As explained in Morley and Piñeiro (2007b), this rather high predicted rate of future economic growth stems from the assumption of no financial crisis or natural disasters up to 2020, a relatively low capital requirement per unit of additional output, continuation of remittances, and exogeneity of the savings-investment process. Furthermore, the main function of the predicted growth rate in the base run is to serve as a benchmark against which to examine the effect of CAFTA—that is, it is the *change* in the growth rate that is important.

[33] Unskilled laborers have less than high-school-level education.

reduction in foreign saving given El Salvador's fixed exchange rate after the dollarization), employment growth of skilled labor is sharply reduced but still positive.

By 2020 CAFTA's maquila provisions are projected to have increased the level of employment for male and female unskilled labor by, respectively, 12% and 18% in the urban sector and, respectively, 13% and 10% in the rural sector, relative to the situation without the provisions. Clearly, unskilled urban females are the big winners from the maquila provisions in CAFTA.

Similar to the case of Honduras, earnings inequality is expected to rise in El Salvador, largely for the same reasons as in Honduras (i.e., excess demand for skilled labor and excess supply of unskilled labor). It is important to note that this is the case with or without CAFTA, and even though differences between the two scenarios are relatively small, losses of unskilled labor are higher under the maquila scenario than in the base scenario. Between 2000 and 2020, the earnings position of both rural and urban unskilled labor relative to that of their skilled counterparts deteriorates significantly, about 14%. This is entirely due to higher wages of skilled labor: as discussed earlier, unskilled labor benefits from the maquila provisions in CAFTA only through higher employment rates.

Unlike in the case of Honduras, the data in the SAM for El Salvador used in the model simulations permit us some conclusions regarding the relative earnings position of rural and urban workers. The maquila provisions in CAFTA do not seem to affect rural-urban differences in wage rates for skilled labor, which is perhaps not surprising given that maquila uses mostly unskilled labor. A similar conclusion holds for the relative earnings position of males and females: the model results (not reported in Table 5, but see Morley and Piñeiro 2007b) suggest that the male/female earnings ratio hardly changes between 2000 and 2020, and differences between the baseline and maquila model scenarios are insignificant.

CAFTA's maquila provisions have a rather limited, but positive impact on the rate of growth of capital formation, which leads to a capital stock in the year 2020 that is 8% higher than in the absence of these provisions. However, and in line with the rising share of unskilled labor in total GDP, the factor share of capital decreases over time, and faster in the maquila scenario compared with the baseline scenario.

In conclusion, the total impact of CAFTA's maquila provisions in El Salvador is rather small, both in terms of economic growth and changes in the structure of the economy. On the other hand, and as expected, their impact on the growth of the textile sector itself is substantial. However, the biggest impetus of the maquila provisions in CAFTA comes from their impact on labor, in particular on the creation of unskilled jobs for urban females, where the additional 0.8% annual growth rate in employment creation results in nearly 20% more jobs by the year 2020.

Table 5. Impact of CAFTA Textile Maquila Provisions on Macroeconomic Aggregate Indicators

	Honduras[a]		El Salvador[b]		Nicaragua[c]	Costa Rica[d]
	Baseline[e]	CAFTA-maquila	Baseline[e]	CAFTA-maquila	CAFTA-maquila over tariff reduction and agricultural quotas only	CAFTA-maquila over baseline[e]
Growth	% per year up to the year 2020				% change per year for 2006–2012	% change per year for 2007–2026
GDP	3.06	4.46	4.48	4.91	0.6	0.01
Value-added textile maquila sector	2.96	4.51	6.24	7.60	12.52	0.03
Employment	Units of unskilled and semi-skilled employment				Annual % growth rate employment	
	male wage earners		urban male unskilled labor		male unskilled wage earners	wage earners
1997	7.13	7.13				
2000	7.71	7.71				
2005	9.01	10.32				
2010	10.42	12.59				
2015	12.10	15.37				
2020	13.93	18.61				
2000–2020			5.04	5.59		
2006–2012					0.7	
2007–2026						0.0
	male self-employed		rural male unskilled labor		female unskilled wage earners	own-account workers
1997	25.62	25.62				
2000	30.17	30.17				
2005	36.87	43.09				
2010	41.84	51.30				
2015	47.77	61.60				
2020	54.21	73.48				
2000–2020			4.53	5.02		
2006–2012					2.5	
2007–2026						0.0
	female wage earners		urban female unskilled labor		own-account male unskilled	skilled workers
1997	1.37	1.37				
2000	1.46	1.46				
2005	1.69	2.04				
2010	1.97	2.54				
2015	2.29	3.13				
2020	2.64	3.83				
2000–2020			5.85	6.67		
2006–2012					0.08	

