SOURCING FACTOR'S EFFECT ON THE PATTERN OF CHINA'S APPAREL EXPORTS TO THE UNITED STATES

by

QIMIN ZHANG

(Under the direction of Dr. Jan Hathcote)

ABSTRACT

This study examined and compared the significance of several important sourcing factors and how they influenced the trade pattern between the United States and China from 1985 through 2000. Under the context that all apparel quota restrictions against China will be phased-out by 2005, quota effect was specially emphasized by analyzing the relationship among quota limitations, utilization rates, and U.S. import demand. Telephone interviews were also conducted in an effort to get retailers' opinions regarding these sourcing factors based on their sourcing strategy. The research found that most of the examined variables significantly influenced the trade pattern of the selected apparel groups and, that quota removal will boost the U.S. apparel import from China.

INDEX WORDS: Tariffs, Quota, Labor Costs, Freight Costs, Quality, Lead Time, Import Volume, Sourcing

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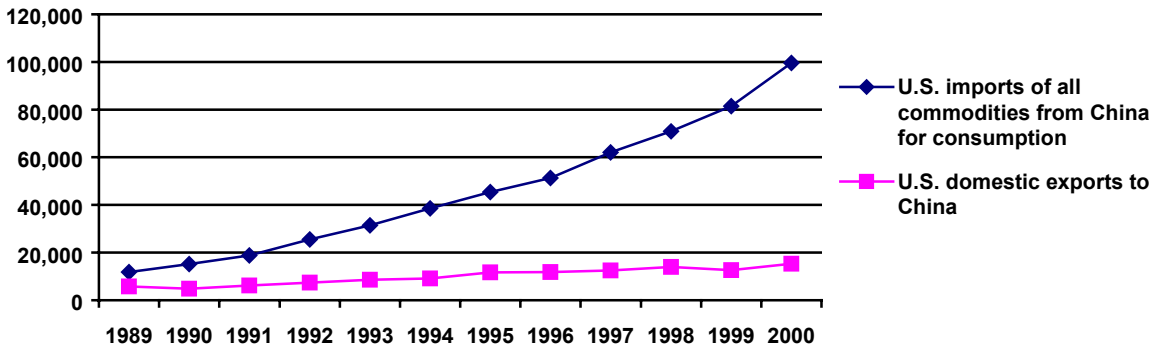
CHAPTER 1

INTRODUCTION

United States- China economic and trade relations have been increasingly important for both countries since the normalization period in the early 1980's. With the development of China's economic reform and easier access to its domestic market, U.S. investment and bilateral trading increased rapidly. U.S. direct investment in China covers a wide range of industries. U.S. companies have entered agreements establishing more than 20,000 equity joint ventures, contractual joint ventures, and wholly foreign-owned enterprises in China. More than 100 U.S.-based multinationals have projects, some with multiple investments (U.S. Department of State, China, July 2001).

Figure 1.1. Trade balance of all commodities betwenn U.S. and China: 1989-2000 (Unit: $ million)



(Source: Dataweb from USITC)

On the other side, as the number four trading partner of the United States. China has been enjoying a trade surplus with U.S., especially in textile and apparel products for many years. The graph above depicts both the trade between the United States and China

of aggregated commodities and the table below gives the comparison of apparel and related goods (SIC 23) between China and United States.

Table 1.1. Trade balance of apparel and related products between U.S. and China: 1996-2000 (Unit: $ million)

Apparel and related goods (SIC code: 23)	1996	1997	1998	1999	2000	Percent Change 1999-2000
U.S. imports from China	6,770	7,964	7,785	8,226	9,564	16.3%
U.S. domestic exports to China	9	10	14	10	11	5.3%

Source: Dataweb from USITC
(Note: The import figures above are by custom value and export figures are by FAS value)

As a major source of U.S. imports of textiles and apparel, China's exports of all apparel and textiles, regardless of fiber types, to U.S. account for 12.5%, 11% and 8.7% in 1988, 1996 and 2000 respectively based on value (Dickerson, 1995 & OTEXA). It is also predicted that the market share of Chinese made apparel and related goods will increase dramatically after China enters into the World Trade Organization (WTO). As a matter of fact, at the WTO Ministers Conference held in Doha on November 11, 2001, China notified the WTO that it has ratified its agreement and will become a full member. This will make China the 143rd country to join the WTO (World Trade Organization 2001).

Tracing back to the trade history, the most significant import restraints imposed by the United States are those on textile and apparel products. As Keesing and Wolf (1980) have argued, these trade restraints are major impediments to the full participation of developing countries in the world trading system, including China. The history of the textile and apparel import restraints of the United States began in 1957 when Japan agreed to a five-year 'voluntary' restraint on their 20 cotton textile articles exports to the United States. In 1961, a US-initiated conference of major textile traders was convened

under the auspices of the General Agreements on Tariffs and Trade (GATT). The outcome of this conference was the Short Term Arrangement Regarding International Trade in Cotton Textiles (STA), which withdrew cotton textile trade from the Most Favored Nation (MFN) system of international trade for a period of one year. Meanwhile, negotiations continued and, in October 1962, the STA was replaced by the Long Term Arrangement Regarding International Trade in Cotton Textiles (LTA). At this time, there was a great deal of political pressure in the U.S. to extend the coverage of the LTA to wool and man-made fibers (Cline, 1990). The result of these developments was the Multi-fiber Arrangement (MFA), which came into being in January of 1974. The MFA was a general, multilateral framework for managing textile and apparel trade for cotton, wool and man-made fibers. The MFA was renewed in 1977 (MFAII), in 1981 (MFAIII) and in 1986 (MFAIV). MFAIV, which covered a period of five years, extended coverage to those made from vegetable fibers and silk blends (Majmudar, 1988).

Although the United States played a leading role in developing a multilateral approach to resolve international trade problems, which led to the formation of the General Agreement on Tariffs and Trade (GATT) in 1947, the special provisions of the MFA were based on the assumption that textile trade was a special case (Dickerson, 1995).

About 120 countries subscribed to GATT, which provided both a forum for discussing trade barriers and trade-related disputes and a code of conduct for its members. The principles of nondiscrimination and transparency were central to the GATT. Nondiscrimination was reflected in the "most-favored-nation" clause, which

specified that a party granting a trade advantage to one country must grant it to all contracting parties (Maggard, 2001).

China was one of the 23 original signatories of the GATT in 1948. After China's revolution in 1949, the government in Taiwan announced that China would leave the GATT system. Although the government in Beijing never recognized this withdrawal decision, nearly 40 years later, in 1986, China notified the GATT of its wish to resume its status as a contracting party (WTO News, 2001).

The Uruguay Round of multilateral negotiations under GATT was initiated as early as 1986. As a result, GATT was replaced by the World Trade Organization (WTO) in 1995. The WTO is an international institution in which member countries negotiate agreements to reduce trade barriers to trade with 142 other members. It is also a forum for countries to enforce trade agreements and continue negotiations toward expanding world trade opportunities. Meanwhile, the Agreement on Textiles and Clothing (ATC) became part of the WTO and replaced the MFA. The ATC provided for the "integration" of textiles and apparel into the GATT regime in three stages over a ten-year transition period that terminates on January 1, 2005 (Abernathy, F., Dunlop, J., Hammond, J & Weil, D. 1999), which means all quotas on U.S. imports of textiles and apparel are scheduled to be eliminated by 2005 (USITC, 1996).

In September 2000, China was granted Permanent Normal Trade Relationship (PNTR), which meant that the U.S. would not review and/or renew China's status every year and paved the way for China to become a member of the WTO. On September 17, 2001, under the Chairmanship of Ambassador Pierre-Louis Girard of Switzerland, the Working Party concluded almost 15 years of negotiations with China and agreed to

forward some 900 pages of legal text for formal acceptance by the 142 Member Governments of the WTO. Thirty days after China notifies its acceptance of the agreement, China legally becomes a member of the WTO. As a result of the negotiations, China has agreed to undertake a series of important commitments to open and liberalize its regime in order to better integrate in the world economy and offer a more predictable environment for trade and foreign investment in accordance with WTO rules (WTO News, 2001). After China's 15-year relentless struggle to join this organization, the WTO Minister Conference in Doha finally approved China's accession as the 143rd member of WTO on November 11, 2001.

