

Industrial Transformation in the Apparel Industry:

A Comparison of El Salvador and Hong Kong

A Comprehensive Exercise

Avianne Boney

Carleton College
November 2006
Advisor: Alfred Montero

Integration into the global market is a goal that all countries strive for. Some succeed in doing so; others are only partially and barely successful. Central America has recently succeeded in gaining access to international trading markets because of its export-oriented apparel industry. Throughout the 1990's the apparel industry in Central America expanded to such an extent that it now represents more than 60 percent of total manufacturing exports for both Honduras and El Salvador (United States Industry Trade Commission, 2003). As the trends in the global apparel industry change, this places pressure on the Central American countries to also change the *modus operandi* of their industry. Managers of multinational clothing firms assert that competition between individual firms is now less important than competition between global apparel supply chains. As a result, the responsibility of the suppliers is increasing.¹ Suppliers are not only expected to handle production but also to give input in design and pre- and post-production processes. Furthermore, the industry has become hypercompetitive. "Firms continually disrupt the status quo to create a series of temporary advantages... they create short-lived differentiation advantages that are easily and rapidly eroded through imitation and innovative new styles" (Richardson, 1996). In order to gain the competitive advantage, firms need to continually invent new processes and products. Since suppliers are also competing against each other, they also become entangled in this hypercompetitive environment which means that they also have to be innovative. Suppliers will need to have more than simply manufacturing facilities; they will need innovative capacity and effective management. However, the industry in Central America is lacking these essential components.

Historically, in pursuit of industrialization and economic growth, the apparel industry was the first manufacturing industry to be established. It was the catalyst for industrialization in the newly industrialized countries in East Asia and it also transformed the economies of the

¹ Traditionally, competition was on the level of the firm. The only responsibility of the manufacturer was sewing.

United States and the United Kingdom from being agriculture-based to being based on industrial output (Blair and Gereffi, 2003). Hong Kong, Singapore, Taiwan and South Korea, otherwise known as the four “Asian Tigers”² all started export-oriented industrialization by investing in apparel production and this allowed them to move on to other manufacturing industries such as electronics and auto parts. Since the 1950’s the industry in East Asia has been transformed from a low technology, low-value added industry to one in which there are always new technological pursuits. In Central America, the apparel industry still manufactures mostly low-value added products and is highly dependent on the investment of foreign firms.³ Tracing the developments of the industry in both regions, one of the major differences has been the type of government policy towards manufacturing industries.

In this paper I argue that it is primarily government’s investment in both hard and soft technologies that led to industrial upgrading in the apparel industry in Hong Kong. Based on this, I propose that a commitment by El Salvador’s government to invest in both these technologies will enable them to address the current demands of the industry and pursue industrial upgrading. Out of the East Asian tigers with the most thriving apparel industries, Hong Kong has the most competitive economy, whereas in Central America among the leading apparel exporters, El Salvador has the most competitive economy (Global Competitiveness Report 2005).⁴ I use these

²They are referred to as Asian Tigers because of their rapid economic growth and the drastic improvements in the standard of living which this brought with it.

³ In both Central America and East Asia, multinational corporations played a vital role in transforming the clothing industry from one catering solely to domestic needs to a leading export industry (Felker 2003).

⁴ In the Global Competitiveness Rankings for 2006-2007 Hong Kong ranked 11th, Taiwan 13th, Korea 24th, El Salvador 61st, Guatemala 75th and Honduras 93rd. The World Economic Forum, in an attempt to evaluate the level of competitiveness of countries in the international arena, looked at a sample of 125 countries and placed them into 3 different groupings based on their stage of development. They point out that whichever strategy a country employs to improve its competitiveness must evidently be based on its stage of development. The three stages are the *factor-driven* stage, the *efficiency-driven* stage and the *innovation-driven* stage. At the first stage, the country’s natural endowments are mainly unskilled labor and natural resources; they compete on the basis of these endowments. Maintaining competitiveness depends on macro-economic stability, well-functioning public and private institutions, efficient infrastructure and a healthy, literate workforce. In the *efficiency-driven* stage, emphasis is on effective manufacturing systems and increasing competitiveness translates into investing in education, efficient markets and maximum use of technology. In the *innovation-driven* stage of development countries can only compete by inventing new products. In order to continue to be competitive, these countries must continually use new, sophisticated processes to produce new products. Of the leaders in the apparel industry in Central America, Guatemala and Honduras are classified in the *factor-*

countries as prototypes for examining how the governments increased the competitiveness of the economy via the apparel industry. In Hong Kong, the government actively promoted the productivity of the labor force which equipped the latter with soft technologies necessary to advance their apparel industry. The government of El Salvador emphasized increasing output by boosting apparel exports; this enhanced the manufacturing sector but also made them overly reliant on foreign investors.

I measure the independent variable (government policies) against the dependent variable (industrial upgrading) firstly by examining government policies towards manufacturing industries, towards investment by multinational corporations and towards building soft technology. Industrial upgrading, as the dependent variable, is measured by the degree of own brand manufacturing and full-package production, and the level of engagement in higher value-added activities. Given that the ability of a firm to partake in these three types of activities is determined by both physical capabilities and by human resources which govern the production process, I introduce *hard* and *soft* technology as an intervening variable. I assert that government policies that are geared towards promoting a balance between hard and soft technologies will be more successful in bringing about industrial upgrading than policies which solely emphasize hard technologies. Secondly, I examine the way in which multinational clothing firms were able to take advantage of these policies to also contribute to upgrading.

Gary Gereffi, one of the leaders in the scholarship on the global apparel industry defines *industrial upgrading* as “[the process of] moving from export-oriented assembly to more integrated forms of manufacturing and marketing associated with the original equipment

driven stage whereas El Salvador is in transition between the *factor-driven* and *efficiency-driven* stage. In East Asia, both Korea and Taiwan are in transition from the *efficiency-driven* to the *innovation-driven* stage and Hong Kong is in the *innovation-driven* stage.

manufacturing (OEM)⁵ and original brand name manufacturing (OBM)⁶ export roles, respectively” (Gereffi, 1999). Original equipment manufacturing is also referred to as *full-package production*: the process in which the contractor is responsible for purchasing raw material and organizing all stages of the production process (Blair and Gereffi, 2003). In the average life cycle of an item of clothing, only 13 percent of the time is actually devoted to manufacturing, whereas 36 percent is dedicated to design and product development and 22 percent to sampling (Iaanazone, 2005). Currently, most of Central America’s apparel firms are at the assembly manufacturing stage; they mainly engage in sewing operations. On the other hand many East Asian firms now manufacture and market their own brands, develop textile and clothing technologies and provide import/export trade services. East Asian firms gain experience in design, marketing and management, which are three of the most fundamental and valuable assets in the global supply chain. Central America lacks this experience.

Industrial upgrading has more potential for economic growth because it provides opportunities for backward linkages with domestic firms. East Asia’s economic success in the manufacturing sector was based on the ability of local suppliers to provide necessary inputs into the industry, which meant that they no longer had to import more expensive materials such as textiles. Backward linkages improve the turnaround time, increase the domestic value-added to the product and generate more employment and innovation opportunities within the domestic economy.

Industrial upgrading however requires two key components: hard and soft technology. *Hard technology* refers to automated, machinery-based tools which improve and expedite the production process. *Soft technology* captures the idea of human knowledge and know-how,

⁵ OEM: contractors buy the fabric and coordinate all steps of the production process up to distribution.

⁶ OBM: local firms manufacture their own brands and strive to increase competitiveness of this brand in the global market.

including managerial and coordination skills, which enables workers to solve practical problems (Thompson, 2003). It is *soft technology* which allows leading firms like Levi Strauss and Liz Claiborne to be competitive in managing a global supply chain and which allows them to continue to grow by revamping products, ideas and images. As soft technology increases, hard technology also increases (Estrin et al., 1996a). Adopting more hard technologies will not however improve or increase soft technologies.

While I argue that investment in soft technology would improve the potential for industrial upgrading in El Salvador, previous literature on this subject emphasizes two different views. One view is that the apparel industry in Central America presents little capacity for advancement and the other stresses the ability of these countries to seek out full-package production contracts in order to upgrade the industry.