Table 5. Continued

2007–2026						0.0
	female self-employed		rural female unskilled labor		own-account female unskilled	unskilled workers
1997	3.86	3.86				
2000	4.33	4.33				
2005	5.15	6.15				
2010	5.90	7.46				
2015	6.76	9.02				
2020	7.71	10.84				
2000–2020			5.24	5.74		
2006–2012					0.4	
2007–2026						0.01
			urban male skilled labor		male skilled wage earners	male labor
2000–2020			2.84	3.16		
2006–2012					1.0	
2007–2026						0.01
			urban female skilled labor		female skilled wage earners	female labor
2000–2020			3.02	3.43		
2006–2012					0.9	
2007–2026						0.0
			rural male skilled labor		own-account male skilled	
2000–2020			2.88	3.23		
2006–2012					0.1	
2007–2026						
			rural female skilled labor		own-account female skilled	
2000–2020			2.92	3.27		
2006–2012					0.4	
2007–2026						
Wages	Relative wages (unskilled/skilled)		Relative wages (unskilled/skilled)		Annual % growth rate wages	Annual % growth rate wages
	male wage earners		urban male		male unskilled wage earners	wage earners
1997	1.00	1.00				
2000	0.99	0.99	0.92	0.92		
2005	0.96	0.94	0.87	0.86		
2010	0.93	0.91	0.81	0.80		
2015	0.91	0.87	0.75	0.74		
2020	0.88	0.84	0.69	0.67		
2006–2012					0.2	
2007–2026						–0.1

Table 5. Continued

	male self-employed		rural male		female unskilled wage earners	own-account workers
1997	1.00	1.00				
2000	0.99	0.99	0.91	0.91		
2005	0.96	0.94	0.86	0.85		
2010	0.93	0.90	0.80	0.79		
2015	0.91	0.87	0.74	0.72		
2020	0.88	0.84	0.68	0.66		
2006–2012					0.7	
2007–2026						0.3
	female wage earners		urban female		own-account male unskilled	skilled workers
1997	1.00	1.00				
2000	0.99	0.99	0.90	0.90		
2005	0.96	0.94	0.84	0.83		
2010	0.93	0.90	0.79	0.77		
2015	0.91	0.87	0.72	0.70		
2020	0.88	0.84	0.66	0.64		
2006–2012					0.0	
2007–2026						–0.02
	female self-employed		rural female		own-account female unskilled	unskilled workers
1997	1.00	1.00				
2000	0.98	0.98	0.90	0.90		
2005	0.96	0.93	0.85	0.84		
2010	0.93	0.89	0.79	0.78		
2015	0.91	0.86	0.73	0.71		
2020	0.88	0.83	0.67	0.65		
2006–2012					0.0	
2007–2026						0.03
					male skilled wage earners	male labor
2006–2012					–0.1	
2007–2026						–0.01
					female skilled wage earners	female labor
2006–2012					–0.2	
2007–2026						0.02
					own-account male skilled	
2006–2012					0.0	
2007–2026						
					own-account female skilled	
2006–2012					0.0	

Table 5. Continued

2007–2026					
			Factor share unskilled labor		
2000			0.168	0.167	
2005			0.173	0.176	
2010			0.179	0.182	
2015			0.185	0.189	
2020			0.191	0.197	
			Factor share skilled labor		
2000			0.187	0.187	
2005			0.186	0.189	
2010			0.186	0.188	
2015			0.184	0.186	
2020			0.182	0.184	
Capital	supply of capital (stock)				supply of capital (annual % growth rate)
Initial	158.88	158.88			
2000	165.95	165.95			
2005	190.37	190.37			
2010	229.28	240.58			
2015	272.74	301.31			
2020	319.54	370.90			
2000–2020			3.14	3.55	
2006–2010					
2011–2012					
	return to capital (%)		factor share capital		return to capital
Initial	10.2	10.2			
2000	11.3	11.3	0.645	0.647	
2005	11.8	15.9	0.641	0.635	
2010	10.8	14.4	0.636	0.630	
2015	10.3	13.7	0.631	0.625	
2020	9.9	13.3	0.627	0.620	
2006–2012					0.6

[a] Source: Morley and Piñeiro (2007a).
[b] Source: Morley and Piñeiro (2007b).
[c] Source: own calculations based on Sánchez and Vos (2006).
[d] Source: own calculations based on Sánchez (2007).
[e] Baseline = without CAFTA or the CBTPA.

Nicaragua

Our discussion of the results of the model simulations to assess the impact of the maquila provisions in CAFTA for Nicaragua is based on an earlier paper by Sánchez and Vos (2006). The CGE model used in their paper follows the IFPRI standard model described in Lofgren et al. (2001), coupled with a recursive adjustment over time that is by and large similar to that used in the models for Honduras and El Salvador, thus facilitating the comparison of results. The static solution of the model is generated for the year 2000 (the base year of the data), and the dynamic part of the model is solved recursively until the year 2012. The static solution is obtained under similar assumptions as in the Honduras model but with the following exception: in the Nicaragua model, labor is subdivided according to occupational type (salaried and own-account), skill level (skilled vs. unskilled), and gender. Real wages are fixed for all types of labor (so all labor markets, including the one for skilled labor, adjust via quantities). The discussion below refers to the version of the Nicaragua model that uses the same external, fiscal, and savings-investment closures as the Honduras model.[34] The recursive model is solved in the same manner as in the case of the Honduras and El Salvador models.