China is the largest textile and apparel exporting country in the world (accounting for a quarter of its own total exports and nearly 20 % of the world total in 1995). Boosted by an increased demand from the international market, China's textile and apparel exports hit a new record of US$52 billion in 2000, up 20.9 % from the previous year, and accounting for one-fifth of the country's total. Domestic sales of textile products turned better in the latter half of 2000. The total industrial output of the sector stood at 800 billion yuan (Chinese currency) or an annual increase of 9 % (Asia Pulse, 2001). China will benefit from the elimination of Multi-Fiber Agreement (MFA) quotas, which will not only change China's resource allocation among its production and export sectors, but will also affect the structure of China's trade with its trade partners (Wang, 1999). It was claimed right after the Doha conference by Neil Kearney, general secretary of the International Textile, Garment and Leather Worker's Federation that the textiles and garments industries in Bangladesh, Indonesia, Lesotho and even India could face virtual

extinction through the combination of the accession of China to the WTO and the dismantling of bilateral import quotas.

This study identified several critical issues associated with the U.S. import volume of apparel from China and analyzed to which extent these variables influence the import volumes. The quota effect was emphasized by researching the utilization rate and the significance of the influence to the import volume.

Purpose of the Study

The purpose of this study is to examine the significance of China's comparative advantages and quota phase-out effect on the apparel trade between the United States and China by 2005 based on Heckscher-Ohlin's factor proportions trade theory. Thus, we are able to predict the possible change of apparel trade pattern between the United States and China and provide more beneficial information to the U.S. retailing industry in terms of sourcing strategies of countries' apparel industries.

Objectives

The objectives of this research were:

(1) To examine the apparel trading history between the United States and China.

(2) To examine to which extent the quota and tariff restrictions have imposed barriers of apparel trade between the two nations.

(3) To examine China's comparative advantages in apparel trade with the United States and how these factors are going to change the pattern of the trade.

(4) To examine the significance of several factors, especially quota, influencing the trading volume.

(5) Predict the pattern of trade after China's quota phase-out.

Limitations

The limitations placed on this study were:

1. Only two countries China and the United States were examined.
2. Only six factors were examined: quota, tariff, labor costs, lead time, quality and freight costs.
3. Only 30 buyers or people involved with global sourcing of retailers or buying offices were interviewed for the preliminary study.
4. Only the period between 1985-1999 were used.
5. Influence of consumer tastes and preferences on demand were not applied.

CHAPTER 2

REVIEW OF LITERATURE

Factor Proportions Trade Theory

From the evolution of international trade theory, one can see that the theory of factor proportions is streamlined from the theory of Absolute Advantage developed by the father of economics, Adam Smith. Factor proportions theory, also termed Heckscher-Ohlin theory, was developed by the Sedish economist Eli Heckscher and later expanded by his former graduate student Bertil Ohlin (Czinkota, Ronkainen, & Moffett, 1996). The Heckscher-Ohlin theory considered two factors of production, labor and capital. Factor intensities depended on the state of technology, the current method of manufacturing a product. Technology was defined as a way of combining resources to produce an output (Eastwood, 1985). The theory assumed that the same technology of production would be used for the same goods in all countries. Using these assumptions, factor proportions theory stated that the comparative advantage was derived not only from the productivity of a country, but from the relative abundance of its factors of production. Therefore, each country's resource endowment was a major factor in determining comparative advantages.

Based upon the theory of factor proportions, a country that was relatively labor-abundant should specialize in and export relatively labor-intensive goods, while a country

that was relatively capital-abundant should specialize and export capital-intensive goods in exchange for labor-intensive goods (Czinkota, 1996).

As the result of the labor abundant factor and the character of apparel industry, wage differences were a key factor in the global shifts in apparel production. Although many of the least-developed countries have relatively poor productivity levels in apparel production, typically the hourly costs of labor are so much lower than wages in the developed countries that the less-developed countries continue to have a significant competitive advantage in world markets (Dickerson, 1995). According to the census compiled by the Chinese government in 2000, the total population of China is 1.261 billion with annual growth rate as 0.93%, which gives China a huge labor resource endowment to specialize in apparel production.

Elasticity of Demand

Elasticity is defined as the percentage change in a dependent variable due to a percentage change in an independent variable (Eastwood, 1985). The general definition of elasticity is shown in the below equation:

$$E_{DEP,IND} = \frac{\%\Delta DEP}{\%\Delta IND} \quad \text{(Eastwood, 1985)}$$

The income elasticity and price elasticity of demand provide the framework for the relationship between quantity demanded and price, as well as income. The income elasticity of demand is a numerical measure of the degree of responsiveness of consumer demand to income changes. Consumer sensitivity to price change is measured by the price elasticity of demand. If the price change for the good is represented in the numerator, then its corresponding elasticity is called own-price elasticity. If the price

change is for another good, then its corresponding elasticity is called a cross-price elasticity (Eastwood, 1985).

Typically, income elasticity of apparel has been reported to be positive. However, differences in elasticity values have been dependent on the measurement of income. In most studies using disposable income as the income measure, income elasticities have been in the 0.5-0.6 range (Bryant, Keith, & Wang, 1990). Empirical estimates of income elasticity of apparel using total expenditure as a proxy ranged from 1.01 to 2.01 (Nelson, 1989). Shiells, Stern and Deardorff's study in 1986 revealed that the coefficient of income elasticity of demand was 2.773 for men's clothing and 1.872 for men's sweaters. For women's clothes, the coefficients produced were 1.9 for women's clothes and 1.972 for women's lingerie (Shielss, Stern, & Deardorff, 1986).

The price elasticity of apparel has been found to be negative in all cases, indicating that an increase in price is associated with a decline in the amount of clothing purchased. Mokhtari (1992) reported that clothing expenditures were highly price elastic (-1.9) in the short run, while in the long run this elasticity settled at unity (-1.0), using an error correction model for the same period of time as Norum (1990). Bryant, Keith and Wang (1990) also found unitary price elasticity for apparel in their study (Mokhtari, 1992 & Norum, 1990). Direct-price elasticities of U.S. demand for apparel imports from developed and developing countries were also estimated by Chadwick and Dardis (1993). Analysis of the data produced direct-price elasticities of -0.61 and -2.35 for developing and developed countries, respectively (Chadwick, & Dardis, 1993).

Quota

Quota is a limit on the quantity of a good that may be imported in a given time period (Dickerson, 1995). Under MFA, bilateral agreements established textile and apparel quotas without compensation, which is contrary to the general prohibition against their use under the General Agreement of Tariff and Trade (GATT). As a result, a series of discriminatory bilateral quotas restricted exports by most developing countries (Irene, & Whalley, 1990).

In 1996 the U.S. had quotas on textiles and apparel from 46 countries (USITC 1997). Of these countries, 37 were WTO members whose shipments were subject to the terms of the ATC. The U.S. government sets quota limits on nations that account for more than 1% of total U.S. imports in a particular garment category. Quota levels are decided then through bilateral negotiations (Christerson, & Appelbaum, 1995). The quota assigned under the MFA for particular products were allocated by agreements to governments rather than to particular producers, and the exporting country's government officials were authorized to distribute the quota among its producers. As might be expected in a large number of countries, this procedure created a secondary market for quotas that was added to the exporter's price (Abernathy, 1999). Therefore, quota is often the single largest expense in the overall cost of imported clothing, sometimes accounting for 15-20 percent of the factory price of a garment (Christerson, 1994).

Based on various studies, quotas have been generally binding in Asia (including South Asia) though not in Latin and Central America (Panagariya, Quibria, & Rao, 1997). It was reported in 1989 that the aggregate quota utilization rates were 89.9% for Bangladesh, 92.6% for China, 87.9% for Hong Kong, 72.8% for India, 95.1% for

Indonesia, 84.7% for South Korea and 83.1% for the Philippines (Panagariya, Shah, & Mishra, 2001). According to Christerson (1994), quota tends not to limit the amount of imports into the major markets of North America and Europe, but rather tends to drive producers to constantly look for new, low-wage locations, which are not quota restricted. In addition, quota forces manufacturers in quota restricted locations to upgrade into higher value apparel production.

W. Denney Freeston and Jeffrey Arpan claim, "Probably no other manufactured products receive as much protection as fabric and apparel"(Freeston, Denney, & Jeffrey, 1983, pp.50). Michael Finger and Ann Harrison put it another way: "Although textiles and apparel account for less than 2 percent of total employment in the U.S. economy, protecting them against import competition accounts for 83 percent of the net cost to the U.S. economy of all import restrictions"(Finger, & Harrison, 1996, pp.48). It was concluded in 1990 that the annual costs per direct job preserved by protection amount to $134,686 in textiles and $81,973 in apparel. These costs are extremely high. Considering that average wages in textiles and apparel are in the range of $12,000 annually, consumers pay nearly seven times as much to sustain job positions through protection as it would cost them to provide permanent vacations at full salary to the workers involved (Metzger, Boorstein, Morkre, & Reitzes, 1996).

