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DISCUSSION PAPER No. 88

**Domestic Market-based Industrial  
Cluster Development in Modern  
China**

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**Abstract**

China's huge domestic market is constantly expanding, and is low-end demand oriented and highly dispersed. The domestic market-based development of China's industrial cluster, however, is not only a quantitative expansion, but has also been accompanied with remarkable qualitative upgrading. Specialized markets are a microcosm that clearly indicate this paradoxical phenomenon. By analyzing three typical cases of industrial clusters that have specialized markets, this paper will make the case that under modern China's market conditions, the local public sector is the crucial driving force for upgrading industrial clusters, which organize complicated transactions, promote quality control, and stimulate the division of labor.

**Keywords:** industrial cluster, market condition, specialized market, local public sector

**JEL classification:** L1, L5, L6, O1

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## 1. Introduction<sup>1</sup>

This paper will discuss the relationship between industrial clusters and market conditions. By inserting Global Value Chains (GVCs), many industrial clusters in developing countries have realized a remarkable development in the field of production management and quality control<sup>2</sup>. It must be noted that the unique market conditions in developed countries directly support this upgrading pattern<sup>3</sup>. Because the majority of their society is middle class, the demand in the markets of developed countries is more sophisticated, rapidly changing and high-quality oriented. On the other hand, due to the existence of powerful companies, the production and distribution of products within these markets are better organized. Corresponding to the advance of globalization, these companies tend to govern worldwide production and distribution. The essence of the GVC approach can be understood as a thinking that attempts to obtain development opportunities from such unique markets.

In modern China, a large number of SMEs in industrial clusters have rapidly developed within the domestic market. However, China's market conditions seem to be quite different from developed countries. The scale of this market ballooned during a very short period, but the majority of Chinese society is still lower class. Furthermore, there are no powerful companies or social intermediate organizations that are able to organize production or distribution within such a huge market. Under these market conditions, as common sense dictates, intense price competition will take place more readily than the competition characterized by quality control, brand management, or R&D.

However, a few studies have indicated the domestic market-based industrial cluster

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<sup>1</sup> This paper is a midterm report of IDE's research project titled "the Flowchart Approach to the Formation of Industrial Clusters: Focusing on the Mechanism of Endogenous R&D and Innovation."

<sup>2</sup> See Global Value Chain Initiative website: <http://www.globalvaluechains.org> (accessed October 2, 2006).

<sup>3</sup> The ideas behind this paper were influenced by the concept of the *National Chain* (Hubert Schmitz 2005, 2006a, b). Value chain approach is quite useful in analyzing the business linkages between various companies within an industry. However, as this paper will mention the market conditions, which include the market structure (the number of companies), the size and the quality of demand in a market, the framework for the value chain approach will not be applied here.

development in China is not only a quantitative expansion, but that it has also been accompanied by a qualitative upgrading (Sonobe and Otsuka 2004; Jin 2003)<sup>4</sup>. Why were these clusters able to develop under such market conditions? To answer this question, the mechanism that China's industrial clusters responded to, its domestic market, must be investigated. Moreover, the feature of China's domestic market must be further clarified.

As the features of various industries are quite different, this paper explores the above question through the following three cases. All of the industrial clusters in these cases have surprisingly upgraded within the domestic market.

The first case is China's largest industrial cluster for daily necessities. Because of the huge size of the domestic market, the demand for the products of this industry is more varied than for that of others. This requires higher skills to deal with the complicated transactions<sup>5</sup>. We are going to explore who played the substitutive role, without a powerful buyer that can organize a large number of commodities in a well-ordered way.

The second case is China's largest industrial cluster for eyewear. As a commodity that affects human health, the requirements for quality in the eyewear industry are much higher than in other industries. Our question is, in a market where the price competition is more general, without any social intermediate organizations or companies that are able to constantly put the pressure from consumers on the small producers, who promoted the progress in quality?

