



How do Industry Clusters Success: A Case Study in China's Textiles and Apparel Industries*

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ABSTRACT

In the course of transformation toward a market-driven, globally oriented economy, China's textiles and apparel industries have been experiencing profound changes, both in terms of individual firms' sustainable competence and the agglomeration competitiveness at industrial level. Among various changes, the most significance should be the phenomenon of regional clusters of various specialized industries. In each of the regional cluster localities, hundreds and even thousands of enterprises of various sizes have been formed and clustered together. Industrial clustering as an economic phenomenon is relatively new in China. No formal investigation and systematic analyses have been found on the phenomenon, especially for the textile and apparel industry. This research observed and documented a case study of industrial clustering in the Wujiang county of Jiangsu province. Through the analysis, the researchers generalize the factors that account for existence of the clusters and how the clusters sustain high performance of industry competitiveness. As the industry is one pillar of China's economy, it is important to study this trend for further growth of the industry.

Keywords: Industrial clusters, geographic economics, regional specialization

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1. Research Background

Since the late 1970s, China has reformed its economy and started transformation from a planned, centralized economic structure into globally oriented market systems with various extents of autonomy. In this process, the economic structure is experiencing profound changes. In the textile and apparel

industry, one such change is the emergence of industrial clusters of various products, for instance, women's wear in Hangzhou, men's wear in Wenzhou, socks in Ningbo, necktie in Chengzhou (all in Zhejiang province), and knitted products in Zhangcha (Guangdong province). In each of the localities, hundreds and even thousands of enterprises of various sizes have been formed and clustered together.

Enterprises of related industries which serve the clustering enterprises are also located nearby. According to China National Textile Industry Council (CNTIC), there are now 19 such township industrial clusters of textiles and apparel, which altogether have a total output of RMB238 billion (nearly US\$30 billion), accounting for about one quarter of the total textile and apparel output of the country. About 1.81 million workers are employed in these clusters (CNTIC, 2003).

The phenomenon of industrial clustering of textiles and apparel has enormous significance. These clusters have helped strengthen in the international market the position of China, which is now the largest producer and exporter of textile and apparel products in the world. They have had significant impacts on the economic development of the localities, and on the economic geography of the country. They have helped create a large number of enterprises, entrepreneurs, and employment, which has important economic and social implications.

Although the importance of the phenomenon is it, not much research has been conducted. This paper is intended to fill in the gap to some degree, and to arouse the attention of the academic community, as well as business community, to this important development. The information provided is thus of use to both researchers and to industrialists.

2. Literature of industrial clustering

There is a large body of literature on industrial clustering observed in the developed countries and documented, perhaps, in the nomenclature of economic geographic, agglomeration/inordinate economy, or industrial districts. In the United States for example, the steel industry is concentrated in Pittsburg, the automobile industry is in Detroit, the financial industry in New York, and the textile industry in the North and South Carolinas. In recent years, the fast development of the high-tech

industry in the Silicon Valley has particularly attracted the attention of both the academia and the business community. Much research has been conducted, and there is a large body of literature on the phenomenon of industrial clustering.

Among several approaches discussing the spatial clustering phenomena, the cluster concept put forward by Porter (1990, 1998) has been particularly influential in business, government and academia in the past decades. Porter is well known for his study in this area. He associated the phenomenon of industrial clustering with the rationale of developing competitive advantages for firms. According to Porter, the competitive advantage of an industrial cluster is influenced by four interrelated determinants, graphically depicted as a 'diamond model': factor conditions, demand conditions, related and supporting industries, and firm strategy, structure and rivalry. Porter argues that the geographic concentration of rivals, customers and suppliers tends to amplify innovative ability and competitiveness in a cluster even further.

Krugman's work on economic geography has drawn the interest of economists to the idea of "increasing returns" to proximity in the form of clusters (Krugman, 1991; Krugman & Venables, 1990, 1996). Krugman's approach to regional agglomeration involves two basic concepts. First, there is the idea that regional specialization evolves for accidental reasons, and second, the notion that once these regions become established, they are sustained by the external scale economies.