However, under NAFTA, there are no quota limitations for imported apparel from Mexico and Canada if US-made fabric is used. The agreement also provides for the elimination of limits on "nonoriginating" textiles and apparel by 2004 (Fan, Lee, & Hanna, 1998). Furthermore, ATC under WTO has set down the basic framework that all the MFA quotas are to be phased out in four phases over a ten year period (1/1/1995;

1/1/1998; 1/1/2002; 1/1/2005), encompassing respectively 16, 17, 18 and 49 percent of imports of all specified textile and clothing products based on volumes in the year 1990 (Spinanger, 1990). If China enters the WTO and obtains the benefit from elimination of MFA quotas, however, it is predicted that its share of the US textile import market will dramatically increase by 15 percentage points in the year 2005. When the quantitative restrictions are removed, China's imports will amount to nearly a quarter of the US market by the year 2010 and beyond (Wang, 1999).

Tariffs

Tariff, also known as a duty, is a tax on imported goods (Dickerson, 1995). Over the past few decades, there were relatively fewer tariff reductions for apparel than for other industrial products. Fewer tariff reductions were due to a strong protectionist sentiment in the apparel industry and to a lack of reciprocal tariff bargaining in other countries (Arpan, de la Torre, Toyne, Bacchetta, Jedel, Stephan, & Halliburton, 1982).

According to Whalley (1994), with the elimination of MFA and non-MFA restrictions after the transition period, tariffs, rather than quotas, will remain the principle trade policy instrument through which protection to the domestic textiles and clothing industry can be granted. Several explanations for the relatively high tariffs that will continue to prevail in this sector can be provided. Tariffs reflect the degree of protection that governments want to grant to the domestic industry, typically textiles and clothing. Moreover, as tariffs are not the main instrument of protection for countries applying MFA or non-MFA restrictions, the focus of attention has been on the management of bilateral quantitative restrictions through the successive renewals of the MFA, rather than tariff reductions. Members thus have been less willing to provide substantial tariff

concessions. This was again noted in the Uruguay Round, where tariff negotiations were part of the "offer/request procedures". But the offers were substantially less than in other sectors (Smeet, 1995).

According to Moore (1995), the average tariff for apparel and textile products, weighted by 1989 Most Favored Nations (MFA) was 16.9 percent. They were particularly high for wool fabrics, averaging around 36 percent, with suits at 25 percent. Tariffs were also high for man-made fiber fabrics, with a simple average of 19.2 percent and a maximum of 42.4 percent (Moore, 1995). Dickerson (1995) also noted that in the Uruguay Round, tariffs on all U.S. industrial products, except textiles, were reduced by 34 percent. However, textile and apparel tariffs were reduced by only 12 percent. The imposition of a tariff not only alters the quantity of apparel demanded and supplied and the price paid, but also affects consumer and producer welfare. Restraints imposed on trade of textiles and apparel, therefore, have significantly increased the price paid by consumers for both domestic and imported apparel, limited consumer choice and the variety of apparel available within the market, and diminished the volume of apparel that would otherwise be consumed. Restraint of trade and protection of domestic production have also, in some instances, decreased the efficiency of production relative to the level which would be required within a more highly competitive, free trade environment in which only the efficient production would be maintained (Rees, 1993).

However, based on the research done by Martin and Pelzman (1983), a negotiated reduction in the U.S. tariff on textiles will undoubtedly result in the lowering of tariff barriers on certain U.S. exports. This will create additional employment opportunities in these sectors, the value of which will add to the welfare gains associated with the textile

agreement. North American Free Trade Area (NAFTA) creates the world's largest free trade zone and all tariffs on trade among three member countries, U.S., Canada and Mexico are to be eliminated over a 15-year period ending in 2010 (Guildford, 2000). In addition to NAFTA, Mexico is the biggest user of 9802 (formerly 807) production because of its proximity to U.S. and inexpensive labor costs. Under 9802, the U.S. tariff regulations permit cut pieces of garments to be exported for assembly and the finished garments to be imported into the U.S. with the tariff applied only on the added value of the garments. Meanwhile, the Caribbean Basin Initiative (CBI), which includes 22 Caribbean countries, was granted Trade Development Act (TDA) in 2000 after relentless lobbies to and thus enjoy the same parity as Mexico.

Roach (1997) stated that the utmost attention should be paid to China. Without the Most Favored Nation (MFN) status, the average tariff rate for China will increase 40 percent, and China will be lost as a source of supply. Thus, the MFN status of China has significant effects on tariffs (Roach, 1997). According to Gavin and Sylvester (1996), an analysis of the complete list of tariff reductions revealed that the new MFN duties on 4,996 products brought China's simple average tariff rates down from 36 percent in 1995 to 23 percent, still leaving China's tariff rates above those rates for other developing countries. A preliminary U.S. Department of Commerce analysis of 3,899 items on the lists reports that the new duties on average represent a 40 percent decrease from the 1994 MFN rates (Gavin, & Sylvester, 1996).

Labor Costs

Apparel production is highly labor-intensive. The intricate nature of cutting and sewing apparel makes it difficult to introduce labor-saving technology. In addition,

fashion trends in industrialized countries over the last 20 years have moved from an emphasis on practicality, simplicity, and standardization to individuality, freedom of expression, and a breakdown of clear conventional standards of dress. This trend toward style and individuality has forced manufacturers to offer a wider variety of styles and colors, which makes automation more difficult, labor costs more important, and offshore sourcing to low-wage areas more attractive (Christerson, 1994).

Since apparel production is highly labor-intensive, labor costs are often a consideration in deciding where to contract production (Lardner, 1988). Apparel trade does not simply involve the exchange of finished products across national boundaries, but rather involves a globally integrated production system in which capital, labor, information, and materials are drawn together from a number of firms often dispersed across the globe (Christerson, 1994). With retailers creating more private labels, retailers or "manufacturers without factories" contract out all manufacturing activities to networks of independent subcontractors, whether locally or internationally (Gereffe, 1994). Therefore, labor costs are a significant determinant of trade flows, especially for low-value products which tend to compete on cost, causing production to be dispersed to low-wage areas.

According to Shippen and Ben (1999), if the United States was taken as a price-setter, which means every U.S. domestic change in demand and supply has no effect on world prices, the results of the research would suggest that foreign competition on the costs and labor costs play a significant role in determining employment and hours worked in the U.S. apparel industry (Shippen,1999).

As far as labor cost is concerned, China has the world's largest cheap labor force. According to an estimate by the World Bank (World Bank, 1995), China's working population (age 15-64) was 723 million in 1995, which is 29 percent of the world total, and half of the working population of low income countries. The urban labor force of China's export-oriented coastal area alone is larger than the labor force of Japan and the four Asian tigers combined. In addition, there is a large amount of redundant labor, estimated at 175 million, in the form of hidden unemployment in China's agricultural sector (Wang, 1999). Those factors highlight China's basic condition as a labor abundant and capital scarce country which cannot be changed in the near future despite the high capital accumulation rate and foreign direct investment inflow of recent years. From the perspective of factor proportions trade theory, China possesses the endowment of labor abundance as a comparative advantage.

Labor force abundance directly results in cheap labor costs and low wages in the labor-intensive sectors such as apparel industry. Wage differentials in the apparel industry remain quite high between U.S. and developing countries. According to Christerson & Appelbaum (1995), average wages per hour for apparel production in the United States was more than 35 times as that in China. However, China's labor costs are no longer the lowest. Costs are lower in India, Cambodia, Russia and other countries that have become more accessible in recent years. It is true that the educational and skill levels of the Chinese work force are higher than those found in most countries, but Chinese textile and garment companies will have to leverage this advantage for it to become a competitive edge (Egan, 1999).

Lead Time

Lead time for manufacturers refers to the time required between the execution of production and the delivery of finished merchandise (Dickerson, 1995). Labor cost considerations often take a back seat to quick delivery, particularly in fashion apparel. The importance of lead time to labor cost is emphasized by many authors in the "flexible specialization" literature. In response to market instability, firms tend to target smaller, more rapidly changing market niches, which requires the rapid alteration of product designs. Thus, cost advantages gained in dispersing production to low-wage areas are negated by ineffective supply response (Scheonberger, 1988). For mass-produced, standardized products, competing on low-cost, it makes sense to disperse production to low-wage areas; but for products competing on responsiveness to quickly changing markets, production tends to take place near the final market (Christerson, 1994). According to Ostroff (1996), "the U.S. apparel market is flat, with buyers demanding that manufacturers keep costs down and use quick response." (Ostroff, 1996, pp.18). As a result, the United States has shifted much of its sourcing from China to Mexico and the Caribbean nations. Because the regions are closer in proximity, shipping times decrease. Lead time largely depends upon offshore location (Hathcote & Nam, 1999). According to Rajamanickam's research in1998, lead times are longest for apparel manufactured and shipped from the Far East and range from 14 weeks to 55 weeks, with an average of 27.5 weeks. Lead times are shortest for production done in the U.S. market, averaging 6.3 weeks and ranging from 3.7 weeks to 7.2 weeks. Another important factor determining the lead time is the size of the company. The research reveals that large companies usually have shorter lead time than small companies. (Rajamanickam, 1998).