The first argument can be summarized by examining Lau and Chan’s Product Life Cycle and International Production model for the apparel industry (Lau and Chan, 1994).

Table 1: Product Life Cycle (PLC) and International Production

<u>PLC in Industrialized Countries</u>		
<u>Introductory Stage</u>	<u>Growth Stage</u>	<u>Maturity Stage</u>
1. Product Innovation 2. Commercialization 3. Manufacture	1. Product Improvement 2. Manufacture 3. Market expansion	1. R&D on improving product and production process 2. Innovate new product 3. Offshore Production
<u>PLC in Developing Countries</u>		
<u>Introductory Stage</u>	<u>Growth Stage</u>	<u>Maturity Stage</u>
1. Acquire manufacturing skill 2. Manufacture for export	1. Improve manufacture skill 2. Manufacture for export and local consumption	1. Improve technology and move up-market 2. Prepare manufacturing for another mature product 3. Offshore Production 4. Move to downstream activities (marketing and service)
<u>PLC in Less-Developed Countries</u>		
<u>Introductory Stage</u>	<u>Growth Stage</u>	<u>Maturity Stage</u>
1. Acquire manufacturing skill 2. Manufacture for export	1. Improve manufacture skill 2. Manufacture for export And local consumption	1. Improve manufacturing process 2. Manufacture for export and local consumption 3. Prepare for another product

As is shown in the table above (table 1) a fully developed apparel industry in an industrialized country is very different in nature to the same in a less-developed country.⁷ In less-developed countries, the mature stage does not entail any sort of infrastructure which allows for research and development (R&D) or innovation of a new product, but rather it continues to be highly dependent on the investment of foreign companies and the export of low-end goods. Whereas developing countries can upgrade their industry by producing high-end and high value-added products, less-developed countries like those in Central America continue to export goods such as t-shirts. They therefore never develop product design skills. The fact that even in the maturity stage, foreign retailers are still controlling the production process, also means that apparel firms in the Central America have no opportunity to develop marketing, management and product development skills. This model underscores the popular train of thought that not all less-developed/developing countries can even hope to achieve the same economic prosperity as the East Asian tigers.

Embedded within this train of thought is the argument that the apparel industry has a very limited capacity for growth (Lau and Chan, 1994). Many scholars argue that not only is it unlikely that the apparel industry in the Central America develops beyond the labor-intensive, low-wage industry that it is at present, but also that this is the type of industry which the region needs. Given that apparel manufacturing is highly labor-intensive, it is extremely beneficial for these countries which, although they have small populations, also have high rates of unemployment and unskilled labor. They also highlight that apparel manufacturing utilizes low-level technology. Central American countries do not have sufficient resources to invest in technology and capital and the labor force is not educated enough to drive technological growth.

⁷ This book was written in 1994, when what we currently call a “developing country” was referred to as a “less-developed country.” Whereas what is currently called a “newly industrialized country” was considered to be a “developing country.”

Their lack of access to technology makes it unlikely that they produce and market innovative products that will be competitive in the world market (Lau and Chan, 1994).⁸

Furthermore, Central American countries are small states in the global economy, which limits their capacity for growth. Particularly in the case of the apparel industry, these countries which boast a vibrant apparel manufacturing sector are at the mercy of the United States' trading policies and the operations of multinational apparel retailers.⁹ Michael Porter states that these apparel firms are easily replaceable because they offer low-cost, unskilled labor which can be supplied by many developing countries in the world, and also by China which offers the lowest costs for apparel manufacturing (Porter, 1990). The countries in Central America also benefit from the Caribbean Basin Trade Partnership Act which gives preferential treatment and duty-free access to the US market. They achieved an illusory sense of competitiveness since they had access to guaranteed foreign markets and they did not have to compete with countries with lower-cost labor such as China (Mortimore, 1999). This limits the ability of these countries to decide the direction of the industry. All of these factors contribute to the argument that the structure of the apparel industry in Central America and the external factors surrounding its operations present limited capacity for growth and give rise to further doubts on the likelihood of Central American countries patterning their industrialization process after that of East Asian countries.

On the contrary, the second major school of thought looks to the process of industrialization in East Asia to provide a hint on how the small states in Central America should pursue industrialization. Scholars who support this school argue that countries in the Caribbean

⁸ Exports generated from the sector also serve as an important source of foreign exchange and also gives these countries both a larger market and a point of entry into the international economy (Safa, 1994; Mortimore, 1999). Thus it is an important component of their economies

⁹ One example is that under the Caribbean Basin Trade Partnership Act Caribbean Basin countries must source fabric from the US, in order to benefit from quotas and duty-free access.

Basin should upgrade their industrial operations by undertaking full-package production instead of simply doing assembly operations. Many scholars recognize the problem of the apparel industry in this region as one of lack of product differentiation and the simplicity of the operations performed. It is agreed that the local apparel manufacturing firms which exist in these countries, need to pursue full-package production opportunities which would enable them to both expand their manufacturing production and also produce higher value-added goods (Blair, 2000). Seeking out full-package opportunities would also allow local firms to form linkages with domestic textile and accessory firms. This type of backward linkage is presently lacking in the Caribbean Basin and because of this the growth of the apparel industry has not had significant impacts on the domestic economy. Full-package production also allows firms to gain more autonomy in decision making and to learn the different stages of the production process from the supplier. Thus by gaining knowledge of various aspects of production, local employees in US firms would be able to branch out and manage their own apparel firms.

The scholars who argue in favor of full-package production stress that the proximity of the Caribbean Basin to the US plays a key role in making full-package production feasible and profitable. They point out that, in the modern day apparel industry, as fashion trends change quickly, fast turnaround times and quick delivery are increasingly important to ensure competitiveness in the global economy. The Central American countries will therefore be able to compete with China and other East Asian countries, based on this advantage (Rees and Hathcote, 2004).

I challenge these two schools of thought because as mentioned above, innovation is the key to a vibrant apparel industry. It has been extremely difficult for firms engaged in full-package production to move on to the manufacture of their own brands. Presently, the industry in El Salvador lacks innovation and therefore, although it has been bringing in foreign exchange

through exports, it still lags behind Hong Kong in competitiveness. Increased investment in soft technologies has the potential to enhance innovation, which will facilitate upgrading.

Methodology

I start by tracing the apparel industry in both countries from the early stages up to the level of industrial upgrading it currently has, as measured by the existence of full-package production, higher value-added activities and own brand manufacturing. I then examine the government policies which were implemented to support the industry in terms of both developing hard and soft technologies and how these technologies promoted industrial upgrading. Following this, I analyze how multinational apparel firms within the countries contributed to investments in hard and soft technologies. The contribution of MNCs is only secondary to that of the government and in fact reinforces the positive role played by the government. Data is sourced from a wide variety of material: official government reports, industry reports, official trade and industry statistics from the World Trade Organization, the World Bank and the International Monetary Fund, annual reports and 10K reports of clothing firms and news reports.

Empirical Evidence

Difference in Industrial Upgrading in Both Countries

In comparing the early stages of the apparel industry in El Salvador and Hong Kong, I found that although the industries initially developed in similar ways, government policy towards promoting industrial upgrading was very different in both regions which led to different outcomes. In both regions the industry started when small domestic apparel firms began producing for the domestic market. As labor costs increased in industrialized countries such as Japan and United States, apparel firms in those countries began to outsource their production to cheaper areas such as Central America and East Asia and local firms in these countries became “overseas contractors” for foreign firms. Currently, the apparel industry in El Salvador is at this

stage. In Hong Kong, the rise of labor costs has forced apparel firms to outsource their production to cheaper areas such as China, Malaysia and, ironically, Central America. As stated earlier, industrial upgrading manifests itself in 3 ways: higher value-added services, own-brand manufacturing and full-package production. Hong Kong was able to engage in all three.