Modeling the impact of CAFTA's maquila provisions Nicaragua is a bit different than that for Honduras and El Salvador in that the latter two countries do not enjoy preferential access to the U.S. market granted through the TPL provisions. The discussion below is based on the assumption that Nicaragua will be able to completely fill the preferential quotas of the TPL arrangements.[35]

The net effect of the maquila provisions in CAFTA on economic growth is an additional 0.65% per year during the period 2006–2012. This means that by the year 2012 the maquila provisions in CAFTA add about 4% to Nicaragua's GDP. The size of the maquila sector itself is simulated to about double during the period 2006–2012, an annual growth rate of 12%. Textile exports will also more than double, increasing Nicaragua's dependency on maquila exports without attaining a more diversified economy. Exports of nontraditional agricultural and agro-industrial exports will become less competitive due to appreciation of the real exchange rate.

The maquila provisions in CAFTA have a positive effect on employment, which is expected to be nearly 4.5 % higher by 2012 compared with the scenario that involves only tariff reduction and agricultural quotas. But unskilled labor is again the clear winner: by 2012 employment of unskilled female wage earners will be more than 16% larger than without the maquila provisions, and their wages

[34] Despite the fact that the exchange rate regime in Nicaragua is of the crawling-peg type (mini-devaluations), which basically implies a fixed nominal exchange rate, due to unsatisfactory model results obtained under this assumption the simulations discussed in this section were generated with a nominal exchange rate that is allowed to vary, keeping foreign savings constant.

[35] Here it is also useful to again point out that the simulation on which the discussion is based does not take the expiration of the ATC into account. However, as argued earlier, the textile maquila sector in Nicaragua may be less affected than the same sector in other CAFTA countries.

will be 4% higher, compared with only 1.5% for male unskilled wage earners.[36] So unlike in the case of El Salvador, unskilled labor will benefit not only through higher employment rates but also through higher wage rates, even if the size of the increase remains relatively limited. But generally, wages of unskilled labor relative to those of skilled labor will improve somewhat.

In summary, the impact of the maquila provisions in CAFTA on the Nicaraguan economy will be positive but again not dramatic. But just as in Honduras and El Salvador, the biggest impetus will be on employment of unskilled female wage labor: whereas by the year 2012 the Nicaraguan economy is expected to be 4% larger compared with a situation without CAFTA, employment of unskilled female wage labor will be 16% higher. Again, however, these calculations do not take account of the potentially negative impact of the completion of the ATC.

Costa Rica

The discussion of the results of the model simulations to assess the impact of CAFTA on the maquila industry in Costa Rica is based on Sánchez (2007). As in the case of the other countries, the CGE model developed for Costa Rica largely follows the IFPRI standard model described in Lofgren et al. (2001). The static solution of the model is generated for the year 2002 (the base year of the data in the SAM), and the dynamic part of the model is solved recursively until the year 2026, under the assumption that CAFTA will take effect in 2007.

As in the Nicaragua model, labor is subdivided according to occupational type (salaried and own-account), skill level (skilled vs. unskilled with nine years of education as the cutoff point), and gender. Whereas for nonsalaried labor nominal salaries are assumed fixed, for salaried labor it is assumed that real salaries are "downward sticky" (i.e., they can go up but not down). The same model closures are used as in the Honduras and Nicaragua models—that is, the nominal exchange rate is endogenous and therefore foreign savings remain fixed;[37] fixed household and government saving rates make total investments endogenous in the model, while fixed government consumption and income taxes endogenize government savings.

Like Nicaragua, Costa Rica has negotiated a number of TPL provisions even though they allow less liberal access to the U.S. market than is the case for Nicaragua. Again we assume that the preferential quotas of the TPL arrangements will be completely filled.

[36] Employment of skilled wage labor (again particularly that of women) will also increase substantially, even though corresponding wages will suffer a slight decline.

[37] The endogenous nominal exchange rate in the model is in line with the recent (October 2006) policy changes that made the Costa Rican exchange rate regime more flexible, by doing away with the crawling peg and introducing free floating within a certain bandwidth.

Unlike in the other Central American countries, the positive economic effects of CAFTA in Costa Rica are nearly entirely due to tariff reductions that permit cheaper imports of industrial inputs. The impact of the maquila provisions in CAFTA on the Costa Rican economy is very modest, which is not surprising given the much lower weight of the textile maquila industry in Costa Rica (Table 5). By the year 2026, the maquila provisions in CAFTA result in a GDP that is a paltry 0.2% higher than without those provisions, and their effect on total employment and wages is negligible (even though employment in maquila is 0.6% higher).