As lean retailing becomes the theme of this industry and those retailers implementing lean retailing outperform their competitors in all the segments, the implications of this growth relayed to apparel industry is that all suppliers should radically reduce the amount of time to respond to orders. That means apparel manufacturers must be able to provide frequent deliveries, in smaller quantities, of more diverse products. Moreover, they must do so with a far greater level of accuracy in fulfilling orders and meeting delivery standards than in the past (Abernathy, Dunlop, Hammond & Weil, 1999). According to the Standard & Poor's retailing report in 1993, what goes on behind the scenes is of great importance: efficient warehousing, transportation, and delivery systems are among the elements of successful merchandising (Standard & Poor's Industry Surveys, 1993). According to the survey conducted by Kurt Salmon Associates in 1997 of CEOs and presidents of 54 retailing companies around the globe representing over $270 billion in annual sales, one of the most outstanding findings due to quick response (QR) is the strikingly shorter lead time. Lead times have been cut in half. There are two waves of QR. The basic wave is implementing Electronic Data Interchange (EDI), Advanced Ship Notice (ASN) and Universal Product Code (UPC) barcoding-which does produce significant savings. The second stage extends to improving QR capabilities throughout the supply chain, from manufacturing floor-ready merchandise to automatic replenishment (Musselman, 1997).

Quality

Dickerson's (1989) research results indicated that the majority of consumer respondents viewed US apparel as equal to or better in quality than imported products: 47 percent viewed domestic apparel as better in quality than imported, and 23.9 percent

considered US-made apparel equal to imported (Dickerson, 1989). In 1990, Khachatuian & Morganosky (1990) and other researchers did an investigation of consumers' quality perceptions of apparel from the United States, South Korea, China, Italy and Costa Rica. The results indicated that US-made clothing was perceived as having the highest quality with a mean of 3.24 (on a 4-point scale with 4 being excellent quality). Italy was perceived second highest with a mean of 3.04, followed by China (2.23), Korea (2.02) and Costa Rica (1.94) (Khachaturian, & Morganosky, 1990). However, Rachel Dardis (1985) investigated price and quality differences by using eight brands of men's dress shirts during a four-month period. Three-way analysis of variance was used to determine the significance of brand and store type, origin, and time of purchase or number of launderings. The results indicated that imported shirts were of the same, if not higher, quality than domestic shirts, but were lower in price (Dardis, Spivak, & Shih, 1985).

Research of sourcing evaluation factors between several regions of the world, which was prepared by the American Apparel Manufacturers Association (AAMA) Technical Advisory Committee, indicated that product quality, one of the crucial sourcing evaluation factors, is good in the Far East, poor in 807/Caribbean Basin Initiative (CBI) nations, and fair in the United States (Gaetan, 1988). In Moore's research of 1995, she defined the quality as the absence of defects. She also identified another important aspect of the quality of the supplier as the range of products that could be made. Her research indicated that among Asian countries, Japan was perceived as at the top, with Korea, Taiwan and Hong Kong also regarded as the producers of top quality apparel. China and Thailand were seen as producing medium-to-good quality. India was regarded as not producing as wide a range of products as China; and as not producing top

quality. Pakistan, Bangladesh and Indonesia were perceived to be at the lower end of the scale (Moore, 1995). Dickerson (1995) forecasted that the quality of Chinese merchandise will continue to improve, and that China's manufacturing facilities will be upgraded. As a result, China will continue to be a major influence in world textile and apparel production.

Freight Cost

A firm's competitive position in a given export market is determined by relative costs (the total costs of getting the product to the market compared to the costs of its competitors) and the elasticity of demand for its product. Relative costs are determined by relative production costs, relative exchange rates, relative trade barriers, and relative transportation costs (Bryan, 2000).

Containerized transport is the primary means of transportation in apparel trade. Five developed countries (United States, Japan, United Kingdom, Netherlands and Hong Kong) accounted for half the world's container movements in 1983 and the total from all developing countries (excluding Taiwan, Korea and Hong Kong) was 13% (Waters, & Soman, 1990). Countries in South and East Asia currently dominate the container traffic of developing countries. By 1982 the ports of developing countries accounted for over 10 million container movements or almost 24% of the world total, but the top four countries, Hong Kong, Korea, Taiwan, and Singapore accounted for half of the movements.

Liner freight rates have a direct effect on imports and exports, and therefore on the economic activity of the trading countries. In addition, shipping freight rates, similar to tariffs, afford protection to domestic production. Based on Jansson's study in 1986, the

liner freight rate is the sum of handling costs plus a contribution margin where the contribution margin is determined by demand elasticities and is positively related to the unit value of commodities (Jansson, & Shneerson, 1986). Consequently, any increases in transportation costs would be fully shifted to the importer, under the assumption that export supply is perfectly elastic (Bryan, 2000).

Developing countries are generally at a major transport and insurance cost disadvantage (relative to developed countries) on inter-regional trade. The reason for this is that most sea borne trade in manufactured products is carried by shipping conferences (cartels), which usually practice price discrimination against developing countries. The investigation noted that a Cost, Insurance and Freight (c.i.f.) valuation base places a disproportionate burden on countries that have relatively higher freight cost. Since transport costs are related to distance, nations which are not favorably located in relation to their major export markets pay relatively higher freight rates than their competitors.

Aside from the influence of distance, developing countries bear higher freight costs due to their inability to achieve transport economies of scale, or their adoption of costly and inefficient policies affecting shipping (Erzan, & Yeats, 1990). As the tariff is reduced, the quantity traded rises and the consumer price has declined. The rise in demand results in a higher price being received by the producers. However, the benefits of the trade liberalization are not fully passed on to producers and consumers. The shippers are able to take advantage of the more liberal trade regime, replacing part of the trade-tax wedge by one of their own, a greater monopolistic markup. As the tariff continues to fall, the shipping firms receive a larger margin over their marginal costs, resulting in increasingly large profits (Francois, & Wooton, 2001). According to the

survey of Canadian exporters, when faced with marine transportation rate increases, one third of respondents negotiated a lower increase, while another third absorbed the increase. Of the remainder, some were able to pass the increase on by raising their own prices, while others either switched modes and/or transportation companies or dropped out of the market.

CHAPTER 3

METHODOLOGY

This research examined the impact of China's entry into the WTO on the pattern of U.S. apparel imports from China and anticipated the possible change of the apparel sourcing strategy for domestic U.S. retailers and manufacturers. The research tested the fitness of several independent variables to the dependent variable, the domestic demand for the apparel imported from China with emphasized focus on the effect of quota on demand trend.

Telephone Interviews

For the purpose of collecting data for two variables and identifying any additional variables, telephone interviews were conducted with 30 buyers of the nation's leading department stores and resident buying offices in New York City and Los Angeles in order to measure their perceptions of two independent variables such as lead time and production quality. Their opinions of the trend change of import volume after China's quota phase-out were asked. All the selected retailers were among the most representative players in the industry with sales volumes above 300 million.

Model

The model applied to this study consisted of a log linear demand equation to estimate the volume in dollar value of U.S. apparel imports from People's Republic of China over the time period from 1985 to 2000. Although some of the bilateral trade

agreements were set in the early 80's, significant trade volume between U.S. and China began around 1985. This is the reason why the period from 1985 to 2000 was covered.

Six variables considered likely to affect the U.S. apparel import volume from China were applied to this model. These factors included quota prices, tariff rates, labor costs, freight costs, lead time and production quality. Other variables were considered upon completion of telephone interviews if additional factors were identified. The following log linear regression model was used in this study.

$LnV_i = \beta_0 + \beta_{1i}LnQ_i + \beta_{2i}LnT_i + \beta_{3i}LnL_i + \beta_{4i}LnF_i + \varepsilon_i$

where:

LnV_i: the natural log of the dollar value of the product i imported from China.

LnQ_i: log of quota price of product i imported from China.

LnT_i: log of the tariff rate of product i imported from China.