Within the geography and spatial-planning literature, the interest in so-called new industrial districts arose primarily from observations of the spatial organization of production in several key industries such as the electronics industry in California and the clothing industry in northern Italy (Saxenian, 1994; Scott, 1992). Efforts were given to explaining contemporary location patterns of North American industries

(Storper, 1995; Storper & Salais, 1997). It was stressed that some newly industrialized areas were characterized by vertically disintegrated production networks based on highly flexible and specialized firms that co-located in order to minimize transaction costs. In recent years, Silicon Valley as a cluster for some high tech industries has attracted particular attention of researchers. According to their studies, enterprises in a cluster enjoy external economies of scale by easy access to supply of materials, skilled labor, service, and information on technology and market. They also dynamically benefit from the competitive environment. In addition, industrial clustering stimulates creation of new enterprises, resulting in creation of new jobs. Not only is industrial clustering advantageous for individual enterprises, it also helps improve competitiveness of the industry as a whole. These findings provide insight into the development of industrial clustering, and also have impact on research in this field.

Jacobs and DeMan (1996), Doeringer and Terikla (1995) and Rosenfeld (1996, 1997) presented more in-depth interpretations and definitions of industry clusters, and discussed the related implications for new industry development. Further they generally focused on the geographic and spatial proximity that facilitate social interaction and inter-firm cooperation as key beneficial features that characterized the dynamics of clustered firms. In industrial clusters, firms draw on core competencies and knowledge flow among the existing firms in the clusters and thus are encouraged for better competitiveness (Gilder, 1989; Storper & Salais, 1997).

In the last decade, the emphasis of spatial clustering theory has shifted from transaction costs towards an increased interest in knowledge spill-over and other interdependencies. Some of the most prominent empirical studies include the work on the British motor industry (Pinch & Henry, 1997), the work on high-tech SMEs

located in Oxford and Cambridge (Keeble et al., 1999), and the work on Silicon Valley and Route 128 (Saxenian, 1994). These studies share a concern with tracing the mechanisms by which knowledge is generated and circulated within localized production systems. Paci and Usai (2000) explored the spatial distribution of innovative activity in Europe; the results indicated spatial and sectoral specialization of innovative and productive activities was significantly and positively correlated.

Most of the studies on industrial clustering have been conducted for and in the developed countries. However, industrial clustering also exists in the developing countries, especially in some Asian and South American countries, and has attracted the attention of some researchers (Porter, 1998). It has been noted that some of the industrial clusters of the developing countries grew in urban areas, while some others were the result of industrialization of the countryside; some were formed by themselves, while others were formed under the auspices of the government policies. While lacking the dynamic vigor and quality as those in the developed countries, these clusters nevertheless enhance the competitiveness of the countries. Many times these industrial clusters are export oriented. The extent to which these export-oriented clusters in the developing countries can achieve industrial upgrading objectives and positive developmental outcomes depends on the way in which firms in these clusters become incorporated into global chains.

3. Industry Clusters of Textiles and Apparel in China

Industrial clustering is a new phenomenon in China. Only a few research started to pay attention to it in the 1990s. Wang (2001) described the development of some clusters in the coastal regions of China, and discussed their characteristics, including their localized network. He particularly

examined the impact of accidental factor on the formation of clusters, and pointed out that the strength of the impact depended on the congruence of the sector choice, brought about by the accidental factor, with the natural advantages of the region and the rightness of the policy decision of the local government. Thus, the importance of government was emphasized.

The textile and apparel industry is one of the pillars of China's economy, accounting for 9.6% of China's total industrial output and 13.7% of its total industrial workforce in 2001 (Zhang, 2002). Historically, the geographical distribution of the industry was not even. For example, textile plants used to be concentrated in three coastal cities, Shanghai, Qingdao and Tianjin. After the foundation of the new China, under the system of planned economy the government dispersed the industry to more cities, where many textile plants were located. While these could be regarded as clusters in a sense, in most cases the textile industry was only one of the industries of these relatively large cities. These could not be compared to the current clusters of the textile and apparel industry, which have emerged in recent years and are the focus of this paper. In these new clusters the textile and apparel industry accounts for much large percentage of the local economy, and many times is the only industry.

The first tier of the clusters existed in the late 1970s and early 1980s, when China was first open to the outside world. Taking the advantages of proximity and low labor cost, many Hong Kong textile and apparel companies invested in Pearl River delta, and there appeared a few clusters of textile and apparel firms. These clusters grew fast, as new investments also came from Taiwan and other places, and many local entrepreneurs emerged as well. These clusters include Shenzhen (though later much diluted as it is now one of the largest cities in China), Dongguan (similar to Shenzhen but to a less degree), Humen,

Shaxi, and others.