The third case is China's largest industrial cluster for moulds. As typical of supporting industries, cost is a key factor in upgrading the mould industry. Our

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<sup>4</sup> Sonobe and Otsuka (2004) argued China's industrial clusters qualitatively upgraded in the third stage of China's development. However, their basic assumption is that except for some leading companies, most of the SMEs had gone out of business before this stage. In contrast, we are asserting that even after the second stage, a large number of SMEs survived and developed. This paper focuses on the institutional factors that facilitated the development of these SMEs.

<sup>5</sup> It is noteworthy that the SMEs which produce various types of daily necessities usually geographically clustered in a same space. Thus, how to deal with the complicated transactions of these daily necessities is a key factor in upgrading the daily necessities related clusters.

question is, without a powerful producer who provides raw materials, machines, and maintains the subcontract production system, who supported the small producers, allowing them to survive the price competition?

As for the rest of this paper, section 2 introduces the *Specialized Market* as a unique viewpoint for helping us to observe China's industrial clusters. Section 3, 4, and 5 investigate the above three industries from the viewpoint of the specialized market. We state our conclusions at the end.

## 2. Brief Introduction to the *Specialized Market*

This paper discusses the above issue from the viewpoint of the specialized market<sup>6</sup>. As a unique space in most of the important industrial clusters in China, the specialized market is quite useful to our analysis.

**Table 1 Scope of Specialized Markets in Zhejiang's Major Industrial Clusters (1998)**

| Market scope   | Within the city | Beyond the city but within Zhejiang | Beyond Zhejiang but within the domestic market | Other developing countries | Developed countries | Unknown |
|----------------|-----------------|-------------------------------------|--|----------------------------|---------------------|---------|
| No. of markets | 5               | 1                                   | 45   | 21                         | 15                  | 15      |

Source: Ding (2006a, Chapter 1). The original source is ZPMCC Committee (2000).

Firstly, the commodities of specialized markets are mainly distributed in the domestic market<sup>7</sup>. Table 1 shows the scope of 68 specialized markets within 53 typical industrial clusters in Zhejiang province, where the specialized markets and the industrial clusters first appeared and are the most developed. As this table clearly shows, in 1998, among 68 markets, there are 45 markets that sell commodities to China's domestic market<sup>8</sup>.

<sup>6</sup> This paper defines specialized markets as wholesale markets located in industrial clusters, and dealing with the related commodities of the local industry.

<sup>7</sup> As for the reason why specialized markets have a strong ability to explore China's domestic market, see (Ding 2006b).

<sup>8</sup> It is interesting that some markets have linkages with overseas markets. There are

Secondly, the structure of the specialized market is highly dispersed. As Table 2 indicates, among 68 markets in Zhejiang, at least 56 markets have no less than 100 booths. Of these, 14 markets have between 1,000 and 4,999 booths, and 7 markets have no less than 5,000 booths. Needless to say, most of the booth keepers engage in the related businesses of the local industries, including both in the commercial sector and in the manufacturing sector.

**Table 2 Number of Booths in Specialized Markets in Zhejiang's Major Industrial Clusters (1998)**

| No. of booths  | 100-999 | 1000-4999 | No less than 5000 | Unknown |
|----------------|---------|-----------|-------------------|---------|
| No. of markets | 35      | 14        | 7                 | 12      |

Source: Ding (2006a, Chapter 1). The original source is ZPMCC Committee (2000).

On the other hand, there are also a large number of buyers who make purchases in the specialized markets. According to limited data, among Zhejiang's above-mentioned 68 markets, there are 2 markets which have 100,000 buyers visiting per day<sup>9</sup>. Additionally, there are 5 markets which 50,000, 15,000, 10,000, 8,000 and 50 merchants, respectively, visit per day<sup>10</sup>. We can infer that no one company is able to control others under this market structure.

Thirdly, the specialized market developed simultaneously with the industrial cluster. Table 3 indicates the trend for the growth of markets in Zhejiang province. This table's data consists of both the markets linked to industrial clusters and the markets that do not have such linkage. We can observe a rough trend in both the number of markets and the transaction volume of these markets: both increased rapidly during the period from 1979 to 1998. After 1998, although the number of markets decreased, the transaction volume continued to expand. This means that after a period of competition,

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21 markets that sell commodities to developing countries, and 15 markets that sell commodities to developed countries. The specialized market seems to be superior at exploring the developing countries' low-end market.