Proof of Industrial Upgrading in Hong Kong

Full Package

In Hong Kong in 2000, the apparel industry had the 3rd highest gross output and the fourth highest value added of all manufacturing industries, whereas the textile industry had the 4th highest and 3rd highest respectively. The printing and publishing and electronics industries were the only two industries with higher gross output and value added (Hong Kong Census and Statistics Department, 2006). The combined gross output of the textile and apparel industries was \$54,583 million Hong Kong dollars (2000), whereas the electronics industry had a gross output of \$32,138 million Hong Kong dollars. It is evident that the apparel industry plays a crucial role in the manufacturing economy of Hong Kong. Hong Kong not only produces apparel but also textiles. Important backward linkages exist between both industries. By providing its own source of raw material and training designers and managers, Hong Kong has been able to engage in every step of the production process from buying its own material to distributing the final product to the retailers (full-package production).

Higher Value-Added Activities

By doing this, they are able to perform higher-value added activities. Traditionally, they were responsible solely for manufacturing of clothing items and US companies took charge of design, quality control, distribution and shipping (Sally, 1993). Currently, Hong Kong engages in all of these activities. The number of workers involved in the import/export trade has continued to increase over the years, such that it now surpasses the number of people involved in

manufacturing. In 2004, the import/export trade in the apparel sector employed 95,889 employees from 15,190 establishments whereas actual apparel manufacturing employed 28,752 employees out of 1673 establishments (Hong Kong Trade Development Council, Industry Statistics 2005). The value added per worker increased by more than 50 percent between 1984 and 1994. As table 1 shows, in 1984, the value added per worker was \$47,000 (Hong Kong dollars) and it increased to \$134,000 in 1994. This demonstrates that workers in the garment sector now engage in higher-value added activities than they did before. By looking at table 2, one can see that between 1990 and 1998 the value of engaging in apparel decreased. The real earnings index, which bases earnings on the consumer price index shows that earning in apparel manufacturing has actually been decreasing, even though nominal earnings has been increasing. This signifies that it has become less profitable for Hong Kong to engage in low-value added apparel manufacturing.

Furthermore, the vast increase in re-exports also illustrates the extent to which the industry in Hong Kong upgraded. More than half of clothing exports now include re-exports which means that Hong Kong domestically produces less than half of its total exports; this has allowed them to move on to higher value-added activities such as providing import/export trade services. As shown in table 3, between 1995 and 2003 the value of re-exports increased by 21 percent from \$11,757 to \$14,952 million US dollars. Re-exporting can only be lucrative if Hong Kong offers a service which is unavailable in the manufacturing countries. Hong Kong import/export traders are able to coordinate the logistics for US firms. This service requires soft technology and not necessarily hard technology, although basic infrastructure is evidently needed.

Table 4 demonstrates the increase in value-added activities in Hong Kong from 1971 to 1996. Between these years, manufacturing, as a percentage of total employment, has decreased

from 41.2 to 19.0 percent and higher value-added activities such as traded services have increased from 31.8 percent to 49.0 percent.

Own Brand Manufacturing

Hong Kong garment firms have also been able to produce and market their own brands. Hong Kong-owned firms such as Bossini, U2, Giordano and G2000 have gained an international reputation. They were only able to get to this position because of the presence of qualified personnel within the firm who could keep producing innovative designs and who could market the brand on a global scale. Most Central American apparel firms have no experience in design or marketing, which, as mentioned earlier, are two of the most valuable assets to a company. In Bossini, many of the employees in top management positions in fact received their tertiary level education from Universities established by the government of Hong Kong. Pansy Chau Wai Man, Director of Buying and Design received her diploma from Hong Kong Polytechnic and the Director of Production graduated from the Hong Kong University of Science and Technology and University of Toronto (*Bossini Annual Report 2005*). Many however received their degrees from universities in the United Kingdom, Australia and the United States. One such example is the Director of Global Business Development, who received his MA from the University of Hull in the United Kingdom. It is worth mentioning here, that one government policy designed to improve human resources was the use of incentives to lure highly-skilled migrants back to Hong Kong. In terms of the international students who pursue tertiary level education in OECD states, 10 percent of these students are from Hong Kong.¹⁰ Many of the people in the upper management of Hong Kong-owned brand names got experience by working in top US apparel firms. The founder of G2000 Group,¹¹ Michael Tien, spent 5 years working for Macy's before he

¹⁰ Wyckoff, Andrew and Martin Schaaper.

¹¹ One of the most internationally recognized Hong Kong clothing companies.

returned to Hong Kong. Much of the Central American skilled labor force also migrates abroad, mainly to the US. However, there has been no government policy aimed at luring them to go back.

The existence of own brand manufacturing, full-package production and higher-value added activities have all contributed to industrial upgrading in Hong Kong.

Proof of Industrial Upgrading in El Salvador

Full-package Production

In contrast to Hong Kong, industrial upgrading in El Salvador has only taken the form of increased full-package production. Taiwanese firms have played a key role in making this possible. One of the recent trends in the garment industry in El Salvador has been the rapid inflow of investments from East Asia. In 2005, 62 percent of manufacturing exports came from apparel. Of this, 49 percent was capital investment. Twenty-five per cent of this capital investment came from Asia and within Asia, Taiwan, South Korea and Hong Kong had the largest investments in El Salvador. This represents the *triangle trade* which is beginning to define the trading relationship between Central America and East Asia (Gatchell, 2000). In 2000, Taiwan invested US \$27 million in El Salvador and in 2001, it increased its investment drastically to US\$40 million (as shown in table 5), which represents the most drastic increase of all the investing countries.

Given that China joined the World Trade Organization in 2001 and the Multifiber Arrangement¹² was discarded which got rid of quotas on apparel products in developing countries, East Asian countries have been facing intense competition from China. As a result,

¹² Multifiber Arrangement was created to limit the quantity of apparel products that could be exported from one country to another. It was enacted in 1974; it allowed 44 member countries to enjoy quotas on the export of apparel and textile products. It was gradually phased out over a period of 10 years. The first stage of phase out removed 16 percent of the quotas on 256 product categories (1995). Second phase of the process eliminated 17 percent of the quotas on 503 product categories (1998). The third stage eliminated an additional 18 percent of 459 product categories (2002). In 2005, all quotas were removed.

they have been seeking to boost their apparel industry by taking advantage of manufacturing contractors in Central America not only because of their proximity to the US but also because exports of most apparel products are allowed to enter the US duty-free under the Caribbean Basin Trade Partnership Act (an expansion of the Caribbean Basin Initiative which will be discussed later). Taiwanese firms evaluate their advantage of locating in the Caribbean Basin in different ways. Although under the Caribbean Basin Trade Partnership Act, fabrics used in production in Central America and the Caribbean must be imported from the US, some Taiwanese firms have calculated that in terms of total cost it is not economically advantageous to import more expensive low-end fabric (such as cotton) from the US while enjoying duty-free exports. They have found that it is more profitable to simply source cheaper fabric from El Salvador itself which saves on both transportation and higher raw material costs.

Table 6 outlines the time differential in sourcing apparel from China compared to other countries in Central and North America. Although the US has the shortest lead time, it also has the highest manufacturing costs. The lead time in China (10 weeks) is more than twice as long as in El Salvador (4 weeks). Since fashion trends change quickly, quick turnaround times are extremely important if a firm is to remain competitive. Based on the evidence provided in table 7, it is clear that manufacturing costs are markedly cheaper in China. However, apparel firms report that although transport costs may seem substantially smaller than manufacturing, costs quickly add up in response to changing demands. Furthermore, duty and quota charges represent 46 percent of total costs of a pair of jeans from China; thus duty-free exports make El Salvador a more economically favorable option.

Taiwanese firms have built textile mills, laundry facilities and apparel manufacturing facilities in the country and are prepared to establish Salvadoran firms as full-package producers. As of August 2006, a new industrial park, *El Parque Taiwan de El Salvador*, wholly financed by

Taiwanese capital was under construction (*Central America* 2005). Many locally owned clothing companies lack the capital to be able to enter into full-package production and so investment from Taiwan is very helpful to Salvadoran firms (Stanmore, 2000).

However, foreign investors' choice to invest in El Salvador is based on more than the actual cost of transactions. They also based their decision on political and macroeconomic stability; the dollarization of the economy in 2001 has played an important role in making foreign investors choose El Salvador over other Central American countries. For US firms, it greatly eases financial transactions.