Poverty and Distributional Impacts of CAFTA's Maquila Provisions

Given the positive impact on economic growth that we display in Table 5, it is not surprising that the maquila provisions of CAFTA have a very significant and favorable impact on poverty as well (Table 6).[38] With the exception of Costa Rica, the provisions unambiguously help both the rural and urban poor. And again with the exception of Costa Rica, the poverty effects are of a nontrivial magnitude. They are expected to be largest in Honduras, which is not surprising given the enormous importance of the maquila industry in that country. By the year 2020 and compared with the baseline scenario, the maquila provisions in CAFTA are expected to have cut the national poverty rate by more than 7 percentage points (to 59.1% down from 66.4%). Extreme rural poverty in Honduras is 54% in the baseline scenario and is expected to decline to 44% by 2020 under the maquila scenario, which represents a 1.3% annual percentage improvement over the baseline scenario. While the overall income distribution becomes less skewed as a result of CAFTA's maquila provisions, labor income inequality is expected to increase in Honduras with or without CAFTA, due to a projected increase in the supply of skilled labor (2%) that is smaller than the projected increase in demand for skilled laborers (wages for the unskilled and semiskilled are fixed by the assumption of an excess supply of those types of labor). The maquila provisions in CAFTA are projected to strengthen the tendency toward greater wage inequality in urban areas because the higher rate of GDP growth increases wages of the skilled relative to the unskilled. However, it is important to note that, relative to the baseline scenario, CAFTA increases the earnings of both the skilled and the unskilled in Honduras. Whereas for the latter the improvements come in the form of more jobs at the same wage, the improvement for skilled labor comes in the form of higher wages only. Moreover, many poor urban households have unemployed skilled labor resources, and putting these to work would actually be good for poverty, even if it increases labor earnings inequality. In conclusion, the benefits of CAFTA's maquila provisions for the Honduran poor stem primarily from increased employment opportunities.

[38] Note that the figures shown in Table 6 are yearly percentage changes.

Table 6. Impact of CAFTA Textile Maquila Provisions on Poverty Rates and Income Distribution

	Honduras[a]	El Salvador[b]	Nicaragua[c]	Costa Rica[d]
	Average annual % change over baseline scenario			
Total poverty rate	–0.7	–1.1	–1.9	–0.2
urban	–0.8	–1.0	–3.0	0.0
rural	–0.7	–1.4	–1.3	–0.4
Extreme poverty rate	–1.4	–1.6	–5.8	0.2
urban	–1.7	–1.4	–14.7	0.2
rural	–1.3	–1.9	–1.8	0.1
Income distribution	positive	positive	positive	neutral

[a] Based on simulations for 2004–2020.
[b] Based on simulations for 2005–2020.
[c] Based on simulations for 2006–2010.
[d] Based on simulations for 2007–2026.

In El Salvador relative to the baseline scenario, the maquila provisions in CAFTA increase per capita income by an additional 0.4% per year while cutting the overall poverty rate by nearly 4 percentage points (from 23.6% to 19.9%) over a period of 15 years, equivalent to a 1.1% annual percentage decrease in the overall poverty rate. Just as in Honduras, the benefits of the maquila provisions in CAFTA for the poor in El Salvador stem primarily from increased employment opportunities: the very big increase in the demand of unskilled (mostly female) urban labor leads to a decrease in both urban and rural poverty, with the latter decreasing even more than the former due to urban-rural demand linkages. Thus employment growth is critical to reducing poverty. Furthermore, if the economy creates urban employment that pulls unemployed or inactive workers out of the countryside at the same time that the increase in urban employment and income increases the demand for agricultural production by urban households, then all of this has a favorable impact on rural poverty. Whereas the baseline scenario predicts a significant decrease in income inequality over time, the maquila provisions in CAFTA contribute slightly to a further decrease in income inequality when compared with the baseline (i.e., at the national level the Gini coefficient falls from 0.46 in the baseline to 0.45). This is because relative to the baseline scenario, the maquila scenario narrows the average income differential between urban and rural households, despite the fact that maquila itself is an urban activity. While skilled urban labor gains more (in terms of wage increases) than unskilled urban labor (for which wages are assumed fixed), which leads to an increase in urban labor income inequality, the linkages between the urban and rural labor markets for the unskilled ensure that the poverty effects in the rural sector dominate those in the urban sector. In this way the positive effect of job creation on the distribution of income is greater than the associated rise in the skill differential.

In Nicaragua, the impact of maquila on poverty is much smaller than in Honduras and El Salvador. There are two basic reasons for that. First, CAFTA influences the Nicaraguan economy

primarily through increased preferential access to the U.S. market via quotas. Second, the poverty simulation results are for a much shorter period (2006–2010) than in the cases of Honduras and El Salvador and therefore somewhat less insightful. Nevertheless, the poverty effects are certainly of a nontrivial magnitude. The maquila provisions in CAFTA affect rural and urban poverty nearly equally, both of which will be about 0.8 percentage points lower than without such provisions. It is interesting to mention that whereas reducing tariffs alone increases rural poverty in Nicaragua somewhat, the maquila provisions more than compensate for that negative distributional effect. The effect of maquila on the distribution of household income is positive but very small (0.1% decrease in the Gini). That the poverty effects are less than the effect on GDP is explained by the fact that the benefits for the poor mainly are through higher employment and not so much via higher wages.