<sup>9</sup> This is the number in the maximum.

<sup>10</sup> This is the number in the maximum.

some markets disappeared, but the scale of others grew larger.

**Table 3 Development of Transaction Markets in Zhejiang**

| Year | No. of markets | Transaction volume (100 million Yuan) | Comparison with the transaction volume of Zhejiang's social consumer commodities |
|------|----------------|---------------------------------------|--|
| 1979 | 1322           | 11.3                                  | 0.192 : 1  |
| 1984 | 2241           | 26.9                                  | 0.214 : 1  |
| 1990 | 3797           | 162                                   | 0.458 : 1  |
| 1995 | 4349           | 2165.7                                | 1.634 : 1  |
| 1998 | 4619           | 3209                                  | 1.681 : 1  |
| 2001 | 4278           | 4652                                  | 1.820 : 1  |

Source: Ding (2006a, Chapter 1). The original source is Jin (2003).

Notes :

\* Comparison with the transaction volume of Zhejiang's social consumer commodities  
 =Transaction volume of transaction market in Zhejiang: Total retail amount of Zhejiang's social consumer commodities

Table 4 indicates this trend more clearly. It shows that among Zhejiang's 68 specialized markets, at least 36 markets have been extended or relocated. Of these, 21 markets have been extended or relocated multiple times. As a market is extended or relocated only when its business scale has drastically expanded, we can confirm that specialized markets developed constantly with the industrial cluster.

**Table 4 Times of Extension or Relocation of Specialized Markets in Zhejiang's Major Industrial Clusters (1998)**

| Times          | 0  | 1  | No less than 1 | 2 | No less than 2 | 3 | No less than 3 | No less than 4 | Has the plan | Unknown |
|----------------|----|----|----------------|---|----------------|---|----------------|----------------|--------------|---------|
| No. of markets | 12 | 10 | 5              | 6 | 2              | 9 | 1              | 3              | 2            | 19      |

Source: Ding (2006a, Chapter 1). The original source is ZPMCC Committee (2000).

Based on the above analysis, we can confirm that specialized markets are just a microcosm of China's domestic market. In order to understand the domestic

market-based development of industrial clusters in China, the features of specialized markets and their role in regards to the SMEs in industrial clusters must be clarified.

**Table 5 Organizations in Charge of the Construction and Management of Specialized Markets in Zhejiang's Major Industrial Clusters (1998)**

| Organizations  | AIC | V | TG | CG1 | CG2 | G+G | G +P | G→P | P | Unknown |
|----------------|-----|---|----|-----|-----|-----|------|-----|---|---------|
| No. of markets | 6   | 5 | 1  | 2   | 1   | 14  | 5    | 4   | 5 | 25      |

Source: Ding (2006a, Chapter 1). Original source is ZPMCC Committee (2000).

Notes:

AIC: Administration for Industry and Commerce (Gongshang);

V: Village;

TG: Town Government;

CG1: County Government;

CG2: City Government;

G+G: Multiple local governments or government departments jointly establishing a market;

G+P: Local governments and private firms jointly establishing a market;

G→P: Local government transferred authority to private firms after establishing and managing a market for some time;

P: Private firms.

Compared to transaction markets in other developing countries, the high intervention of the public sector can be pointed out as the most characteristic feature of the specialized market<sup>11</sup>. As Table 5 indicates, among Zhejiang's above-mentioned 68 markets, there are at least 38 markets where the local public sector is or has been in charge of the construction and transaction management for the market. Only 5

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<sup>11</sup> The reason why China's local public sector is so active to intervene in the local economic development is an important theme that requires separate study. We just point out that modern China's unique fiscal system is a key factor in understanding this question.



markets have been managed by private firms from the beginning. Usually, the local public sector intervenes in a specialized market by establishing a managing committee composed of some local government employees. Thus, the study of industrial cluster development within the domestic market is essentially the study of the role of managing committees in the development of specialized markets and the impact on industrial clusters.