Mark Moon, general manager of Central American Cutting Center S.A. de C.V. stated that he chose to invest in El Salvador because of its stable economic atmosphere, supportive government, education levels and the dollarization of the economy (*Textile World*, November 2002).¹³ Foreign companies agree that El Salvador is now one of the best places to invest in Central America because of the ease of establishing a business, improved infrastructure, good work ethic of Salvadorans and the dollarization of the economy which eases financial reporting. President and CEO of Land's End, Dodgeville, Wisconsin, David Dyer was quoted in *Textile World* as saying, "We came...we saw..and we were very impressed. We found a very favorable business environment, good infrastructure, high-quality factories and most important, wonderful people" (*Textile World*, November 2002). Over the past few years, El Salvador has gained a great reputation for having a favorable investment climate.

How did the government of Hong Kong and the government of El Salvador influence the current state of industrial upgrading in their respective countries? I will now outline the

¹³ In 2001 El Salvadoran economy was dollarized. By 2002, 60 percent of the notes used were dollars. This increased stability, reduced inflation and reduced interest rates.

government policies which promoted industrial upgrading through investment in hard and/or soft technologies.

Hong Kong: Government Policy towards Industrial Upgrading in the Apparel Industry

In Hong Kong, the garment industry was built by industrialists who emigrated from mainland China in the late 1940's. In 1960, the government developed the Federation of Hong Kong Industries to promote manufacturing industries by developing the physical capacity of apparel firms. The Hong Kong Productivity Council was established in 1967, which provided training and advice to industries on various methods of industrial upgrading. The government hoped to increase productivity by encouraging innovation and the development of new technologies through this Council. By 1975, there were 8047 garment firms accounting for 25.9 percent of manufacturing firms. One of the most important agencies developed by the government designed to specifically upgrade the apparel industry was the Clothing Industry Training Authority (which was set up in 1975). This government agency was responsible for providing training in both technical and non-technical aspects of production, carrying out research and development and making recommendations to firms in the industry. Additionally, there were also collaborations between the Clothing Industry Training Authority and local clothing firms to offer specialized training programs that targeted the specific needs of that firm.

A Vocational Training Council was set up in 1982 as a training program that would allow people to undertake jobs in clothing, textiles, electronics, construction, design and printing. The Vocational Training Council ran a Management Development Centre that helped employees in these sectors develop skills in marketing, personnel and human resource management and technology management. It is important to note that government investment in the apparel industry started off with commitment to building physical capital by setting up a solid base of apparel production firms. This was followed 7 years later with strong investment in human

resources. The Department of Industry was also established in 1982 and one year later, this industry carried out studies on the capacity for technological and economic development of the clothing sector. During this same year, the Department developed a Computer-Aided Design (CAD) Centre at Hong Kong Polytechnic University which was expanded in 1987 to a Computer-Aided Design/Computer-Aided Manufacturing (CAM) Research and Education Centre offering not only training but also providing resources for R&D. CAD and CAM technology made it possible to speed up the production process by being able to quickly alter designs on the computer screen (CAD); these designs were then feed directly to the computer-controlled manufacturing system (CAM). Through these systems, designs are electronically sent to the manufacturer with the manufacturing directions specified for each product or variation of each product. Fabric could automatically be printed, dyes automatically weighed and colors quickly matched based on the design specifications sent.

The efforts of the government not only developed the physical capacity of clothing production firms, but it also trained people in the necessary skills to both work as manual laborers and to work as managers of clothing companies and coordinators of the supply chain. Undoubtedly, without these human resources it would be extremely difficult, if not impossible for a firm to market its own brand or engage in the production of higher value-added goods. The government built 7 universities. In a survey on the state of human resources in Hong Kong (between 1991 and 2001), researchers found that in 1991, 19.2 percent of the Hong Kong's population over 15 years old had tertiary level education or experience as managers/professionals; in 1996 this number grew to 23.8 percent and by 2001, it grew to 25 percent . In 1991, 4 percent of the population over 15 years old received tertiary level education in the field of "textile, design and other industrial technology." This represented 198,000 people. By 1996, although the percentage of people receiving tertiary education in textile, design and industrial technology

decreased (3.6 percent), the actual number of people increased to 276,000. In 2001, only 1.4 percent of people pursuing tertiary level education did so in textile; while 28.7 percent of them received their education in business and commercial studies. The skilled labor force in Hong Kong continues to grow which positively contributes to its innovation-led growth because of both the technical skills of its workers who will be able to invent new products and processes and also because of their business skills.

While the government of Hong Kong put emphasis on increasing labor productivity and at the same time improving manufacturing processes and the quality of products (hard technologies), the government of El Salvador focused solely on increasing the output of the apparel industry.

El Salvador: Government Policy towards the Apparel Industry

Apparel industries in El Salvador started off as cottage industries and it was not until the early 1990's that apparel became a key manufacturing export. In the 1950's and 1960's the Central American countries formed the Central American Common Market, through which they hoped to develop their manufacturing industries. During this period, the cement and transportation equipment industries grew. The apparel industry was largely non-existent during this time. The 1970's and 1980's represented a time of political and economic instability which caused many foreign investors to flee El Salvador.¹⁴ In 1974, the government passed an Export Promotion Law, under the advice of the US government, which provided tax holidays and unrestricted repatriation of profits for foreign firms. In 1984, the US government launched the Caribbean Basin Initiative which was a form of aid with political motives to support the installation of a democratic government in El Salvador. In 1986, a Special Access Program for

¹⁴ El Salvador's civil war lasted 12 years from 1980 to 1992. The *Football War* in 1969 with Honduras lasted 5 days but it caused the Central American Common Market to be suspended and there was continuing political instability throughout the 1970's.

Textiles was created as part of this Initiative and this program provided Guaranteed Access Levels to the US market for Salvadoran apparel manufacturing firms. Two important stipulations however was that fabric had to be wholly sourced from and cut in the US and the garments had to be wholly assembled in Caribbean Basin countries. Given that the civil war was still happening during this time, only in the early 1990's when the war ended, was the apparel industry able to benefit from this Initiative. Foreign clothing investors took advantage of this opportunity to manufacture in Central American countries using lower-cost labor and import the products duty-free into the US.

The Salvadoran government recognized this as an important opportunity to rebuild its war torn economy and so in the early 1990's one of the major government policies designed to promote investment in the *maquiladora* (garment manufacturing) sector was free trade zones, referred to as *Zonas Francas*. These zones allow firms that export the majority of their products to enjoy local and national tax exemptions and duty-free machinery imports. In 1991, the first private free zone was opened.¹⁵ In an effort to encourage foreign investment, the government enacted the Free Trade Zones Law in 1998 which exempted foreign firms from taxes. Foreign firms were not required to pay duties on imports of raw materials and machinery used for exports, they were exempted from tax on fuels and lubricants which were used in production for export and also from income and municipal taxes on company assets and property (*Political Risk Services 2005*). The number of *Zonas Francas* has been increasing every year. Between 2000 and 2002, the number of zones doubled from 8 to 16 (USITC, 2005). Presently, more than 90 percent of free zone businesses are engaged in clothing assembly and the majority of the companies which operate there are foreign-owned. *Zonas Francas* therefore represent one of the

¹⁵ The first free trade zone was built in 1974 but this was entirely government-run; private firms were not allowed to enjoy the benefits of these zones (*Textile World*, 2002). This law was changed in 1986 to allow private firms to enter the zones.

most significant government initiatives designed to promote the economic viability of the apparel industry.

Government policies which were designed to increase output in the apparel sector were geared towards attracting foreign investors who would establish their firms in El Salvador. An Investment Law was established in 1999 which asserted that foreign and domestic investors would receive equal treatment and which made it easier for foreign firms to set up businesses (*Political Risk Services, 2005*). For example, foreign investors are now able to obtain capital under the same conditions as local businesses. Out of this Law came the National Investment Office which made it possible for foreign businesses to clear legal requirements in a minimum of 7 days, whereas in the past it used to take up to 400 days. As table 8 shows, out of the 3 Central American countries with the highest apparel exports, El Salvador ranked the highest in the ease of doing business and it has improved significantly between 2005 and 2006 in the ease of starting a business. Government policy has been effective in making it easy for foreign investors to set up their operations. An Export Electronic System was also established which made it possible to issue export permits within 45 minutes. One interesting point to note is that there is no requirement for the transfer of technology. This evidently limits the potential for technological advancement.