Given the marginal effects of the maquila provisions on income and employment in Costa Rica stemming from the small share of the sector in the total economy, the poverty impacts of such provisions can be expected to be extremely small. Indeed they turn out that way, with no measurable effect on aggregate poverty. However, by the year 2026 rural poverty and extreme urban poverty are a marginal 0.02 and 0.04 percentage points less compared with the baseline scenario. As indicated earlier, the largest economic effects of CAFTA in Costa Rica stem from tariff reductions, which are responsible for virtually the entire poverty reduction effect of CAFTA (estimated at 0.6 percentage points by 2026 in Sanchez 2007). Even though both tariff reductions and CAFTA's maquila provisions particularly benefit the urban poor, the rural poor gain as well, insofar as those who lost their job in agriculture benefit from increased employment opportunities in the nonagricultural sectors. Given the very small effects on poverty, it does not come as a surprise that the overall income distribution is not affected.

7. CONCLUDING REMARKS

The economic importance of the textile maquila industry in Central America is undeniable: the sector provides employment to more than 400,000 (mostly poor) people, especially young rural females; and is currently responsible for anywhere between 6% and over two-thirds of total export value, depending on the country (even if these shares are now decreasing over time). CAFTA has changed the industry's playing ground to a considerable extent. Historically, U.S. trade agreements have included incentives that limited the development of forward and backward linkages in the textile and apparel sectors in exporting countries: most inputs needed to be U.S. made and most value-adding processes needed to be undertaken in the United States to qualify for duty benefits. Compared with previous agreements such as the CBI and the CBTPA, CAFTA has substantially widened the scope of the trade relations between Central America and the United States as far as the apparel trade is concerned, to such an extent that it may provide additional opportunities for growth in the sector, additional jobs, and increased vertical integration. Indeed our simulations with economy-wide models that include microsimulations to address poverty impacts suggest that depending on the country, the maquila provisions in CAFTA add between 0.01% and 1.4% to annual economic growth, and between 0.005% and 1.4% per year to employment of particularly female unskilled labor, compared with a situation without CAFTA. As a result and depending on the specific country, the rate of total poverty is likely to fall by between virtually zero (Costa Rica) and 0.73% (Honduras) per year relative to a situation without the maquila provisions in CAFTA. With the exception of Costa Rica, the growth, employment, and poverty impacts of the textile maquila provisions in CAFTA are thus quite significant and much larger than the (much more publicized and debated) CAFTA rules that have to do with tariff reduction and increases of tariff-free quotas (for a comparison between these effects, see Morley and Piñeiro 2007c).

However, CAFTA alone is no guarantee for the survival and sustainability of the textile maquila industry in Central America, for the simple reason that it is not the only significant change in the economic environment faced by the industry. Past successes of Central American maquila exports to the United States are to a substantial extent due to preferential access but also quotas. Although CAFTA is a blessing for the Central American textile maquila industry because it consolidates and extends this preferential access to the U.S. market, the expiration of the worldwide quota system in force for the textile industry (the Uruguay Round Agreement on Textiles and Clothing, or ATC) in January 2005 poses a big challenge since the increased Asian competition that results from the end of the quota system could easily erase benefits CAFTA provides. In this context it is important to note that while Central American exports of textile and apparel are heavily focused on the U.S. market, 72% of all exports to the United

States in 2005 consisted of only six major products,[39] virtually all of which were heavily protected by the quota system under the ATC. China no doubt poses the greatest challenge but, after considerable pressure of the United States, has agreed to a series of voluntary export restraints until the end of 2008, in spite of the earlier completion of the ATC. As a result the loss of market share in the United States for the Central American textile industry has thus far been limited, but it is widely expected that the increased competition after 2008 may result in average price reductions of the order of 20%. Since maquila in Central America is unlikely to compete with Asian suppliers on the basis of cost, the industry will need to develop an integrated approach to improve competitiveness at the enterprise level that exploits other (potential) strengths that will give it a comparative advantage in the U.S. market. This paper has argued that these potential strengths will have to be found in the areas of quality, timeliness/responsiveness and geographical location, percentage rejects, and socially responsible production methods, besides the general conditions required to attract foreign investors.

Before elaborating on each of these factors in somewhat more detail below, it is important to stress the crucial importance of moving quickly to full-package production and away from simply assembly. Buyers in the United States increasingly prefer to source from suppliers capable of full-package production, which also provides obvious economic benefits to the Central American economies through forward and backward linkages. In any case Central America is unlikely to compete with Asian suppliers in pure assembly operations, and thus Central American firms must overcome bottlenecks that prevent the sector from shifting away from simple, low-price, high-volume products in which Asian countries tend to excel (China in particular) toward higher-value-added items and those that are needed quickly and frequently (fast-response items).[40] One of these bottlenecks is risk: compared with pure apparel assembly, the risk factor is much higher in full-package production because even a partially canceled order usually incurs great losses. These not only include the wages paid to workers for their assembly and overhead costs, but also the loss of the inputs, particularly cloth that has already been purchased by the maquila. One potentially promising way to overcome the risk bottleneck is by increasing efforts to enter into contracts with risk-sharing firms.