### **3. Yiwu: A Case Study of a Daily Necessity Cluster**

#### **3.1 Brief Introduction to Yiwu<sup>12</sup>**

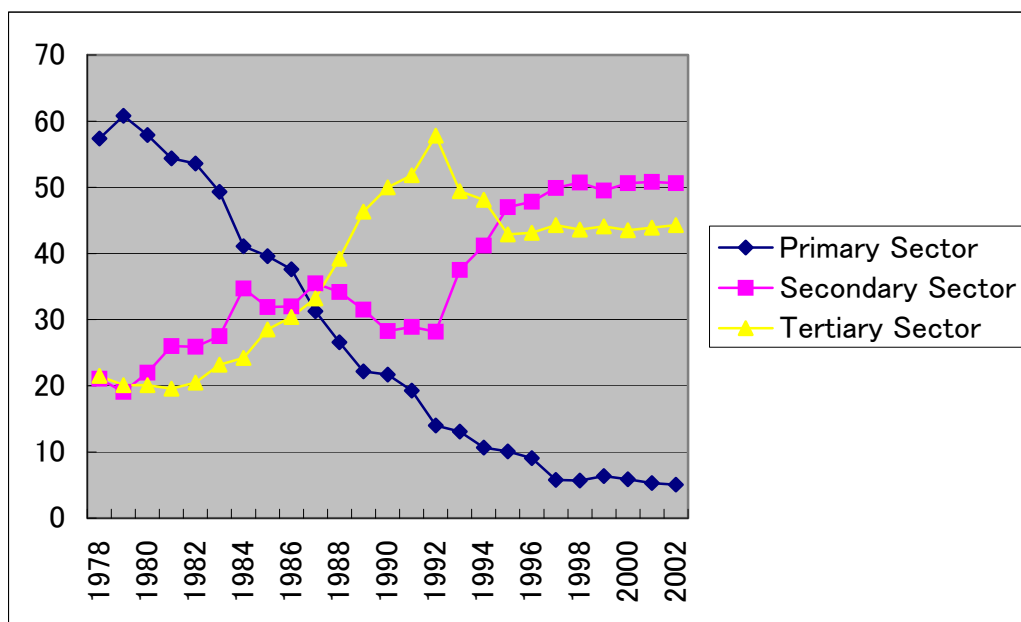
Yiwu is the world's largest production and distribution center of daily necessities. This city was a proper rural area at the end of the 1970s. However, after the local government established a wholesale market—Yiwu China Commodity City (Yiwu Market)<sup>13</sup>—in 1982, Yiwu started its rapid economic growth. During the period from 1982 to 1990, accompanying the increase in the number of booths in Yiwu Market from 700 to 8,000, 180 “One village one product” appeared consequently. After the 1990s, the number of booths in the Yiwu Market increased further. Moreover, this market began to export overseas from the end of the 1990s. As a result, no less than eight large industrial clusters were formed within Yiwu for, in particular, socks, shirts, wool, accessories, zippers, toys, key sticks and printing (Ding 2006a, Chapter 4). The major companies in these clusters are modern mass-production factories. Currently, the Yiwu Market has over 400,000 commodities in 1,901 categories from 43 industries. Its commodities are distributed in not only China's domestic market, but also in 212 countries and regions in the world market (ZCCC Group 2006).

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<sup>12</sup> As for the details of the development of the Yiwu Market, see Lu, Bai, Wang (2003), Ding (2006b).

<sup>13</sup> Yiwu Market is one of Zhejiang's above-mentioned 68 markets.

Figure 1. Changes in the Industrial Structure of Yiwu City (percent).



Source: Lu, Bai, Wang (2003). The original source is Yiwu Statistics. ed. (1978-2002).