Unlike Hong Kong, investment in education and training programs was not a priority for the government of El Salvador. In speaking about the limitations of El Salvador's apparel industry, it is commonly stated that the industry lacks qualified management personnel (Gatchell, 2000). The percentage of the economically active population with tertiary level education has been increasing, but at the same time, the out-migration of skilled labor has also been increasing. In 1991, 68.7 percent of the economically active population had little or no schooling (between 0-6 yrs of schooling), but by 1997, this number fell to 59.8 percent (*Investment Climate Survey*

2005). Between these same years, the share of the economically active population with 13 or more years of education increased from 6.9 to 9.8 per cent between these years (IMF Report 1998). However, the government has questioned the quality of higher education in the country. This spawned the enactment of the Higher Education Law in 1995 which stipulated various criteria that higher education institutions had to ascribe to. As a result of this law, 13 universities were closed between 1995 and 1999 because of substandard quality. Currently, there is only 1 public university, *University of El Salvador*. The damage done to this university during the civil war degraded its organizational and academic standards. As of 2000, El Salvador had 1 public university and 27 private universities which all sprung up during and after the civil war and do not maintain the quality which the government would like them to attain. Under the Higher Education law, all full-time faculty are supposed to carry out research, but between 1999 and 2000 there were only on average 3.5 research projects per university, which is very much below what it should be based on the law (Elias and Egginton 2003).

Furthermore, as can be seen in table 9, out of the total immigrants who work in the US, 2.42 percent are professionals and technicians. Although this seems like a small figure and it is lower than both Mexico and Dominican Republic, this represents 6,678 people, which is a large number of people given that there is already a lack of qualified professionals. Table 10 illustrates the huge impact of remittance flows on the domestic economy. In 2000, remittances represented 13.2 percent of the gross domestic product. While Hong Kong was able to lure back some of its qualified personnel, the economic impact of Salvadoran immigrants presents a great challenge for El Salvador's government to do the same.

In terms of research and development, in 1998, the government of El Salvador was spending 0.08 percent of its GDP on R&D (*Investment Climate Survey* 2005). This R&D focused on developing the electronics and auto parts industry, and the apparel industry remained largely

ignored as an industry in need of R&D. This mentality also prevails among apparel firms. In a survey done of manufacturing firms in El Salvador, 56 percent reported providing training for employees, most of which were exporting firms. Apparel producers were however, not a part of these exporters. They rarely offered training.

As stated earlier, soft technology is a very important component of the apparel industry. Without qualified management personnel, coordination of different stages of the production process becomes extremely difficult. The government has not entered into any agreements with US firms which would require that locals occupy a percentage of management positions nor has it collaborated with universities to offer management training programs.

While the governments of both countries have been extremely influential in shaping the outlook of the apparel industry, multinational clothing firms have played a secondary role in industrial upgrading.

Multinational Firms' Investment in Hard Technologies

Multinational firms were particularly significant in setting up garment manufacturing facilities in El Salvador during the early 1990's. However, in terms of technology, they have invested in the same hard technologies in both areas; their priority has been on quality products and efficient manufacturing.¹⁶ Some of the key hard technologies utilized by the leading apparel firms are Quick Response, the Unit Production system and Modular Manufacturing.

Quick response (QR) is one of the most essential innovations in the apparel industry. It is a data-entry computer system which allows retailers and manufacturers to respond quickly to

¹⁶ There has not been a huge investment in looking at ways to improve the mechanization of the sewing and cutting operations, since these are done by human labor. However, minimal investment has been made in adopting technologies which decrease the length of time devoted to manufacturing. Unit Production System (UPS) cuts the length of time it takes to go from one step of production to the other. Items of clothing move automatically from one production stage to another via overhead transporters. Idle time associated with untying of bundles is therefore reduced. Modular Manufacturing is a process which cuts production schedules from monthly to weekly by allowing producers to respond to customers needs faster. It is an electronically controlled system in which small teams (usually 9-10) of people produce an entire garment.

changing needs. In this system, sales are recorded into computer systems using bar codes, and retailers are able to almost immediately judge demand for the product and alter production accordingly. This technology increases product differentiation, diversification and response time. According to the United States Industry and Trade Summary, 40 percent of vendors (in the U.S.) were using point-of-sale inventory in 2003 (USITC, 2003). The level of hypercompetition which exists increases the need for buyers, producers, distributors and retailers to continually be in communication with each other. Quick response does not necessarily speed up the actual manufacturing process but improves the firm's efficiency by allowing it to better respond to customer's needs.¹⁷

Multinational Firms in El Salvador

With the inflow of foreign investors in the early 1990's, many multinational clothing firms built their own manufacturing plants and installed the relevant machinery. They have therefore been responsible for investment in hard technologies in El Salvador. Mark Moon, General Manager of Central American Cutting Center in El Salvador, stated that he uses Electronic Data Interchange (EDI) with fabric suppliers which allows information to flow freely between suppliers, producers and customers so that they are each able to track products or developments along the production line. Liz Claiborne and Levi Strauss also utilize the same technologies in El Salvador.

Multinational firms in Hong Kong

US apparel firms contributed to industrial upgrading by offering unique opportunities for

¹⁷ Example of technology used by leading apparel firm: Liz Claiborne Inc., uses TradeBeam's Import Management Solution, a web-based software that allows it to manage logistical details. Claiborne is now able to monitor shipments, delivery, arrivals through this system.¹⁷ It reduces the work for the US based administrative employees who formerly had to manually enter data that was faxed by suppliers or sent by trucks. Claiborne also has a register-linked system, *Customer Relationship Management* which registers point-of-sale data. Furthermore, they are able to match invoices and receipts with orders through *Oracle Retail Price Optimization* software. This makes accounting easier (Power, 2006)

Hong Kong workers to be involved in non-production aspects of the industry. They allowed local firms to take part in design, marketing and sales of the brand (Luk, 1997). This is a fairly new phenomenon. Product design has always been the most valuable asset held by these US firms and thus previously, they themselves completed all non-manufacturing steps in the process. In 2004, Levi Strauss entered a licensing agreement with Hong Kong-owned apparel firm, Li and Fung Limited, one of Hong Kong's leading garment firms, which allowed the firm to design, manufacture and market men's knits, wovens and t-shirts for Levi's Red Tab, SilverTab and Premium labels (Levi Strauss Company Profile 2005).¹⁸

Hong Kong-owned multinational clothing firms are also beginning to play an important role in upgrading the apparel industry by investing in both physical and human capital. On September 15 2006, Li and Fung Limited signed a collaboration agreement with the School of Professional Education and Executive Development of the Hong Kong Polytechnic University to offer its employees training in merchandising. This 20-month program includes courses in material sourcing, sample submission, shipping, trading, vendor coordination and product development.

It is evident from the examples above, that the clothing industry does not require high-end sophisticated technology. Most of the processes that improve efficiency are computer-based systems which improve communication and coordination among the various agents in the supply chain. Although these technologies are used in Central America, unless a concerted effort is made to transfer the know-how of operating the technology, it will not be beneficial in helping them to upgrade their industry. The important aspect of these technologies is being able to interpret the information and adapt production accordingly. Being able to respond to demand

¹⁸ In 2004, Li and Fung ranked 1st in the category "Best Managed Company" according to *Asia's Best Companies 2004*.¹⁸ In 2004, it ranked 1st in "Best Corporate Governance" and in the same year it also ranked 1st in "Best Investor Relations."

increases a firm's competitiveness. However, Central American firms are not getting experience in doing this. They solely supply what the US and Taiwanese firms demand.

Conclusion

Hong Kong and El Salvador have had different levels of success in upgrading their apparel industries. Hong Kong's industrial upgrading includes full-package production, own brand manufacturing and higher value-added activities; whereas El Salvador's only includes very limited full-package production. Hong Kong's success in moving on to the production of higher value-added goods and in performing more steps in the production process including marketing and design was facilitated by government investment in both hard and soft technology. On the other hand, although apparel exports have been steadily increasing in El Salvador, the industry still remains highly dependent on foreign investment. While ordinarily this may not be a problem, as the industry becomes hypercompetitive, El Salvador becomes more vulnerable; they must be able to offer more than manufacturing facilities. The Salvadoran government has largely been committed to boosting the apparel industry by attracting foreign investors, however, no policies were put in place to build the productivity of the industry itself. The government has put several measures in place to build managerial skills in its population but this remains largely isolated from the apparel industry. The extent to which entry into full-package production has been a source of improvement in human capital resources in El Salvador by building an effective management base, remains questionable. In order to upgrade the apparel industry, the government needs to be dedicated to investing in soft technologies which would allow them to be engaged in more steps in the production process.