Closely following this, the economy in Yangtze River delta developed fast and became very dynamic. Many enterprises of collective ownership and of private ownership established and grew very fast. Many of them were textile and apparel firms. It was typical that these firms clustered together. Several reasons account for their fast growth: First, the entry barrier to the textile and apparel industry was very low in terms of capital and technology. For example, at the beginning, only one manually operated device to knit socks or just a few sewing machines were needed. At the same time, there was almost endless supply of cheap labor, who were farmers eager to leave the land. As the enterprises expanded, some shrewd entrepreneurs lured technicians and skilled labors who were retired from state-owned enterprises to work for them. These firms were most located in towns. The government granted very flexible policies for the growth and operation of these firms. They were much less restricted by the clumsy rules and regulations than the state-owned enterprises, for example, they did not have to offer the so called iron-bowl to their employees, and they had no burden of payments to retired employees. On the other hand, these firms were very sensitive and responsive to market changes. Thus, they were very competitive. Second, at that time China was just about to come out of the planned economy when there was insufficient supply of almost everything. Thus, there was never a lack of strong demand for such consumer goods as textiles and apparel. Along with this, little marketing and marketing skills were needed to sell the products. Third, as these firms were started by farmer-entrepreneurs in towns and even villages, they set examples and became models to others. Many times the latter just followed the footprints of the pioneers, starting with the same methods, making the same products, and selling in the same market. As villagers often belong to the same family, they did not view each other as competitors, and helped each other

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in terms of capital, technique, and even customers through the strong sense of kinship.

These firms were the seeds of the industrial clusters of textiles and apparel. Now most of the clusters still distributed in the two areas: Pearl River delta and Yangtze River delta. The former is Guangdong province, and the latter Zhejiang province and southern part of Jiangsu province. These happen to be the most advanced regions in China, in coastal area, with the best infrastructure in information, communication, and transportation. As a matter of fact, most of the clusters are located either beside a highway or very close to a port. They are also very close to major cities, particularly Hong Kong, Guangzhou, and Shanghai.

Now according to CNTIC (2003), the most well-known industrial clusters of textiles

and apparel in China can be categorized into three types, as shown in Table 1:

1. Textile industrial bases: These are medium sized cities, and a large percentage of their economy is textile/apparel based. There are 10 such bases, including Dongguan, Kaiping, Zhongshan (all in Guangdong province), Haining, Shaoxing, Xiaoshan (all in Zhejiang province), Changshu, Jiangyin, Zhangjiagong (all in Jiangsu province), and Haicheng (Liaoning province).
2. Cities with special features: These are small cities, mostly used to be county seats, and now are featured with one broad category of textile/apparel products. There are also 10 of them, as presented in the following table (Changshu of Jiangsu province is at the same time also an industrial base):

Table 1: Well known industry clusters in China Provinces

Province	City	Featured products
Zhejiang	Pinghu	Apparel for exports
	Shengzhou	Necktie
	Tiantai	Filter cloth
	Yuhang	Various fabrics
Jiangsu	Changshu	Casual wear
	Jintan	Apparel for exports
Shandong	Changyi	Dying and printing
	Jimo	Knitting
Hebei	Qinghe	Cashmere
Fujian	Shishi	Casual wear

3. Towns with special features: These are all towns, and now featured with one category of textile/apparel products. These are the stars of the textile and apparel industrial clusters, and are the attention focus

of research, including this paper. There are 19 of them, and all are located in the three coastal provinces and the two deltas. These towns are presented in the following Table 2:

Table 2: Illustrative town localities developing cluster-based economies

Province	Town	Featured products
Guangdong	Dalang	Wool sweater
	Humen	Women's wear
	Shaxi	Casual wear
	Xijiao	Fabrics
	Xintang	Denim wear
	Yanbu	Underwear
	Zhangcha	Knitting
Zhejiang	Datang	Socks
	Fengqiao	Shirts
	Maqiao	Knitting
	Puyuan	Sweater
	Xucun	Interior fabric
	Youchegang	Static flocking
	Yaqian	Man-made fiber
	Yangxunqiao	Warp-knitting
Zhili	Children's wear	
Jiangsu	Hutang	Weaving
	Sanxing	Embroidered home textiles
	Shengze	Silk/light fabric

By 2002, the total outputs of textiles and apparel of these 38 clusters amounted to RMB365 billion (about US\$45 billion). At present the structural development of the textile and apparel industry of China is characterized in two directions: one is a group of large companies based in large cities with capacity in marketing and product development, often operating supply chain regionally even globally; the other is a number of clusters of many small and medium sized firms based in small cities and towns, with featured products and vigorous growth (CNTIC, 2003). Thus, industrial clustering has become one of the two wings of the development of the textile and apparel industry in China. This demonstrates the importance of the clusters.