LnL_i: log of labor costs of product i imported from China.

LnF_i: log of freight costs of product i imported from China

The β's are parameters to be estimated, and ε_i is a random error term for product i. The log linear regression model is applied in this research because the parameter βs more accurately reflect the elasticity relationship between the import volume and the independent variables (Ott, 1993). The mathematical relationship between β and elasticity is explained by using the example of price elasticity as following:

$$E = \frac{\frac{\partial Q}{Q}}{\frac{\partial P}{P}} = \frac{\partial LnQ}{\partial LnP} = \beta$$

where:

E is the price elasticity; $\frac{\partial Q}{Q}$ is the demand change rate and $\frac{\partial P}{P}$ is the price change rate. According to consumer demand theory, a negative relationship typically exists between an increase in the price of a given good and the quantity demanded of the good, except for specific cases such as goods which are perfectly inelastic or Giffen goods (Rees, 1993). Tariff rates and freight costs typically have negative relationships with the demand while there exists a positive relationship between the labor costs and the import demand.

Descriptive analysis was conducted with the variables production quality and lead time based on the results of the telephone interview. The quota utilization rate of the 24 products from 1998 to 2000 was analyzed and put into the descriptive form to anticipate the trend of the trade pattern. Below is a list of variables and the operational definition.

Table 3.1. Operational definitions

Variables	Definition
Import Volume	Custom dollar value of U.S. imported apparel for each of 24 MFA categories from Mainland China were applied. The time series of every other year ranges from 1985 through 2000. These MFA categories included 334/335/340/341/347/348/434/435/440/438/447/448/634/635/640/641/647/648/834/835/840/847. (See Appendix for the detailed product descriptions.) These categories were divided based on the different fibers

	such as cotton, silk, wool and man-made fiber.
Quota	Quota prices of the 24 apparel categories resulted from the secondary market in Mainland China were applied over the period from 1985 to 2000. Prices prior to 1998 were the average prices complied by China World Best Apparel Export & Import Division, and the prices after 1998 were the average prices on the electronic bid market of Mainland China. (No quota restrictions for silk product.) The quota utilization percentage of these products since 1998 were also examined in order to predict the trend change.
Tariffs	Import-weighted ad valorem tariff rates of the above 24 selected categories were recorded from Harmonized Tariff Schedule (HTS) of the United States of USITC.
Labor costs	Hourly compensation costs in U.S. dollar value for production workers in the manufacturing sector of China were used. All yearly data in China was changed to an hourly base using 45 working hours per week because the five working day policy was implemented after 1995. The Chinese currency (RMB) was converted to U.S. dollars by using the current exchange rate.
Freight costs	Freight costs were derived from the C.I.F. (Cost, Insurance, Freight) prices to New York or L.A. from

	China subtracted by the general prices (Custom Value) of these products made in China over the period from 1985-2000.
Lead time	Retailers' opinions regarding this variable were obtained from the telephone interview. This variable was used in descriptive analysis by asking interviewees' perception of lead time from China.
Production quality	Retailers' opinions regarding this variable were obtained from the telephone interview. This variable was used in descriptive analysis by asking interviewees' perception of production quality from China.

Data Collection

The research was conducted by using primary data collected from the telephone interviews and secondary data collected from various government publications and database of trade institutions. The data cover six factors and the time period from 1985 to 2000.

The 24 MFA categories were correlated with, and transformed to, the Harmonized Tariff Schedule (HTS) numbers. All 24 categories were chosen based on four different fiber sectors: cotton, man-made fiber, silk and wool. The correlated HTS number with MFA categories are shown in the following table.

Table 3.2. Conversion table

MFA Category	Harmonized Tariff Schedule Code
334	6201.12
335	6202.12
434	6201.11
435	6202.11
634	6201.13
635	6202.13
834	6211.39
835	6204.29
340	6205.20
341	6206.30
440	6205.10
438	6106.90.10
640	6205.30
641	6206.40
840	6205.90
840 (W)	6206.10
347	6203.42
348	6204.62
447	6203.41
448	6204.61
647	6203.43
648	6204.63
847	6203.49
847 (W)	6204.29

Note: See Appendix for the description of the products with HTS codes

The U.S. dollar value of imported apparel of these categories from China was obtained from the United States International Trade Commission (USITC) Trade Dataweb for the period from 1989 through 2000. The value prior to 1989 were obtained from the U.S. General Imports & Imports for Consumption: Schedule A Commodity by Country published by the Bureau of Census.

The second largest apparel export company in China, the apparel export & import division of China World Best Group Company provided the quota prices on the

secondary quota market in China from 1985 to 2000. The latest prices were also collected from the Hong Kong Trade Development Council for verification purposes.

The Harmonized Tariff Schedule (HTS) of the United States of USITC publications was used for tariff rates of the selected apparel categories. The tariff rate of the selected HTS codes from 1988 to 2000 were used and regarded as the average level for that category. The tariff rates prior to 1988 were sourced from the Tariff Schedules of The United States Annotated published by USITC, Washington, DC. Since the Tariff Schedules (TS code) was applied to record all the commodities imported to the U.S. before 1988, the code numbers for the 24 commodities used by this research were different from the HTS codes. Using the description under the same MFA categories, the researcher chose the closest commodities to the HTS codes from the Tariff Schedule of United States (TSUS) for the tariff rates prior to 1988.

Labor costs were taken from the China Statistical Yearbook published by Hong Kong's International Center for the Advancement of Science & Technology and Beijing's China Statistical Information & Consultancy Service Center. The hourly labor costs of manufacturing sector of China from 1985 to 2000 were converted to US dollars by the current exchange rate.

The C.I.F. prices and the Custom Value, or the called general prices of each product, were taken from the USITC Trade Dataweb. Freight costs were calculated by subtracting the C.I.F. prices from the Custom Value. The freight costs varied based on each category product made of different fibers. The freight costs of each category product were calculated by the researcher.

The production quality and lead time were measured based on the results from the telephone interview with retailers and resident buying offices.

Statistical Analysis

Data were analyzed by using the Statistic Analysis System (SAS) multiple regression procedure in this study to determine whether the apparel trade volume between U.S. and China during the period from 1985 to 2000 can be explained by the independent variables: quota prices, tariff rates, labor costs, freight costs. The significance of the variables was analyzed and explained by using major products made from four primary fibers: cotton, man-made fiber, silk and wool. The multiple coefficient of determination, R-square, explained the variability in the dependent variable by the relationship among the independent variables. The parameter estimates for the independent variables and the significance probabilities for each parameter estimate were measured through multiple regression analysis to determine to what extent each of the independent variables affected the dependent variable. The quota phase-out effect was highlighted by comparing the difference between quota free products and products with quota restrictions.

CHAPTER 4

RESULTS

The study was designed to examine the effectiveness of six sourcing variables affecting the apparel import volume from China from 1985 through 2000. Statistical Analysis System (SAS) was used to conduct the analysis and the results were presented in Table 4.3. Quota utilization also was researched in an effort to find out the relationship among quota price, utilization rate and the consequent effect on the import volume. Telephone interviews were conducted in order to obtain retailers' opinion regarding change of sourcing strategy after apparel quota phase-out by 2005. The result of the interviews was shown in Table 4.1. to illustrate the effect of quota phase-out from another perspective.

Telephone Interview

Twenty-eight telephone interviews were eventually conducted with U.S. retailers to obtain the objective data from either apparel buying departments or product development departments. Three key issues, perception of potential change of apparel imports pattern after quota phase-out, quality of apparel from China, and lead- time form China were examined. The research results were listed below in Table 4.1.

Table 4.1. Questionnaire results

	Strongly agree	Agree	Not sure	Disagree
Import volume from China will be increased after 2005	28.57%	57.14%	10.71%	3.57%
	Excellent	Good	Medium	Bad
Quality of apparel imported from China	17.86%	53.57%	28.57%	0
	Short	Acceptable	Long	Too long
Lead time of apparel import from China	17.86%	57.14%	14.29%	3.57%

The questionnaire results were converted to percentage format in an effort to examine the distribution of opinions. As noted from the above table, almost 29 percent of fashion professionals firmly believe China's entry into WTO and its apparel quota removal by 2005 will strongly boost the U.S. apparel imports from China. One tenth of the interviewees are not sure about the prospect, while a very small portion believes the context of apparel quota phase-out will not influence their sourcing strategy or the macro-trend of U.S. apparel imports.

Almost 18 percent of interviewees think the quality of apparel imported from China is excellent compared with that of other nations. More than half of the interviewees believe the quality of apparel from China is basically good, depending on the type of product, while almost 29 percent think the apparel quality from China is medium and needs to be improved. No retailer halted sourcing from China because of poor quality.