The trends in the apparel industry show that multinational firms are looking to diversify their supplier base and looking to pass on some of the pre- and post-production responsibility to the suppliers. El Salvador's proximity to the US offers a great opportunity for foreign investors.

In order for El Salvador garment manufacturers to take advantage of this opportunity they need to show capacity in logistics management, marketing, sales and design. By investing in soft technology primarily through training and R&D, El Salvador will be able to take advantage of these opportunities.

One of the limitations of this study was the difficulty in being able to trace the policies of firms and take note of their policies designed to increase innovation within the industry. Many firms consider this information to be a key asset and therefore it is unavailable to the public. In fact, it was only in 2005 that Levi Strauss finally released the names of its foreign contractors. Previously, they thought that this information should be kept private so that their competitors would not have access to their “technologies”. However, an examination of government policies proved useful in identifying the causes of success in industrial upgrading.

BIBLIOGRAPHY

Anderson, Kym. 1992. "The Changing Role of Fibres, Textiles and Clothing as Economies Grow." In *New Silk Roads: East Asia and World Textile Markets*, ed. Kym Anderson. Cambridge: Cambridge University Press.

Beine, Michel, Frédéric Docqueir and Hillel Rapoport. 2006. "Measuring International Skilled Migration: New Estimates Controlling for Age of Entry." World Bank Research Report July 2006.

Blair, Jennifer and Gary Gereffi. 2003. "Upgrading, Uneven Development, and Jobs in the North American Apparel Industry." *Global Networks* 3:2: 143-169.

Bobb, Kamau I. 2005. "The Duality of Innovation: Liberation and Economic Competitiveness." Ph.D dissertation, Georgia Institute of Technology.

Bolisani, Ettore and Enrico Scarso. 1996. "International Manufacturing Strategies: Experiences from the Clothing Industry." *International Journal of Operations and Production Management*, 16 (11):71-84.

Bonachich, Edna and David Waller. 1994. "Mapping a Global Industry: Apparel Production in the Pacific Rim Triangle." In *Global Production: the Apparel Industry in the Pacific Rim*, eds. Bonachich, Edna, Lucie Cheng, Norma Cinchilla, Nora Hamilton and Paul Ong. Philadelphia: Temple University Press.

_____. 1994. "The Role of U.S. Apparel Manufacturers in the Globalization of the Industry in the Pacific Rim." In *Global Production: the Apparel Industry in the Pacific Rim*, eds. Bonachich, Edna, Lucie Cheng, Norma Cinchilla, Nora Hamilton and Paul Ong. Philadelphia: Temple University Press.

Carney, Michael. 2000. "East Asian Financial Systems and the Transition from Investment-Driven to Innovation-Driven Economic Development." *International Journal of Innovation Management* 4 (3): 253-276.

Chazen, JA. 1996. "Notes from the Apparel Industry: Two Decades at Liz Claiborne." *Columbia Journal of World Business*. Vol 31.

Cheng, Lucie and Gary Gereffi. 1994. "U.S. Retailers and Asian Garment Production." In *Global Production: the Apparel Industry in the Pacific Rim*, eds. Bonachich, Edna, Lucie Cheng, Norma Cinchilla, Nora Hamilton and Paul Ong. Philadelphia: Temple University Press.

Cinchilla, Norma and Nora Hamilton. 1994. "The Garment Industry and Economic Restructuring in Mexico and Central America." In *Global Production: the Apparel Industry in the Pacific Rim*, eds. Bonachich, Edna, Lucie Cheng, Norma Cinchilla, Nora Hamilton and Paul Ong. Philadelphia: Temple University Press.

Chiu, Stephen and David Levin. 1995. "The World Economy, State, and Sectors in Industrial Change: Labor Relations in Hong Kong's Textile and Garment-Making Industries." In *Industrialization and Labor Relations: Contemporary Research in Seven Countries*, eds. Stephen Frenkel and Jeffrey Harrod. New York: ILR Press.

Clark, Evan. 2005. "Guatemala Sees Future in CAFTA." *Women's Wear Daily* 189:54

Comisión Económica para America Latina. 1999. "Centroamerica: Evolucion Economica durante 1999 (evaluación preliminary)," LC/MEX/L.422, 22 de febrero de 1999, Mexico City, Cuadro 10.

"Country Profile: El Salvador Means Business." *Textile World*. November 2002. 52-53

Datamonitor. July 2005. *Liz Claiborne, Inc: Company Profile*. Retrieved 10/10/2006

Datamonitor. July 2005. *Tommy Hilfiger Corporation: Company Profile*. Retrieved 10/10/2006

Datamonitor. October 2005. *VF Corporation: Company Profile*. Retrieved 10/10/2006

Dehoff, Kevin and David Neely. 2004. "Raising Your Return on Innovation Investment." *The Innovator's Prescription* 35: 38-49.

Dennard, Jennifer. June 2005. "Avery Dennison Opens El Salvador Facility." *Textile World* Page 47.

Dyker, David. 1997. "Learning the Game: Technological Factors of Economic Transformation." *Europe-Asia Studies* 49 (3).

S. Estrin, S. Todd and K. Hughes. 1996 b. *Guardian Industries Limited Case Study*, CIS-Middle Europe Centre, London Business School, Discussion Paper Series, No. 29.

Felker, Greg. 2003. "Southeast Asian Industrialisation and the Changing Global Production System." *Third World Quarterly* 24 (2): 255-282.

Feillou, Anna. 2000. "Centro de Colaboraciones Solidarias: Maquilas y Desarrollo Socioeconomico en Centroamerica." *El Sol de Texas* 34 (3075): 2-3.

Gatchell, Charles. 2000. "Virtual Vertical Clusters Government Arrangement to Increase Full-package by Prearranging Firms into a Full-package Supply Chain." *Organisation for Economic Cooperation and Development Report*.

_____, Paavo Monkkonen, Joseph Perman and Jeremy Rempel. Forthcoming. 2005. "Apparel Manufacturing in El Salvador: A Post-quota Strategy for Competitiveness." University of California, Los Angeles, Master of Public Policy Degree Program, Applied Policy Project.

Gereffi, Gary. 1999. "International Trade and Industrial Upgrading in the Apparel Commodity Chain." *Journal of International Economics* 48:37-70

_____. 1994. "The Organization of Buyer-Driven Global Commodity Chains: How U.S. Retailers Shape Overseas Production Networks." In *Commodity Chains and Global Capitalism*, eds Gereffi, Gary and Miguel Korzeniewicz. London: Greenwood Publishing Group, Inc.

Green, Cecilia. 1998. "The Asian Connection: The U.S.-Caribbean Apparel Circuit and a New Model of Industrial Relations." *Latin American Research Review* 33 (3): 7-47.

Griffin, Gerald. 1985. "Responsible Corporate Performance: The Quest at Levi Strauss." Ph.D. dissertation, Golden Gate University, San Francisco, California.

Grunsven, Leo van and Floor Smakman. 2001. "Competitive Adjustment and Advancement in Global Commodity Chains: Firm Strategies and Trajectories in the East Asian Apparel Industry." *Singapore Journal of Tropical Geography* 22(2):173-188.

Heron, Tony. 2002. "Export Processing Zones and Policy Competition for Foreign Direct Investment: The Offshore Caribbean Development Model." Paper presented for the conference "Towards a New Political Economy of Development: Globalization and Governance," Political Economy Research Centre, University of Sheffield, UK, July 4-6.

Ho, Chi-Kuen. 2005. "The Supply Chain Advantage: Development of a Strategic Business Model for the Hong Kong Clothing Industry." Ph.D. dissertation, The Hong Kong Polytechnic University, Hong Kong.