It is clear that the development of the Yiwu Market directly stimulated the industrial cluster formation in Yiwu. This market played a crucial role in 1992 in particular. As Figure 1 indicates, despite the appearance of “one village one products,” the tertiary sector of Yiwu continued to expand until this year. After that, however, the secondary sector suddenly started its remarkable growth.

Ding (2006a, Chapter 4) has pointed out this transformation was caused by the structural changes that had taken place in the Yiwu Market during the period from 1992 to 1997. In concrete terms, 1) a large number of merchants from other regions began operating in the Yiwu Market; 2) the number of comparatively educated and young merchants increased in the Yiwu Market; and 3) the booth keepers in the Yiwu Market gradually built long-term business relationships with the makers. To fully explain, the situation in the Yiwu Market that caused these changes in 1992 must be clarified.

### 3.2 Classification of Commodities

Mr. He Zhangxing is one of the key persons for understanding the situation in 1992.

At that time, he was in charge of the AIC (Administration for Industry and Commerce) office, which is a major member of the managing committee for the Yiwu Market<sup>14</sup>. According to Mr. He, the classification of commodities in the Yiwu Market was very rough in 1991. In 1990, the 8,000 booths in the market were only divided into four industries: daily necessities, garments, knitwear, and shoes<sup>15</sup>. Although all of the commodities were assigned to be placed in specific spaces by the industries, one could easily find the same type of commodity in any other commodity's space. For some booths, once the booth keeper was changed, the commodities of the booth would also change. Some small merchants who did not have stable relationships with the makers also changed their businesses often. As a result, the same type of commodities had at times quite different prices in different places of the Market. It is easy to imagine that in this chaotic situation the formation of industrial clusters with the establishment of mass-production factories was very difficult.

Consequently, in 1991 when the Yiwu Market planned to build a new generation market<sup>16</sup>, Mr. He was confronted with a great hurdle in his efforts to design an efficient way to classify by industry and location the large quantities and types of commodities of the Yiwu Market (*Hua Hang Gui Shi*). For this purpose, Mr. He and his colleagues visited numerous department and hardware stores to learn methods of classifying commodities by use, raw material, and configuration, etc. In 1992, they were able to work out a plan to classify the Yiwu Market into eight zones, where the commodities of 16 industries could be bought and sold. These industries were 1.) garments, 2.) knitwear, 3.) shoes, 4.) socks, 5.) ribbons, 6.) wool yarn, 7.) small hardware, 8.) decorations, 9.) daily necessities, 10.) rainwear, bags and suitcases, 11.) stationery and sports goods, 12.) cosmetics and other pharmaceutical goods, 13.) buttons, zippers, and other accessories, 14.) toys, 15.) lighters, watches and electronics,

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<sup>14</sup> The record of the interview with Mr. He Zhangxin is based mainly on Xinhuanet (2006). In the following paragraphs on the Yiwu Market, sources were only written when being cited from other sources.

<sup>15</sup> YYLGE Office (1992)

<sup>16</sup> The regular Yiwu Market was originally built in 1982. After that, as business expanded and infrastructure and other constraints were felt, a new generation market was built in place of the original. New generations replaced the earlier ones periodically. The fourth generation market was built in 1991.

and 16.) artificial flowers<sup>17</sup>.

Before moving into the new market, the AIC asked every booth keeper to register their business and obtain a license<sup>18</sup>, as the first step to carrying out the above plan. However, there was no reaction from the booth keepers in the first three days. Many booth keepers worried their profits would decrease due to the scope of their businesses being limited by the registration. In order to solve this problem, Mr. He and his colleagues approached some of the leaders of the merchants of the Yiwu Market, particularly those in the Communist party. In the end, most of the booth keepers were registered.

After the fourth-generation market was opened, the AIC continued to take flexible measures in promoting the classification of commodities<sup>19</sup>. During the first month, they permitted all merchants, registered or not, to enter the new market. From the second month, they began permitting the resale or exchange of booth licenses. The AIC required all the booth keepers to show their license in the Market from the third month.