The results of lead time issue is basically the same as that of quality. Almost 18% interviewees believe the lead time of China has been greatly approved and considered it short. Based upon their product merchandising strategy, more than 57 percent of retailers

believe lead time from China is still acceptable. More than 14 percent of the interviewees think the lead time is long compared with other countries, and 3.5 percent feel it is too long to source from China especially for those merchandises requiring quick-response. Less than 18% of the respondents had negative response toward lead time.

Statistical Analysis Results

For item 334, men's and boys' cotton woven overcoats, multiple coefficient of determination (R-square: 0.685647) indicated that only about 69 percent of all the variability of U.S. import volume from China between 1985 to 2000 can be explained by tariffs, quota, labor costs and freight costs. Based on this result, there is no strong relationship between the import volume and four factors. Parameter estimates of four variables are -0.146882, 0.355371, 0.038305 and 0.507529 respectively. The parameter estimates for variables of quota, labor costs and freight costs meet positive sign while the parameter estimate for the variable of tariffs is negative sign. The negative sign indicates that an increase in the tariff rates resulted in decrease in the import volume in dollar value of MFA category of 334, while the positive parameter estimates indicate increase of quota prices, labor costs and freight costs attribute to the increase of import volume in dollar value of item 334.

The significance of probabilities (P-value) of four variables are larger than the model level of 0.1, which means they are not significant for this model. In other words, tariffs, quota, labor costs and freight costs are not significantly affecting the import volume of apparel item 334 from 1985 through 2000. The R-square of item 335, is 0.987743, indicating that almost 99 percent of the import volume can be explained by the four variables, namely tariffs, quota, labor costs and freight costs. The parameter

Table 4.2. Results of log linear regression analysis

Items	R-square	Tariffs	P-value	Quota	P-value	Labor Costs	P-value	Freight Costs	P-value
334	0.685647	-0.146882	0.1682	0.355371	0.2511	0.038305	0.5924	0.507529	0.4123
335	0.987743	1.856091	0.0014**	-0.059316	0.0084**	-0.260011	0.0074**	0.670243	0.0137*
434	0.893201	1.355956	0.3504	-1.405991	0.0948	0.828099	0.0624	0.506732	0.0659
435	0.982234	-2.554339	0.0124*	-0.603534	0.0305*	0.356083	0.0179*	0.671098	0.0022**
634	0.990350	1.697271	0.0850	-0.667434	0.0165*	0.762184	0.0007***	1.196605	0.0031**
635	0.999199	8.043892	0.0015**	-0.706009	<0.0001***	0.752692	<0.0001***	1.097628	<0.0001***
834	0.970492	-3.326281	0.0425*			-1.434288	0.0242*	0.477397	0.0584
835	0.995475	-0.504138	<0.0001***			0.051275	0.5855	0.994619	<0.0001***
340	0.971742	-1.700119	0.3844	-0.168214	0.0025**	0.169973	0.6456	0.973554	0.0432*
341	0.993412	-0.868061	0.0127*	-0.371968	0.0003***	0.414311	0.0122*	1.071803	0.0381*
440	0.945723	1.464104	0.0072**	-0.013650	0.3183	-0.003216	0.0722	0.182082	0.5229
438	0.857360	-0.745614	0.0944	-0.765005	0.1790	0.609074	0.0978	0.659287	0.1588
640	0.964541	-5.051232	0.0315*	0.106688	0.0048**	0.077644	0.4132	0.915008	0.0566
641	0.914234	-3.566225	0.0732	-0.734178	0.4511	0.586857	0.0180*	0.350193	0.2918
840	0.996345	-0.479951	0.0007***			-0.319062	<0.0001***	1.168928	<0.0001***
840 (Women's)	0.989013	-0.866331	0.2578			-0.162799	0.0001***	0.944253	0.0002***

347	0.961415	0.484007	0.0414*	-0.350369	0.0155*	0.307784	0.0086**	0.055240	0.7971
348	0.992245	-4.223151	0.3564	1.000593	0.0008***	-0.170083	0.0013**	1.362828	0.0073**
447	0.941507	1.490288	0.5616	-0.227827	0.0075**	0.495618	0.1232	0.384765	0.3145
448	0.956604	-1.993976	0.0492*	-0.009521	0.0062**	0.365401	0.1766	0.405302	0.1075
647	0.973248	1.535639	0.0077**	-2.093557	0.0220*	1.205160	0.0066**	-0.761355	0.1702
648	0.986304	-1.501221	0.0334*	0.664488	0.5168	0.761738	0.0008***	0.298056	0.2860
847	0.994374	-1.200409	<0.0001***			-0.071651	0.0635	0.445293	0.0214*
847 (Women's)	0.995374	-0.785983	<0.0001***			-0.071172	0.0042**	0.895482	0.0006***

Note: * P<.05
** P<.01
***P<.001

estimates of quota and labor costs meet negative signs, which means increase in quota prices and labor costs result in decrease of import volume of item 335, women's cotton woven overcoats, while holding all other variables constant. All the four variables are significant under the model level of 0.1.

For item 434, men's and boys' woven wool content overcoats, the R-square is 0.893201. Only the quota parameter estimate meets the negative sign, which is significant also at 0.1 level. In terms of P-value, labor costs and freight costs are at significant level while variable of tariffs is insignificant. The R-square of item 435, women's woven wool content overcoats, is much better than 434 at 0.982234. Parameter estimates of tariffs and quota meet negative signs, while the P-value of all the variables are significant.

The R-square of item 634, men's and boys' man-made fiber woven overcoats, is 0.990350. All the parameter estimates of variables meet positive sign except quota, which is -0.667434. All the variables are significantly influencing the import volume of item 634. Among these variables, labor cost is the most significant factor of this model. The R-square of item 635 is 0.999199, indicating that the dependent variable, import volume of women's synthetic fabric jacket, can be strongly explained by the four variables. Only the parameter estimate for quota meets the negative sign. All the variables are significantly affecting the import volume in dollar value for category 635.

Since there is no quota restriction for silk content categories 834 and 835, only three variables were entered in the model. As for item 834, silk content men's jacket, the R-square value is 0.970492, and two variables, tariffs and labor costs, meet the negative parameter estimates, indicating the increase of tariffs and labor costs contributes the

decrease of import volume in dollar value of item 834. Three variables are all significant based on the 0.1 model level. The R-square of item 835, women's silk content jacket, is 0.995475. Tariffs meet the negative parameter estimates while the other two variables meet positive signs. All the variables are at significant level, especially tariffs and freight costs.

The R-square of item 340, men's and boys' cotton woven shirts, is 0.971742. Parameter estimates of tariffs and quota are negative. Only the P-values of quota and freight costs are significant. The results of category 341, women's cotton woven shirts, are close to that of 340 with the R-square as 0.993412 and negative parameter estimates for tariffs and quota. The difference lies that all the variables of 341 are significant.

In the wool content fabric shirts group, the R-square of 440, men's and boys' wool content woven shirts, is 0.945723. Parameter estimates of quota and labor costs are negative, while others are positive. With regard to P-value, tariffs and labor costs are significantly influencing the import volume under the 0.1 model level. The R-square of item 438, women's wool content woven shirts, is much lower than 440 at 0.857360. Parameter estimates of tariffs and quota are negative. The P-values of the four variables are not significant.

In the synthetic fabric shirts group, the R-square of item 640, men's and boys' synthetic fabric shirts, is 0.964541, indicating that 96% of the import volume in dollar value of category 640 can be attributed to the four variables from 1985 to 2000. Only tariffs' parameter estimate meets the negative sign. All the variables' P-value, except labor costs, are small enough to be significant. The R-square value of category 641, women's synthetic fabric shirts, is 0.914234. Parameter estimates of tariffs and quota

meet negative signs, while the other two are positive. P-values of tariffs and labor costs are small enough to be significant under the 0.01 level.

For silk content group, only three variables, excluding quota, were taken into consideration. The R-square of item 840, men's and boys' silk content shirts, is 0.996345. Parameter estimates of tariffs and labor costs meet negative signs, while that of freight costs is positive. All the variables' P-value are small enough to be significant, indicating great influence upon the import volume of item 840 in dollar value. For women's group item 840, the R-square is 0.989013. Tariffs' parameter estimate is negative but the P-value is insignificant while other variables' P-value are small enough to be significant.