Hong Kong Trade Development Council. 2006. "Profiles of Hong Kong Major Manufacturing Industries: Clothing." URL:
<http://tpwebapp.tdctrade.com/print/print.asp?url=http://www.tdctrade.com/main/industries/ipclot.htm>

Hsieh, Chang-Tai and Keong Woo. Forthcoming. 2003. "The Impact of Outsourcing to China on Hong Kong's Labor Market." University of California, Berkeley and NBER

Hui, Chi-Leung. 1999. "Towards and Intelligent Apparel Manufacturing System." Ph.D. dissertation, Hong Kong Polytechnic University, Hong Kong.

Hymer, Stephen. 1976. *The International Operations of National Firms: A Study of Direct Foreign Investment*. Cambridge, MA: MIT Press.

Innovation and Technology Commission, Hong Kong. 2006. "Hong Kong R&D Centres." URL:
http://www.innotech.gov.hk/en/inno_forces/research.development.centre.html

Innovation and Technology Commission, Hong Kong. 2006. "Innovation and Technology Fund: Distribution of Approved Projects among Different Industrial Sectors." URL:
<http://www.itf.gov.hk/eng/statistics/StatTable104View.asp?StatTypeId=104&StatId=341&StatCaption=Distribution+of+Approved+Projects+among+Different+Industrial+Sectors>

International Labour Organization, *Yearbook of Labour Statistics, 1998* (Geneva: International Labour Office, 1998), p. 805.

International Monetary Fund. 1998. "El Salvador: Recent Economic Developments." IMF Staff Country Report No. 98/32, Washington DC.

Khan, Haider. 2004. *Interpreting East Asian Growth and Innovation: The Future of Miracles*. New York: Palgrave Macmillan.

Kumar, Krishna and Kee Young Kim. 1984. "The Korean Manufacturing Multinationals." *Journal of International Business Studies* 15 (1): 46-61.

"Lacoste Starts Apparel Production in El Salvador." *Apparel Magazine* 2006. 47: Issue10: June

Lau, Ho-Fuk and Chi-Fai Chan. 1994. "The Development Process of the Hong Kong Garment Industry: A Mature Industry in a Newly Industrialized Economy." In *Global Production: The Apparel Industry in the Pacific Rim*, eds Bonachich, Edna, Lucie Cheng, Norma Cinchilla, Nora Hamilton and Paul Ong. Philadelphia: Temple University Press

Lira, Iván Silva. 2005. "Local Economic Development and Territorial Competitiveness in Latin America." *Cepal Review* 85: 79-85.

Lopez-Carlos, Augusto, Laura Altinger, Jennifer Blanke, Margareta Drzeniek and Irene Mia. 2005. "The Competitiveness Indexes." *The World Economic Forum*.

Lovejoy, Jim February 2004. *Quantifying Speed to Market in this Hemisphere*. TC Corporation, Apparel Sourcing Show Magazine. Retrieved 10/20/2006. URL: http://www.vestex.com.gt/revista/2004/01/P_36.htm

Mortimore, Michael. 1999. "Apparel-based Industrialization in the Caribbean Basin: A Threadbare Garment." *Cepal Review* 67: 119-136.

Ministerio de Economía: Gobierno de El Salvador. June 21, 2006. "Industria Textil y de la Confección se Actualize sobre Requisitos de Origen Establecidos en CAFTA." Retrieved 10/19/2006. URL <http://www.minec.gob.sv/default.asp?id=39andmnu=31#25OCT06>

Panorama Laboral 2005, *América Latina y el Caribe*. Oficina Internacional del Trabajo

Parayil, Govindan and T.T. Sreekumar. 2004. "Industrial Development and the Dynamics of Innovation in Hong Kong." *International Journal Technology Management* 27 (4): 369-392

Paus, Eva. 1996. "Exports and the Consolidation of Peace." In *Economic Policy for Building Peace: The Lessons of El Salvador*, ed. James Boyce. Colorado: Lynne Rienner Publishers Inc.

Political Risk Services. January 2005. *El Salvador Country Conditions: Investment Climate*.

- Political Risk Services. March 2005. *Honduras Country Conditions: Investment Climate*.
- Political Risk Services. October 2005. *Hong Kong: Country Conditions – Investment Climate*.
- Political Risk Services. November 2005. *Taiwan: Country Conditions – Investment Climate*.
- Political Risk Services. December 2005. *South Korea: Country Conditions – Investment Climate*.
- Porter, Michael. 1990. *The Competitive Advantage of Nations*. New York: Free Press.
- Ramos, Carlos. 2001. “Una Lección Sobre Maquila: El Salvador.” *La Opinión, Los Angeles* 75 (227): 9A
- Raynolds, David. 1967. *Rapid Development in Small Economies: The Example of El Salvador*. New York and London: Frederick A. Praeger Publishers.
- Rees, Kathleen and Jan Hathcote. 2004. “The U.S. Textile and Apparel Industry in the Age of Globalization.” *Global Economy Journal* 4:1: 1-22
- Richardson, James. 1996. “Vertical Integration and Rapid Response in Fashion Apparel.” *Organization Science* 7 (4):400-412.
- Rosen, Ellen. 2002. *The Globalization of the U.S. Apparel Industry: Making Sweatshops*. Berkeley: University of California Press
- Safa, Helen. 1994. “Export Manufacturing, State Policy and Women Workers in the Dominican Republic.” In *Global Production: The Apparel Industry in the Pacific Rim*, eds Bonachich, Edna, Lucie Cheng, Norma Cinchilla, Nora Hamilton and Paul Ong. Philadelphia: Temple University Press
- Scheller, Heidi P. 1995. “Dimensions of Flexibility in Apparel Production.” Ph.D. dissertation, Iowa State University, Iowa.
- Schrank, Andrew. 2004. “Ready-to-Wear Development? Foreign Investment, Technology Transfer and Learning by Watching in the Apparel Trade.” *Social Forces* 83 (1): 123-156.
- Segovia, Alexander. 1996. “The War Economy of the 1980s.” In *Economic Policy for Building Peace: The Lessons of El Salvador*, ed. James Boyce. Colorado: Lynne Rienner Publishers Inc.
- Sit, Victor. 1982. “Dynamism in Small Industries: The Case of Hong Kong.” *Asian Survey* 22 (4): 399-409.
- The Hong Kong Research Institute of Textiles and Apparel. 2006. “R&D Focus.” URL: http://www.hkrita.com/rnd_focus.html
- The Library Congress. N.D. “A Country Study: El Salvador.” Retrieved 10/20/2006 from

<http://lcweb2.loc.gov/frd/cs/svtoc.html#sv0004>

Thompson, Edmund. 2003. "Technology Transfer to China by Hong Kong's Cross-Border Garment Firms." *The Developing Economies* XLI: 88-111.

Trade and Industry Department, the Government of Hong Kong Special Administrative Region. 2005. "Hong Kong's Re-Exports in 2005." URL: <http://www.tid.gov.hk/english/aboutus/publications/tradestat/rx05ori.html>

Trade and Industry Department, the Government of Hong Kong Special Administrative Region. 2005. "Hong Kong's Domestic Exports in 2005 by Principal Commodity." URL: <http://www.tid.gov.hk/english/aboutus/publications/tradestat/ex05com.html>

Trade and Industry Department, the Government of Hong Kong Special Administrative Region. 2005. "Industrial Production: Principal Statistics for All Manufacturing Establishments by Major Industry Group." URL: http://www.censtatd.gov.hk/hong_kong_statistics/statistical_tables/index.jsp?charsetID=1&subjectID=4&tableID=100

Tucker, Todd. "Why CAFTA Can't Save Central America from the Textile Quota Expiration." Paper presented for "IRC Americas Program," January 7, 2005.

Tybout, James. 2000. "Manufacturing Firms in Developing Countries: How Well Do They Do, and Why?" *Journal of Economic Literature* 38 (1): 11-44.

Ulett, Lizbeth. 2006. "Tratado con EEUU Atrae US\$517 Millones en Inversiones en El Salvador." *La Nacion: Noticias Financieras*. July 13. Pg 1.

United Nations Development Programme. 2003. "Informe sobre Desarrollo Humano El Salvador 2003: Desafíos y Opciones en Tiempos de Globalización." URL: http://hdr.undp.org/docs/reports/national/ELS_El_Salvador/El_Salvador_2003_sp.pdf

United States International Trade Commission. September 2003. "The Impact of the Caribbean Basin Economic Recovery Act: Sixteenth Report 2001-2002." USITC Publication 3636.