Then, the effect of the classification was gradually felt by most of the merchants. For example, in the third-generation market, the transaction scale for artificial flowers and shoes was very small. In the fourth-generation market, however, because the same types of booths were collected in the same areas, their existence became increasingly noticeable. The number of shoes booths increased from 220 to 1,700 during the period from 1990 to 1992<sup>20</sup>. The booth keepers of artificial flowers developed more than one type of new product almost every day.

In 2006, Mr. He looked back on the commodity classification and declared it to have the following three merits.

Firstly, by collecting booths that dealt with the same commodities into the same areas, competition increased. As a result, the merchants in the Yiwu Market were

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<sup>17</sup> The data of the classification plan in 1992 is cited from Zhang and others (1993).

<sup>18</sup> Mr. He did not explain clearly about registration. It is estimated that the business scope of booths was not strictly fixed until this time.

<sup>19</sup> They allocated the newly built booths to more than 13,000 merchants by lottery.

<sup>20</sup> The number of shoe booths in 1990 is cited from the YYLGE Office (1992).

strongly stimulated to develop newer and better commodities. Although Mr. He did not point this out, the increase of better-educated and younger merchants in the Yiwu Market during the period from 1992 to 1997 can be inferred as a result of this situation.

Secondly, the classification of commodities stimulated the merchants to specialize in specific fields (so that their businesses become more stable). It is easy to infer that small merchants in the Yiwu Market were able to build long-term business relationships with makers due just to this reason.

Thirdly, classification enabled the extension of the Market. In 1994, the Yiwu Market was enlarged again. The new market was classified into 13 zones, where the commodities of 21 industries were bought and sold<sup>21</sup>. Currently, as mentioned above, there are over 400,000 commodities in 1,901 categories from 43 industries. The number of booths increased to 580,000. It is clear that a large number of merchants from other regions relocated to the Yiwu Market just due to this situation.

Needless to say, the above three points on the classification of commodities are the most powerful explanation of the development of the Yiwu Market and Yiwu's industrial clusters. This classification of commodities within the Yiwu Market seems to have had a broad influence. In 1998, among Zhejiang's above-mentioned 68 specialized markets, there are at least 18 markets where the commodities were classified by industry and location. Of these, the transaction volumes of five markets amounted to 100-1,000 million Yuan. The transaction volumes of 13 markets were no less than 1 trillion Yuan. We can observe a clear correlation between the transaction scale and the classification of commodities.

## **4 Danyang: A Case Study of an Eyewear Cluster**

### **4.1 The Profile of Danyang Cluster<sup>22</sup>**

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<sup>21</sup> 1994's data is cited from ZPZHD Committee (1997).

<sup>22</sup> The profile of the Danyang Cluster is mainly based on Xu Yuanming and Xu Zhiming (2005). The author partially joined in their fieldwork. The author has also done his own fieldwork in Danyang separately since 2001. In the following paragraphs on the profile of the Danyang Cluster, sources are only written when

Danyang is a *county-level city*, located in Zhenjiang city, Jiangsu Province. This city is one of the largest eyewear industrial clusters in China<sup>23</sup>. Its eyewear industry started in the period from the 1930s to the 1940s, when peasants living in the countryside of Danyang moved to Shanghai and Suzhou. These peasants worked at the eyewear factories as apprentices. At the beginning of the 1960s, some of these peasants returned to Danyang and began the production of lens, frames and screws. After that, a few eyewear factories appeared in Danyang. In 1985, the number of township eyewear factories amounted to 23. The total production volume of these factories increased to 4,563,100 pairs of glasses and 2,592,500 pairs of frames, which accounted for one third of the total in China's domestic market.