Within the pants group, the R-square of item 347, men's and boys' cotton pants, reaches 0.961415, while quota's parameter estimate meets negative sign and the other three variables meet positive sign. The P-value of all variables, except freight costs, are significant. For women's item 348, the R-square is 0.992245. Parameter estimates of tariffs and labor costs are negative. All the variables' P-value, except tariffs, are small enough to be significant. Quota is the most significant factor influencing the import volume in dollar value.

The R-square of item 447, men's and boys' wool content pants, reaches 0.941507. Only the parameter estimate of quota meets negative sign and the P-value is small enough to be significant. For the counterpart of women's item 448, the R-square results meet 0.956604. Tariffs and quota parameter estimates are negative and significant in terms of P-value, while those of variable labor costs and freight costs are positive and insignificant.

In the synthetic fabric group, the R-square results of item 647, men's and boys' synthetic fabric pants, reach 0.973248. Parameter estimates of quota and freight costs are negative while that of other variables are positive. Tariffs, quota and labor costs variables are significant in terms of P-value. Labor costs is the most significant variable in the model. The R-square of item 648 is 0.986304. Parameter estimates of tariffs meet negative sign, while others are positive. Variables of tariffs and labor costs are significant in terms of P-value, while the other variables are insignificant.

For the silk content men's and women's pants item 847, the analysis results are similar. The R-square for men's is 0.994374, while women's is 0.995374. For both groups, the parameter estimates of tariffs and labor costs meet negative signs and the variables are significant in terms of P-value, while that of freight costs are positive and significant.

Quota Utilization

Quota utilization rates and limits of the 18 categories from 1998 through 2000 are recorded and listed in Table 4.3.

The quota limit for item 334, men's and boys cotton jackets, increased all through the three years, and the rate of utilization edged up from 76.8% to 83% during that time period. Its counterpart category 335's quota limit also increased from 386,367 dozen to 417,558 dozen, while its filled percentage soared from 50.9% to 94.8%.

The quota limit of category 434 increased from 12,870 dozen to 14,337 dozen through the three years. Although the utilization rate rose 11.2% to 70 % in 1999, it dropped to 67.1% in 2000 even though the limit was increasing. In contrast to item 434,

the quota limits of category 435 dropped to 25,841 dozen in 2000 from 26,314 dozen in 1998. However, the filled percentage drove all the way up to 91.8% in 2000.

For item 634, the quota limits were lifted all through the three years and the same for utilization rate. Limits of 635 also increased straight during three years. Following a slight drop in 1999, the utilization rate increased dramatically in 2000 reaching 90%.

For the cotton men's shirt group 340, the quota limits decreased steadly through the three years. The filled percentage also dropped almost 12 points in 1999 and striked back to 84.4% in 2000. The limits of women's counterparts changed dramatically by dropping almost half of the limits in 1999 from that of 1998 but gained back more than twofold in quantity in 2000. The utilization rate increased when the quantity limits dropped in 1999 and receded when the limits went up in 2000.

For the wool content men's shirt group 440, the quota limits increased during three years. As opposed to the quantity limits, the filled percentage dropped from 37% to 27.6% in 2000. The quota limits of women's group 438 also increased each year, however, the utilization rate was not only much higher than that of men's group but also increased from 93.5% to 94.6%.

The quantity limits of category 640 decreased sharply each year, while the utilization rate decreased simultaneously. However, the counterpart group 641's quota limits and utilization rates increased steadily over three years.

Cotton content pants categories 347 and 348 were ascribed in the same group and the total quota limits decreased straightly through the three years, while the filled percentage did the same direction.

Table 4.3. Quota limit and utilization rate

	1998			1999			2000		
Category	Limit	UOM	% Filled	Limit	UOM	% Filled	Limit	UOM	% Filled
334	346,664	DOZ	76.8	348,606	DOZ	73.9	353,835	DOZ	83.0
335	386,367	DOZ	50.9	415,480	DOZ	55.5	417,558	DOZ	94.8
434	12,870	DOZ	58.8	14,266	DOZ	70.0	14,337	DOZ	67.1
435	26,314	DOZ	70.1	26,936	DOZ	91.7	25,841	DOZ	91.8
634	665,883	DOZ	71.3	674,075	DOZ	73.3	687,556	DOZ	89.7
635	703,604	DOZ	75.0	711,031	DOZ	74.0	725,251	DOZ	90.0
340	850,413	DOZ	92.3	840,767	DOZ	78.8	839,239	DOZ	84.4
341	554,905	DOZ	75.3	290,806	DOZ	87.2	419,352	DOZ	74.2
440	38,279	DOZ	3.7	40,355	DOZ	33.0	40,557	DOZ	27.6
438	28,369	DOZ	93.5	28,511	DOZ	96.1	27,858	DOZ	94.6
640	1,490,044	DOZ	96.5	1,456,103	DOZ	97.8	1,428,730	DOZ	82.9
641	1,306,952	DOZ	74.0	1,405,431	DOZ	78.6	1,412,458	DOZ	87.1
347	2,529,199	DOZ	97.6	2,464,000	DOZ	97.1	2,419,985	DOZ	75.7
348	2,529,199	DOZ	97.6	2,464,000	DOZ	97.1	2,419,985	DOZ	75.7
447	75,886	DOZ	88.6	74,159	DOZ	82.1	72,893	DOZ	79.9
448	23,940	DOZ	66.5	23,837	DOZ	79.0	23,956	DOZ	76.6
647	1,633,486	DOZ	91.1	1,649,820	DOZ	88.1	1,618,842	DOZ	95.3
648	1,200,121	DOZ	82.8	1,212,123	DOZ	93.3	1,164,436	DOZ	86.8

The men's wool content pants category 447's quantity limits decreased in each year and as did utilization rate. The quantity limits of 448 increased slightly even with a slight drop in 1999. Utilization rate increased rapidly from 66.5% to 76.6% in 2000.

In the synthetic content pants group, the quantity limits of category 647 increased in 1999 and then dropped sharply in 2000, while the filled percentage rate did under the exact opposite direction. As the counterpart of 647, the group 648 executed the same trend as group 647 in terms of quota limits and utilization rate.

CHAPTER 5

CONCLUSIONS, DISCUSSION AND IMPLICATIONS

Conclusions and Discussions

Based upon the results of P-value of Table 4.1, quota is the variable most significantly affecting the import volume of the researched apparel categories with 67 percent of its P-values at significant level. Quota is followed by tariffs, labor costs and freight costs variables with 63 percent, 58 percent and 50 percent of their P-values at significant level, respectively.

Out of the items with significant level on tariffs variable, about 67 percent of parameter estimates are negative, which means for more than two thirds of the researched categories, the increase of tariff rates results in the decrease of import volume in dollars value. Especially for the silk content apparel groups, the increase in tariffs directly leads to the decrease in the import volume of silk content shirts, jackets and pants.

However, 85 percent parameter estimates of variable quota are negative out of the researched categories with significant level on quota, indicating that 85 percent of the apparel groups' import volume decreased in dollar value while the quota price increased. Apparently, quota price brought negative impact upon the import volume, or U.S. domestic demand for the apparel from China. Assuming to keep other variables stable, the increase of quota prices stems the import quantity volume from China and vice versa with the decrease of quota prices. The relationship among the quota limitation and quota price in China domestic market and the direct impact on the export volume to the United

States will be discussed in the following paragraphs. Only two categories are the exceptions: men's synthetic fiber shirts and women's cotton fiber pants. The quota price virtually increased the import volume of these two apparel groups at the same direction. In the other words, the higher of the quota price in China, the higher of the import volume value of these two categories.

As opposed to quota and tariffs, out of the items with P-value of labor costs at significant level, only 33 percent of these items' parameter estimates of labor costs are negative, which means almost two thirds of the researched items were influenced positively by the variable, labor costs. We can learn from Table 4.2 that the labor costs have the most significant negative impact on the silk content group. For all of the three silk content apparel groups, the increase of labor costs directly results in the decrease of the import value. In other words, because of no quota restrictions on silk content apparel, both the tariffs and labor costs brought negative impact upon the price of these merchandises on the U.S. domestic market.

For the researched items with P-value of freight costs at significant level, all of the parameter estimates are positive, indicating that within the selected representative groups, the increase of freight costs directly lead to the increase of import value of those items significantly influenced by variable of freight costs. All the silk content items in Table 4.1 except women's shirts were significantly affected by variable of freight costs. The increase or decrease of freight costs determine the price on the U.S. domestic market and influence the ultimate consumers. Meanwhile, other two key variables, tariffs and labor costs influence the market price from the opposite direction.