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4. Case Observation

We conducted an industry survey in one industrial cluster, which is a town, called Shengze, located in Wujiang county of Jiangsu province in eastern China. While Shengze had an early history of silk production, it was primarily of agriculture before the late 1970s when China started economic reforms. At that time, the size of the town was about 4 square kilometers with a population of 30,000. Since then, the town has seen enormous growth and become one of the 19 towns with special features designated by CNTIC, and one of the most important textile clusters in China. The focus of Shengze is fabric manufacturing, primarily light weighted fabrics for lining of apparel. Now the size of the town has

expanded to 25 square kilometers with a population of nearly 200,000, most of them migrants from other parts of the country. There are about 1,100 factories, operating about 50,000 looms, all of which are of water-jet or air-jet. It is said to be one of the largest concentration of such looms. The total yearly output is about RMB20 billion (US\$2.5 billion). There are about 4,000 selling and buying offices located in the town. The business district of the town is full of such offices, which would impress any visitors to the town. And there is no sign of stopping of the fast growth.

This is a qualitative and exploratory study, and in-depth interviews with town officials and entrepreneurs were used to collect information about the industrial cluster. Altogether 3 town officials (Vice Party Secretary of the town, Director of The Town Government Office, and Director of The Town Development Office) and 8 entrepreneurs were interviewed by structured means. During the interviews, in addition to the current situation of the cluster, the history of development was also investigated. Emphases were paid to the following questions: how is the cluster formed; to what degree does township government play a role, and to what degree do market forces promote the clustering; what is the advantages of clustering to the locality and to the enterprises; what are the interactive relationship among the enterprises within the cluster; what is the relationship between the cluster and the external market system; how does the cluster attract the servicing industries; and how does the clustering help the creation of new enterprises and new jobs. These questions have profound policy and marketing implications. Some of the findings to these questions are presented in this paper, with a focus on the origin and growth of the cluster.

4.1. Historical factors

In accordance with the literature (Krugman, 1986), the development of Shengze into a light-fabric cluster was accidental, but on the other hand quite natural with a historical

reason. Located in southern China with warm climate, fertile land and abundant water from nearby rivers and lakes, Shengze had been one of the silk centers in China for hundreds of years. Historically, residents of Shengze were skillful in silk production, and many workshops and silk-related businesses were located in Shengze. Merchants from all over the country would flock to Shengze for silk. Thus, it could be regarded as a silk cluster even then. However, as planned economy was established and no private business was allowed to exist, the silk center was reduced to nothing and Shengze was no more than an ordinary agricultural town in China. This was for about 3 decades until the late 1970s. By then, economic reforms began, and town residents were allowed to start their own businesses. For a few of them, the natural choice was to enter the silk business, since this was something they were relatively familiar with and the local conditions were suitable for. This was the origin of the cluster.

As discussed above, the general environment at that time was very favorable for the development of textile and apparel clusters like Shengze. Businesses were very successful. The first wave of the entrepreneurs in the distribution channel was sensitive to catch the information, and came to Shengze for its silk. At that time, there was only one shabby hotel to accommodate these merchants. From there, however, it was like a snowball or atom reaction; more demand encouraged more supply, and more supply encouraged more demand. In this process, Shengze as both a production base and a distribution center grew very rapidly. More local residents joined, and more enterprises formed, and a cluster was in the forming.

4.2. The Role of the Local Authority

While the origin seemed to be natural and out of the plan of the local government, the government did play an important role in helping the cluster grow. Both government officials and entrepreneurs emphasized the importance of two measures taken by the local authority.

The first one was the establishment of a market in its physical form. The Shengze government was sensitive to realize that the lack of a market had become the constraint on the development of the economic activities and a physical market was in demand. The government then financed and developed "The Oriental Silk Market", which was like a mart and leased to various trading firms. This provided a platform, and tremendously stimulated the growth of businesses both in demand and supply. Later when this was no longer sufficient to hold all of the buying and selling offices, a new district was developed, which eventually expanded into an area which holds thousands of selling and buying offices.

The other was the establishment of an industrial park, which is beside the provincial highway. The government provided the infrastructure in terms of road, water, electricity, and other basic conditions. This has created a good environment for manufacturing. While at the beginning, Shengze was only focused on silk production, very soon the enterprises broke the limits. As there was some similarity in technology between silk fabric and light-weight fabric, many of the firms expanded into the production of man-made fiber fabrics. Now even though Shengze is still known as a silk center, most of its looms are engaged in weaving of lightweight fabrics.