Regarding quality, an increased emphasis on quality is crucial given the increasingly stringent requirements of U.S. buyers that in the case of noncompliance can lead to costly rejects. Quality issues in the Central American textile industry are widely reported to be the result of insufficiently skilled labor, pointing to the importance of improving quality through worker training programs. In this respect the recently opened Regional Center for Quality Control of the Textile Industry Association in Guatemala

[39] These are cotton and MMF underwear (33% of total exports to the United States), knit shirts and blouses (24%), trousers and slacks (12%), and nightwear (3%).

[40] An example in this respect is Honduras, where expertise mainly lies in subsegments of the apparel sector—simple and cheap garments such as T-shirts—that will face fierce competition with China due to the end of apparel quotas. Building on the country's long tradition of T-shirt production, a shift to T-shirts with embroidery, screen printing, and so forth may be warranted.

and the training programs for textile workers in Honduras represent important examples for other countries in the region.

The timeliness aspect evolves around improved responsiveness, which involves exploiting the region's geographic location advantage. The latter allows shipments to reach clients much faster than from Asia, which has become increasingly important given rapidly changing consumer demand requiring fast delivery time. Increased regional integration and simplification of customs processes would help improve the speed of delivery. Employing personnel at customs who deal specifically with businesses in the *Zonas Francas* would also speed the process, since specific regulations apply to exports produced in such zones. Firms can improve the speed of shipments by training a member of staff to serve as a broker who can approve shipments. Incorporating the newest manufacturing methods—moving from line to module production, for example—can increase delivery speed. Increasing communication between the retailer's shelf and the factory through point-of-sale technology can also improve speed to market.

Partial or entire rejections of orders are very expensive and also compromise confidence in business relationships. The risk of partial defects is particularly high in Nicaragua, where the industry will need to pay more attention to this issue in order to remain competitive.

In virtually all five Central American countries ample room exists for improving the general conditions required to attract foreign investors. These include efficient transport systems, reliable and competitively priced electricity, adequate supply of (semi-) skilled workers, enforcement of labor laws, security, and so on. In this respect it is important to note that the U.S. Department of Homeland Security's Bureau of Customs and Border Protection (Customs) has designated the Port of Cortés in Honduras a Container Security Initiative (CSI) port. The partnership Customs has formed with the Port of Cortés, the largest port in Central America, will enable expedited entry for cargo entering the United States from that port. This designation is a good example of the sort of measures that Central American countries need to aim at to further enhance the competitiveness of their maquila industry.

One clear market niche the Central American maquila industry should exploit so as to compete with Asian producers consists of garments produced with socially responsible production methods. This has especially to do with workers' conditions—not only salaries but also working hours, breaks (sanitary, lunch, etc.), health care facilities, and other social benefits. Although Chinese producers are a clear threat in terms of cost of production, they are not known for adhering to Western standards regarding workers' conditions, and Central American governments should therefore help their maquila industries build up a reputation in this area. A first step may consist of the implementation of workplace standards monitoring programs through which Central American apparel can earn a distinctive label in the world market.

Finally, there may be something to be learned from the Mexican experience. Mexico's textile and apparel sector boomed after NAFTA but has been continually weakening since 2001. In 1999, 15% of

all U.S. apparel imports came from Mexico, but as of May 2005, Mexico had slipped to only 8.6% of U.S. market share in terms of units and 9.5% in value terms. Mexico traditionally has concentrated its principal maquila exports in categories that receive preferential access, which held back the implementation of some of the measurements needed to be able to compete with Asian exporters (China in particular) in the U.S. market after the implementation of the various stages of the ATC during the period 1995–2005. In addition, preferential access provided by NAFTA has had the unintended effect of creating distortions in subsectors of the maquila industry in which Mexico does not enjoy a comparative advantage. As a result, China has increasingly taken over Mexican apparel exports in the United States, and this trend is only expected to get stronger after transitory U.S. restrictions on Chinese textiles and apparel imports are revised (and probably reduced significantly) in 2008. The lesson to be learned from Mexico is that preferential treatment for the Central American maquila sector offered by CAFTA, in combination with the temporary quota on Chinese textile imports into the United States, should not delay the implementation of a strategic approach needed to confront the post-ATC challenges. Rather it should be carefully used by the CAFTA countries to upgrade their maquila industry and reallocate resources to those parts of the industry where a solid comparative advantage can be developed and exploited in the U.S. apparel market. Given the small sizes of the individual Central American countries, a possible road may consist of developing a regional virtual vertical integration so as to compete against Asian competitors as a region, allowing for the development of intraregional trade of intermediary products (e.g., fabric and trims) with the final product exported duty-free to the United States.