With regard to the quota limit and utilization rate, we can learn from Table 4.3. that for those merchandises which brought most tough competition or threats to U.S. domestic textile and apparel industries, quota limits dropped either throughout the whole three years or at least one year in order to prevent market disruption from happening and protect domestic textile and apparel industries. Quota limits of both men's and women's cotton fiber shirts and pants were slashed down throughout the whole three year period, indicating the scale to which how seriously the cotton woven apparel from China will affect the U.S. market and the efforts paid by the government to protect the own interests via one of the most effective trade barrier, quota.

Basically, the filled percentage moves in the same direction as quota limits. The research results matched what Abernathy claimed in 1999. Since the quota assigned by U.S. government was bid on the secondary China domestic market, the higher the limit goes up, the more chance it gets filled and consequently results in the decrease of quota price on the domestic market. However, if the quota limits were cut from the previous year, more competition would be generated from the bid market and consequently the quota price would be pushed up. Ultimately, fewer companies are able to afford the quota at the right time. The leftover quotas are more likely to get wasted by the end of the year because of bad timing for shipment, which results in the lower quota filled rate for that category. Consequently, same as the results by Christerson in 1995 that quota is often the single largest expense in the overall cost of imported clothing.

Based on the results from Table 4.1, since quota accounts for big portion of the apparel unit price, the increase or decrease of quota price resulted from China domestic bid market largely affected the import volume from China. Therefore, the removal of

quota by 2005 will attract more U.S. buyers to shift business from other countries to China by taking advantage of cheaper prices.

The above prediction was also verified by the results of telephone interviews with U.S. retailers and buying offices. According to Table 4.1., most of the interviewees either agree or strongly agree that the apparel import volume from China will increase rapidly after 2005, and they believe quota removal is one of the most important factors influencing their strategic decisions. Given the lower price after quota removal and more export authority to China's domestic manufacturers instead of state-owned export companies during China's WTO integration, U.S. retailers are actually preparing the coming wave by either establishing their own sourcing offices in China for the U.S. market or expanding their market in China, which matched the results concluded by Wang in 1999.

Basically, most of the interviewees believe the apparel quality from China is pretty good especially for the categories made of synthetic fabric and silk content fabric. Because more vendors or manufacturers are using sophisticated technologies and equipment in China, most retailers have seen the lead time from China has been greatly increased and are gradually adapting to the theme of quick response of U.S. retailers. Due to the changed scenario, Chinese vendors were given not only one-shot seasonal programs but replenishment programs as well.

Service will be another important factor influencing retailers' business decisions, which was not listed in the table, aside from price, quality and lead time, according the some of the retailers. The world largest private label sourcing company, Li & Fung in Hong Kong was the most often mentioned name by these retailers because of its

comprehensive service spectrum and perfect quality. Thus, balanced combination of the above factors should be quite important for both exporters and U.S. retailers.

Implications

This research explored several factors influencing the apparel import volume of three major categories made of four different fibers from China to the United States during the period from 1985 to 2000. The relationship among the quota limits, filled percentage and China domestic price of quota was also examined. Retailers' perception of sourcing factors from China, their attitude towards the sourcing strategy after quota phase-out and, more importantly, their emerging requirement for better service from manufacturers can at least provide Chinese manufacturers with the hint about how to effectively deal with U.S. retailers and prioritize their work.

The research can also provide U.S. retailers or importers a scenario to help them make the sourcing decision depending upon the specific merchandise in an effort to increase the profit margin in the more competitive apparel industry.

Limitations

There are several limitations in the research. Only four variables were examined in the model, which means these factors may not present the whole population. Other variables such as exchange rates and consumer preference were not included in the research and these variables may have significant influence on the import volume.

There are also some limitations in the method of collecting data of independent variables. Only twenty-eight retailer and buying offices were interviewed and they are not representing the entire opinion of U.S. retailing industry and some of the response probably cannot be unanimously agreed throughout the company. Data of quota obtained

from the second largest apparel export company in China, China World Best Export & Import Co. are the average bidding price on the market of that specific year, not necessarily the quota price on the specific merchandise imported to the United States in that year. Labor costs were collected from the general manufacturing industry rather than the apparel industry. Tariff rates were applied under HTS codes after 1988 instead of TS codes and some merchandise were merged to the new group under new codes.

Further Research

The third phase of integration into WTO has been effective since January 1, 2002, which enables quota-free for some linen fabric apparel from China. Further research could be conducted to test the effect of quota removal on this category and the result probably can be applied to other specific product. The same kind of research can be undertaken after 2005 when all of the quotas are removed completely, which can give us a much more comprehensive and realistic overview regarding the quota effects.

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APPENDICES

Appendix 1: Interview Script

Introduction

Good morning/afternoon. My name is Qimin Zhang. I am a merchandising graduate student at The University of Georgia. Currently, I am working on my master thesis titled "Analysis of China's apparel quota phase-out effect on the pattern of China's apparel exports to the U.S.". I would like to ask you opinion on three items that will greatly contribute to my thesis. This should not take over 10 minutes.

I assure you that your response will remain confidential, and will not be released in any individually identifiable form without your prior consent, unless otherwise required by law. The results of this study will be offered to you.

Company Name:

Interviewee Name:

Date:

Questions:

1. Do you think that China's entry into WTO with apparel quota phase-out will greatly increase the U.S. apparel import volume from China?

2. What do you think about the quality of the apparel imported from China?
   (0: bad, 1: medium, 2: good)

3. What do you think about the lead time of the apparel imported from China?
   (0: too long, 1: not long, 2:short)

Appendix 2: List of interviewed retailers and buying offices

1. Goody's Family Clothing
2. Parisian Inc. (Saks Fifth Ave)
3. Elder-Beerman Stores Inc.
4. Belk Stores Services Inc.
5. CATO Corp.
6. Federated Merchandising Group
7. J.C.Penney Inc.
8. Kohl's Department Store
9. The Doneger Group
10. Doneger Buying Connections
11. Wal-Mart Store Inc.
12. T.J.Maxx Inc.
13. Saks Fifth Ave
14. Ross Store Inc.
15. Robinsons-May
16. Associated Merchandising Corp.
17. Sears, Roebuck Inc.
18. Stein Mart Inc.
19. Mervyn's Inc.
20. Burlington Coat Factory
21. Dress Barn Inc.
22. Famous Barr Company

23. Dayton Hudson Department Stores

24. The Limited Inc.

25. Beall's Inc.

26. Charming Shoppes Inc.

27. Rich's/Lazarus/Goldsmith's

28. Macy's West

Appendix 3: U.S. Textile and Apparel Category System (24 Selected Apparel Categories)

MFA category	Harmonized Tariff Schedule Code	Product Description
334	6201.12	M/B's overcoats, carcoats, capes, cloaks of cotton, not knit
335	6202.12	W/G's overcoats, carcoats, capes, cloaks of cotton, not knit
434	6201.11	M/B's overcoats, carcoats, capes, cloaks of wool, not knit
435	6202.11	W/G's overcoats, carcoats, capes, cloaks of wool, not knit
634	6201.13	M/B's overcoats, carcoats, capes, cloaks of MMF, not knit
635	6202.13	W/G's overcoats, carcoats, capes, cloaks of MMF, not knit
834	6211.39	M/B's overcoats, carcoats, capes, cloaks of silk or nesoi, not knit
835	6204.29	W/G's overcoats, carcoats, capes, cloaks of silk or nesoi, not knit
340	6205.20	M/B's shirts of cotton, not knit
341	6206.30	W/G's blouses, shirts and shirt-blouses of cotton, not knit
440	6205.10	M/B's shirts of wool or fine animal hair, not knit
438	6106.90.10	W/G's blouses and shirts of wool and fine animal hair, knit
640	6205.30	M/B's shirts of MMF, not knit
641	6206.40	W/B's shirts and blouses of MMF, not knit
840	6205.90	M/B's shirts of silk or nesoi, not knit
840	6206.10	W/G's blouses, shirts and shirt-blouses of silk, not knit
347	6203.42	M/B's trousers, BIB and brace overalls, and shorts of cotton, not knit
348	6204.62	W/G's trousers, BIB and brace overalls, and shorts of cotton, not knit
447	6203.41	M/B's trousers, BIB and brace overalls, and shorts of wool, not knit
448	6204.61	W/G's trousers, BIB and brace overalls, and shorts of wool, not knit
647	6203.43	M/B's trousers, BIB and brace overalls, and shorts of MMF, not knit

648	6204.63	W/G's trousers, BIB and brace overalls, and shorts of MMF, not knit
847	6203.49	M/B's trousers, BIB and brace overalls, and shorts of silk or nesoi, not knit
847	6204.29	W/G's trousers, BIB and brace overalls, and shorts of silk or nesoi, not knit