4.3. The Role of Individual Entrepreneurs

During our interviews, we were very impressed with those entrepreneurs of Shengze. Many of them are local residents and previously were farmers. They demonstrated enormous spirit of risk taking, creativity, and willingness to learn from the market. One young entrepreneur started as a security guard, borrowed a little money to enter the business, then set up a small factory of his own. Now this has been expanded into a company, and just the weaving branch of it has capacity of 220 water-jet looms and 120 air-jet looms. He also exhibited outstanding leadership in

organizing the local entrepreneurs to negotiate with Toyota of Japan. They collectively made the largest order ever in the world, 3,600 air-jet looms. In the process of his business expansion, he has helped numerous others to start their own business by loaning capital, sharing technology and market. These entrepreneurs help the development of Shengze as a cluster.

4.4. The Development of the peripheral Industries

Shengze started with silk production. This was expanded into domestic trade of silk. Very soon light-weight fabric manufacturing began to develop. This further promoted the growth of trading. By then there seemed to be two wings of the town, one was enterprises of fabric manufacturing primarily clustered in the industrial park, one was the selling and buying offices of fabrics primarily clustered in the business district. As large amount of materials are needed, many yarn suppliers are attracted to come and set selling offices in Shengze. One of our interviewees was the owner of a trading company, headquartered in Hong Kong. The company imports man-made fibers from abroad, and sells these fibers to fabric weavers through its selling office here. Textile machine companies, both domestic and foreign, also set up offices in Shengze to sell machines and machine parts, and to provide services to the fabric manufacturers. It is said that none of the plants would keep any spare parts. If a belt is broken, even at midnight, a new one can be ordered and delivered in less than 20 minutes. These have significantly lowered the production costs, and are part of the external economies of the industrial clusters. As Shengze has become a fabric center, showrooms and selling offices of other fabrics, such as denim, are also set up in Shengze.

4.5. Workforce Supply

As the cluster grows and enterprises mushroom, large labor supply is needed. In this process the former agriculture town was totally transformed. Most of the land was

turned into industrial uses, and all farmers are now employed in manufacturing. As the population of Shengze enlarges several folds (from about 30,000 to 200,000) in the last two decades, many migrants are attracted to live and work here. Most of the people were peasants and come from other provinces. While the neighboring Anhui province, which is relatively backward in economic development, provides a large portion of the labor supply, many workers come from remote provinces. They have formed nearly endless supply of cheap labor, and made great contribution to the development of the cluster. A large proportion of the labor supply is uneducated and unskilled. As there are many operational jobs, the raw labor could be trained in a short period time and then be able to work. Thus, the cluster in return also makes direct contribution to employment and indirect contribution to economic development of the less advanced regions of the country. However, there is a shortage of skilled labor. Compared to other places, labor compensation is better, as an operator can make about RMB1,500 (about US\$180) per month. In other places, the prevalent wage rate is about RMB1,000 per month.

5. Conclusive Remarks

In this paper, the development of industrial clustering of textiles and apparel in China is investigated. As a result of economic reforms and development, some characteristics of the textile and apparel industrial clusters are described. One particular cluster, Shengze which is famous for its silk and light-weight fabric, is used as a case to exemplify the growth of clusters. The empirical factors taken into account the cluster performance include the historical and natural origin, the role of the local government, the role of entrepreneurs, the development of supporting industries, and the supply of labor. During the past two decades in the process of development, the cluster not only grows in terms of quantity (number and scale of enterprises) but also in terms of quality (equipment, products, variety, marketing, and management). In the early when Shengze started to take off,

factories used outdated facilities and equipment. Many of the machines used were those retired from state-owned plants. Over the years, as the enterprises grow, these machines have been gradually replaced by advanced ones. Now about 50,000 water-jet and air-jet looms are operating in Shengze, many of them are imported from abroad and are the most advanced models. Many of the companies in Shengze export fabrics to the international market. Not only do they receive order from abroad, some of them have set up offices in North America and Europe. They market their products initiatively, and obtain the most updated information on marketing and products. While most of the companies started as a family business, now many of them are managed professionally by University graduates with MBA and PhD. Many companies have well-established systems and met with international compliance standards and requirements, like ISO9000 certificates. Thus, many of the enterprises have changed from the old-fashioned township companies into modern corporation-type companies. It can be anticipated that these clusters will continue to contribute to the growth of the economy and industrial development of the country.

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