The Danyang Eyewear Cluster continued its growth through the whole of the 1980s and the 1990s. In 2004, the total production amount of Danyang eyewear increased to 3 trillion Yuan, of which the export of eyewear amounts to more than 100 million dollars. The number of workers in the eyewear industry increased to 50,000. More than 1,000 factories and trading companies have appeared in this cluster. Of these, more than 400 are frame makers, more than 70 are CR-39 plastic lens makers, more than 100 are glass lens makers, more than 20 are screw makers, more than 20 are spectacle case makers, and 500 are trading companies and other supporting companies. The domestic share of the plastic lenses of Danyang has increased to more than 70%. The world share of glass lenses and plastic lenses of Danyang amounts to 80% and 50% respectively<sup>24</sup>.

Danyang Optical Market (Danyang Market) is China's largest optical market, and has played a crucial role in the development of Danyang's eyewear cluster<sup>25</sup>. In the 1970s, a small market for exchanging eyewear products was spontaneously formed

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being cited from other authors.

<sup>23</sup> Other typical eyewear clusters are the Duqiao Cluster and the Wenzhou Cluster in Zhejiang province, and the Shenzhen Cluster in Guangdong province.

<sup>24</sup> The Data for domestic and world share are cited from the Danyang Optical Chamber of Commerce (2005).

<sup>25</sup> Danyang Cluster is located in the south part of Jiangsu province. This area's pattern of industrialization is similar to the northeast part of Zhejiang (Ding2006a, Chapter1). Thus, the basic features of the specialized market in Zhejiang derived from the above 68 markets can be applied to this market as well.

around Danyang station. The Danyang city government, the department of AIC, and the village near the station jointly established the formal Danyang Optical Market in 1982. This market was opened in 1986. At the beginning, the number of booths in this market was merely 35. After several extensions, however, the total number of booths increased to more than 700 in 2003. In the same year, the transaction volume of this market amounted to 620 million Yuan. Almost all eyewear related goods, including lenses, frames, parts, and measurement instruments are sold in this market.

It was very interesting that at the first stage in 1987, the glass lenses in the Danyang Market were mainly produced in other parts of Jiangsu province. The share of all the eyewear-related commodities made in Danyang was only 25%. However, after starting business in this market, more than 200 booth keepers gradually began opening their factories in 2002. Many local makers tended to make use of this market as well. As a result, the local share of lenses and frames in the Danyang Market increased to 80% and 70% respectively in 2002<sup>26</sup>. The factors that caused such a structural change must be clarified.

#### **4.2 Upgrading Quality Control<sup>27</sup>**

It is well known that the quality of glasses directly affects the health of one's eyes. Even though the majority of China's domestic market is lower class, the consumers are more sensitive to eyewear quality than to that of any other product. Thus, progress in the quality of eyewear is the most important factor necessary in understanding the above structural change.

In Danyang, the turning point was 1995, when domestic consumers still accounted for the absolute majority. *Zhongguo Zhiliang Wanlixing* (ZZW) is a social movement that started in 1992. It was facilitated by China's central government, major mass

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<sup>26</sup> This paragraph is based on the author's interview with a booth keeper in the Danyang Market in 2002.

<sup>27</sup> This part is mainly based on the author's interview with the person in charge of the QC department of the Danyang Market in April 2001. In the following paragraphs on the QC in Danyang Market, sources are only written when being cited from other authors.

media, famous companies, scholars, and technologists<sup>28</sup>. In 1995, a few members of ZZW visited Danyang Market and inspected its eyewear. Their report indicated that the examination pass rate of glasses in this market was surprisingly zero<sup>29</sup>. CCTV and other major mass media outlets in China reported on this, and as a result, the Danyang Cluster's image was greatly damaged.

Under great social pressure, the government of Danyang and the managing committee of Danyang Market had to take drastic measures to cope with this quality problem. On August 8, 1996, they established a quality control (QC) department in Danyang Market. All the staff of this department came from the QC department of Danyang city.

In September 1996, the QC department and members involved with the Danyang Market (including public security, the office for industry and commerce, the tax office, and the local media) inspected the quality of glasses of the Market again. They confirmed that the quality of Danyang glasses was indeed poor. The examination pass rate for lenses was merely 45%. For frames it was 60%.