United States International Trade Commission. January 1995. "Industry and Trade Summary: Apparel." Washington DC 20436, Publication 2853.

University Grants Committee, Hong Kong. 2006. "Research Output by Institution and Type." URL: http://www.ugc.edu.hk/eng/doc/ugc/stat/output_type.pdf

Wah, Chu Yin. 1988. "Dependent Industrialization: The Case of the Hong Kong Garment Industry." Ph.D. dissertation, University of Hong Kong, Hong Kong.

Weeks, John. 1985. *The Economies of Central America*. New York: Holmes and Meier Publishers.

Whalley, John. 1992. "The Multi-fibre Arrangement and China's Growth Prospects." In *New Silk Roads: East Asia and World Textile Markets*, ed. Kym Anderson. Cambridge: Cambridge University Press.

Wyckoff, Andrew and Martin Schaaper. 2005. "The Changing Dynamics of the Global Market for the Highly-Skilled." Proceeding from *Organisation for Economic Cooperation and Development, Advancing Knowledge and the Knowledge-Economy Conference* held at the National Academy of Science, Washington, D.C. 10-11 January 2005.

APPENDIX

**Table 1: Increase in Value Added per Person in Hong Kong Garment Sector
(Thousands of Hong Kong dollars)**

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Garment Sector	47	47	54	67	74	84	91	102	122	127	134
All Manufacturing Sectors	55	55	67	80	94	108	121	142	165	181	200

Source: Hong Kong Government, Hong Kong Industry Department (1996).

Table 2: Hong Kong: Average Daily Earnings in All Manufacturing, Apparel, and Footwear

Year	All Manufacturing		Apparel		Footwear		Real Earnings Index (HK\$; 1990=100)		
	(HK\$)	(US\$)	(HK\$)	(US\$)	(HK\$)	(US\$)	Manuf.	Apparel	Footwear
1990	179.5	23.04	171.6	22.03	182.5	23.43	100	100	100
1991	200.7	25.83	188.0	24.19	193.5	24.90	100	98	95
1992	218.6	28.24	201.3	26.01	191.9	24.79	100	96	86
1993	241.7	31.25	212.6	27.48	na	na	102	94	na
1994	266.6	34.50	231.0	29.89	na	na	104	94	na
1995	278.0	35.94	238.5	30.83	na	na	100	89	na
1996	296.9	38.39	247.2	31.96	na	na	100	87	na
1997	322.6	41.67	261.1	33.72	na	na	103	87	na
1998	336.0	43.38	250.5	32.34	na	na	104	81	na

na = not available

Source: ILO, *Yearbook of Labour Statistics, 1998*, p. 903. For 1998, Census and Statistics Department, Hong Kong

**Table 3: Exports of Clothing - Value of exports and re-exports from Hong Kong 1995-2003
(millions of US dollars)**

	Exports	Re-exports
1995	21297	11757
1996	21976	12997
1997	23107	13778
1998	22164	12497
1999	22371	12800
2000	24214	14279
2001	23446	14183
2002	22343	14037
2003	23152	14952

Source: The WorldBank

Table 4: Share of Employment by Sector (percent) in Hong Kong

	1971	1976	1981	1986	1991	1996
Agriculture	3.8	1.7	1.4	1.7	1.0	0.5
Manufacturing	41.2	41.5	39.3	35	29.9	19.0
Traded Services	31.8	32.5	33.2	37.3	39.6	49.0
Non-traded Services	23.2	24.3	26.1	26.0	29.5	31.5

Source: Hsieh and Woo, 2003.

Note: Traded services is defined as wholesale trade, import and export trade, banking, insurance, accounting, legal, and other business services, storage and warehouse services, transportation services, and communication services. Non-traded services are utilities, construction, community and social services, recreational and cultural services, personal and household services, and retail trade.

Table 5: Accumulated Foreign Investment in El Salvador By Country Of Origin (Millions of U.S. Dollars)

Accumulated Foreign Investment by Country Of Origin (Millions of U.S. Dollars)			
	2000	2001	2002
United States	715.8	807.5	849.3
Venezuela	309.5	309.5	309.5
France	212.9	214.7	214.7
Singapore	32.1	32.1	32.1
Taiwan	27.2	40.2	41.6
Korea	14.5	15.0	15.0

* Countries such as Chile, Mexico, Panama, Spain, Bahamas, Germany, Costa Rica, Netherlands, Peru, Nicaragua, Guatemala all invested more than US\$20 million during these three years.

Source: Central Reserve Bank of El Salvador

Table 6: Differences in Response Time

Country of Origin	Lead time (Lapse between submitting purchase order and receiving ordered product)
China	10 weeks
Honduras	4 weeks
Guatemala	4 weeks
El Salvador	4 weeks
Mexico	3 weeks
United States	2 weeks

*Data estimated assuming it takes 20 minutes to cut, assemble and finish a knit shirt destined for the US market.

Source: Jim Lovejoy. *Quantifying Speed to Market in this Hemisphere*. TC Corporation. Apparel Sourcing Show Magazine, data from AAFA Sewn Products Resource Council, May 4, 2001. February 2002. http://www.vestex.com.gt/revista/2004/01/P_36.htm

Table 7: Manufacturing Cost differentials between Central America and China 2004

Countries	Manufacturing Cost US\$ per unit FOB	Differences with China in US\$	Differences for a Minimum 24,000 units in US\$	Differences for a Maximum 37,000 units in US\$	Transport costs for a 40 feet container in US\$
United States	5.00	3.88	93,120	143,560	-
El Salvador	1.85	.73	17,520	27,010	2,100
Guatemala	1.8	0.68	16,320	25,160	1,950
Honduras	1.7	.58	13,920	21,460	1,400
China	1.12	-	-	-	4,300

Based on data from Jim Lovejoy. *Quantifying Speed to Market in this Hemisphere*. TC Corporation, Apparel Sourcing Show Magazine. February 2004. http://www.vestex.com.gt/revista/2004/01/P_36.htm

Table 8: Ease of Doing Business in Selected Central American and East Asian Countries

	Ease of Doing Business		Ease of Starting a Business	
	2005	2006	2005	2006
Guatemala	128	118	133	130
Honduras	107	111	144	138
El Salvador	75	71	143	123
Korea	23	23	105	116
Hong Kong	6	5	5	5

Aggregate ranking on the ease of doing business. The categories which were considered are the ease of: starting a business, dealing with licenses, employing workers, registering property, getting credit, protecting investors, paying taxes, trading across borders, enforcing contracts and closing a business. *Doing Business: Explore Economies*. www.doingbusiness.org

Table 9: Number of Professionals and Technicians from El Salvador, Mexico and Dominica Republic who Immigrated to the United States. 1990.

Country of Origin	Country of Residence	Total number of Immigrants	Total number of immigrants in the workforce	Professionals and technicians	Professionals and technicians for every 1,000 immigrants who work
El Salvador	United States	465,433	276,345	6,678	24.2
Mexico	United States	4,298,014	233,781	60,965	26.1
Dominica Republic	United States	347,858	165,478	8,584	51.9

Source: Barrere, Luchilo y Raffo. Forthcoming. *Highly skilled Labour and International Mobility in South America*. STI, Organisation for Economic Co-operation and Development.

Table 10: Remittances flowing into El Salvador 1989 to 2000

	Millions of US Dollars	Percentage of GDP	Growth Rate in Percent
1989	203.3	4.1	4.8
1990	321.9	6.3	58.6
1991	517.6	8.8	60.8
1992	685.3	10.4	32.4
1993	790.6	11.4	15.4
1994	964.3	11.9	22.0
1995	1061.3	11.2	10.1
1996	1086.6	10.4	2.4
1997	1199.5	10.7	10.4
1998	1338.3	11.3	11.6
1999	1374.0	11.0	2.6
2000	1750.7	13.2	27.4

Source: Roberto Rivera Campos 2000, p. 48; Banco Central de Reserva, Indicadores Económicos Anuales 1993-2000, <http://www.bcr.gob.sv/>