APPENDIX A: DETAILS OF THE CBTPA

Although the Caribbean Basin Trade Partnership Act does not provide complete NAFTA parity, it does borrow elements from NAFTA, as well as provisions from the 807, Special Access, and Special Regime programs that preceded the act. Garments eligible for duty-free and quota-free treatment under the CBTPA fall into 11 (13 if separate C and K) preference groups. In order to certify their qualifying status, certificates of origin signed by the exporter are required.

Preference Groups A and B (807 A+ program): Apparel Assembled with U.S. Components

Group A includes garments assembled in CBTPA countries, constructed out of fabric that was produced and cut in the United States. In addition, the yarns that were woven into fabric are required to be wholly formed in the United States. That includes all fabrics used to produce the garment: body fabric, pocketing, and lining. Sewing thread, however, can be of any origin. To qualify for Group A status, the garment must not be subjected to postassembly processes.

For the cases in which other processes are undertaken in production of the apparel, such as stone washing, acid washing, oven baking, bleaching, dyeing, or screen printing, the item no longer qualifies for Preference Group A. If all other criteria for preference Group A are met, but the garment is subject to any such postassembly processes, the item qualifies as an item in Preference Group B.

Trade Act of 2002 Modifications—Groups A and B

In 2000, garments assembled from knit-to-shape components could not qualify under Group A or Group B. However, the 2002 modification allowed apparel with knit-to-shape components to qualify under Group A or B provided that the components were knit in the United States out of yarn wholly formed in the United States. The 2002 Trade Act also clarified that the dying, printing, and finishing of the preassembled fabric in an apparel item needed to occur in the United States for the final article to maintain qualifying status.

Preference Groups C and K (809 program): Apparel Assembled from U.S. Cloth and Knit Components

Groups C and K are similar to the apparel under Groups A and B in that qualification is contingent upon assembly in CBTPA countries, using U.S.-produced fabric made from yarns that were also wholly formed in the United States. However, Preference Group C and K qualification also requires the garment's fabric to be cut in the United States. In addition, to qualify under 809, items must be sewn using thread that was formed in the United States, which is not necessary to qualify as an 807+ garment. Garments made out of woven fabric are categorized in Group C, and those cut and assembled out of knit fabric are categorized in group K.

Trade Act of 2002 Modifications—Groups C and K

The 2002 modification expanded benefits to garments with fabric cut in CBTPA countries, provided that the garments were assembled in CBTPA countries and the fabric was produced in the United States. This expansion also allowed garments assembled in CBTPA countries from components knit to shape in the United States out of wholly formed U.S. yarn to qualify. In both cases, garments were eligible for Group C benefits if other criteria were met. The modification also clarified that, as was the case with groups A and B, qualification in groups C and K was contingent upon the lack of additional operations undertaken on a garment's fabric: the cloth used in apparel must be dyed, printed, and finished in the United States.

Preference Group D: Garments Knit in the Region

Preference D includes garments knit to shape in the CBTPA region out of yarns wholly formed in the United States, with the exception of socks. Knit garments also qualify in Group D if they are cut and assembled in CBTPA countries from *U.S. or CBTPA fabric* provided that the yarns are fully formed in the United States, with the exception of non-underwear T-shirts. The use of sewing thread from any origin

does not disqualify an item from Preference Group D status. Although the allowance of CBTPA fabric is an additional benefit for Caribbean Basin countries (including Central American countries), Preference Group D articles were subject to annual tariff rate quotas (TRQs) during each 12-month period of the CBTPA transition period, beginning on October 1.

Trade Act of 2002 Modifications—Group D

The modifications in 2002 greatly increased the TRQs in Preference Group D. For the year beginning October 1, 2002, TRQs were increased to 500 million square meter equivalents (SMEs). For 2003, the TRQs were increased again to 850.4 SMEs and for 2004 and beyond, TRQs were set at 970.244 million SMEs.

Preference Group E: Regionally Knit T-shirts

Non-underwear knit T-shirts are classified in a separate category, Group E, since as discussed above, they do not qualify under Preference Group D. Knit T-shirts qualify if they are assembled in beneficiary countries out of cloth formed in beneficiary countries. However, yarns used in producing the cloth must be wholly formed in the United States.

The use of sewing thread from any origin does not disqualify an item from Preference Group E status. These regionally knit T-shirts are also subject to TRQs.

Trade Act of 2002 Modifications—Group E

As was the case with other knits, the TRQs for regionally knit T-shirts were also increased with the Trade Act of 2002 modifications. For the year beginning October 1, 2002, the knit T-shirt TRQ was increased to 9 million dozens. The TRQs were then increased to 10 million dozens in 2003 and 12 million dozens for 2004 and beyond.

Preference Group F: Brassieres

Subject to certain restrictions, brassieres that are assembled in the United States or CBTPA countries out of cloth that is cut in the United States or CBTPA countries qualify in Preference Group F under subheading 9820.11.15. If the aggregate cost of cloth components formed in the United States in the previous 12-month period is 75% or more of the aggregate declared Customs value of all cloth contained in all brassieres of that producer during the previous 12-month period, the items are eligible to enter duty-free and quota-free into the United States. If during any 12-month period, this criterion is not met, another 12-month period must be completed during which the percentage must be 85% in order to qualify for duty-free and quota-free treatment.

Trade Act of 2002 Modifications—Group F

The 2002 modification excluded trimmings from the 75% cost test outlined in the original CBTPA. It clarified that the 75% test was required only for those brassieres categorized under Group F. It also clarified that brassieres are categorized under Group F only if they are not entered under other CBTPA groups.

Preference Group G: Short Supply Garments

Garments cut or knit to shape and assembled in CBTPA countries qualify under Preference Group G as short supply garments, even if the cloth or yarn is not formed in the United States or CBTPA countries as long as garments of the same cloth or yarn would be eligible for preferential treatment under NAFTA regardless of cloth or yarn origin. Under NAFTA, these classifications are generally apparel items, such as silk and linen woven garments, that are subject to a more relaxed NAFTA origin rule than yarn forward. Upon determination that other yarns or fabrics cannot be supplied by U.S. producers in sufficient quantities in a timely manner, other garments not included under NAFTA can be designated as short supply garments. These garments also fall under Preference Group G but are categorized under the separate subheading 9820.11.27.

Trade Act of 2002 Modification—Additional Preference Group for Handloomed, Handmade, or Folklore Garments—Group H

Any apparel garments that the United States and CBTPA countries agree should be designated as handloomed, handmade, or folklore garments will be categorized as Preference Group F, and those originating in CBTPA countries were to be eligible to enter duty-free and quota-free.

Trade Act of 2002 Modification—Additional Preference Group for Hybrids—Group L

Apparel produced out of cloth cut partly in the United States and partly in CBTPA countries were able to qualify under Preference Group L for Hybrids under the 2002 modifications. To qualify, the apparel item's yarn and fabric must be wholly formed in the United States and the assembly must be performed with U.S. sewing thread.

APPENDIX B: CAFTA VERSUS THE CBTPA

The following table (based on information obtained from International Development Systems in Washington, D.C.) provides a comparison of duty-free benefits for textile and apparel products between CAFTA and the CBTPA.

	CAFTA	CBTPA
Effective date	El Salvador: March 1, 2006 Honduras and Nicaragua: April 1, 2006 Guatemala: July 1, 2006 Costa Rica: not yet ratified	October 1, 2000, to September 30, 2008 (or until implementation of CAFTA, whichever comes earlier)
Product coverage	All products (yarns, fabrics, apparel and made-ups)	Textile and apparel products that were granted the same duty-free access to the U.S. market and liberalized rules of origin granted to Mexico under NAFTA
Rule of origin	*Yarn forward* for apparel, woven fabrics, and made-ups *Fabric forward* for wool apparel (yarn of any origin) *Fiber forward* for knit fabrics Only *essential character* component required to meet rule of origin	Must use U.S. yarns: - *807+:* U.S.-formed and cut fabrics - *809+:* U.S.-formed fabrics, cut in region - *Regional fabric caps (tariff rate quotas):* knit apparel (but not T-shirts or socks) and outerwear T-shirts All fabric components must meet rule of origin
Exceptions to rule of origin	*Single transformation items (allowed to have fabric of any origin): certain brassieres, woven boxer shorts, woven pajamas, woven dresses* *Short supply: text of agreement includes specific list of yarns and fabrics that may be of any origin* *Accumulation: up to 100 million SMEs of certain woven apparel items and tailored wool apparel may utilize Mexican and Canadian origin fabrics* *Nicaragua TPL: up to 100 million SMEs of cotton and MMF apparel may use yarns and fabrics of any origin (for 10 years in exchange*	NAFTA Annex 401 (short supply) yarns and fabrics "New" CBTPA short supply yarns and fabrics

	CAFTA	CBTPA
	for imports of equal amounts of SMEs of U.S. fabric) *Costa Rica TPL: up to 500,000 SMEs of tailored wool apparel eligible for 50% duty reduction (for two years with possibility of extension)*	
Special requirements	*Elastomeric yarns* (exception to the minimis provision below): elastomeric yarns must be of U.S. or regional origin; latex used in elastomeric yarns may be of any origin *Thread*: all CAFTA-qualifying goods must be assembled with U.S. or regional thread *Visible linings*: if applicable, all CAFTA-qualifying apparel must utilize U.S. or regional fabrics for visible linings *De minimis*: allows for the use of up to 10% (by weight) of non-U.S., non-regional yarns and fibers	*Elastomeric yarns* (exception to the minimis provision below): elastomeric yarns must be of U.S. origin *Thread* (for 809 products only): qualifying 809 apparel must be assembled with U.S. thread *Trimmings*: allows for the use of up to 25% of cost of total materials to be of any origin *De minimis*: allows for the use of up to 7% (by weight) of non-U.S. yarns and fibers *Dyeing and printing*: all U.S.-formed fabrics must be dyed and finished in the U.S.

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