The QC department determined two reasons for the poor quality. The first reason was the poor quality control technology. It was estimated that 30% of the inferior goods were caused by this reason. For example, there were few booths in Danyang Market that met China's National Glasses Lens Quality Standard of GB10180 at this time. Many booths did not even own the measuring instruments that are indispensable to the production and sale of lenses.

In order to improve the poor QC technology, the QC department decided to visit all of the factories related to the Danyang Market yearly<sup>30</sup>. The QC staff usually check the production system thoroughly, explaining the problems to the factory owners in detail.

In the case of lenses, the QC department required all of the booth-keepers who

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<sup>28</sup> This movement put emphasis on the exposure of imitation goods and goods with poor quality. In order to get the true information, the members of ZZW would usually visit a factory, a market, or a department store suddenly, thoroughly inspecting the quality of commodities in these places. The results were reported to China's major mass media outlets.

<sup>29</sup> According to the interviewee, most of the booths in this market closed their shops on this day. This data was based on the inspection results of merely three booths.

<sup>30</sup> Of course, their activity was limited to Danyang.



owned lens factories to introduce electric lens measuring instruments<sup>31</sup>. In 1996, the price of each instrument was 30,000 Yuan. In cases where the booth keeper was not able to afford the instrument, the QC department in the Danyang Market or the Danyang QC department, acting as a guarantor, would ask the measuring instrument agent in Danyang Market to accept postponement of payment. Sometimes, they even helped booth keepers in collecting debts from their customers.<sup>32</sup>

The second reason for the poor quality was a lack of QC awareness. The QC department staff distinguished this point into two types.

The first type is due to poor awareness of management. In concrete terms:

- 1) Mistakenly putting product A into box B;
- 2) Selling product A as product B in order to obtain a higher profit;
- 3) Processing high quality lenses which were requested, in spite of the technological constraints, with poor quality raw material.

The second type is an extreme lack of awareness of trademark rights. It was pointed out that there were only two trademarks in all of Danyang Market in 1996: *Kangming* and *Huaguang*<sup>33</sup>.

Under these circumstances, the QC department took the following measures in improving the QC awareness of the booth keepers.

Firstly, the QC department opened round-table talks with a number of booth keepers. In specialized markets, merchants are usually connected by relationships that are based on geographical origins. Thus, the QC department mainly invited the leaders of different regional merchant groups to attend this talk. The QC department staff tried to build a relationship of trust with those merchants first. After this, they explained to them the importance of QC. These talks lasted for 2 years in the Danyang Market.

Secondly, the QC department opened QC publicity courses quarterly for all booth keepers in the Danyang Market. The tuition and textbook fees for this course were

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<sup>31</sup> Most of the instruments were made by the Japanese maker TOPCON.

<sup>32</sup> The person in charge of the QC department in the Danyang Market, who we interviewed, had helped 22 such booth keepers by 2001.

<sup>33</sup> The first is the brand of a Singaporean company. The second is the brand of a manufacturer in Hubei province, China.

free.

Thirdly, the QC department advised all the booth keepers who owned factories to register their own trademarks. As a result, more than 400 booths had their own trademark by 2001. Some booths even had 5 or 6 trademarks.

Besides the above measures, the QC department periodically supervised and inspected the booths. In 2001, lenses were inspected every month, frames every 6 months, and the assembly of glasses every month<sup>34</sup>. In the case of inspections, the booth keepers are not informed of the inspection date in advance, and all of the products must be thoroughly examined. If quality problems are detected, the QC department will require the booth keeper to improve their quality. If quality problems are detected a second time, the booth's information will be sent to the Danyang QC department. The offender will be punished with a fine of 10,000-100,000 Yuan. In some cases, the booth keeper is even forced to discontinue production.<sup>35</sup>

In the Danyang Market, not only the QC department, but also other departments are in charge of the QC problem. For example, the AIC department puts stress on exposing imitation products. Its staff visit booths or other logistics points at random. If imitation goods are discovered, all the goods from that booth are confiscated. Then, the offender will be punished with a fine of from 10,000-100,000 Yuan<sup>36</sup>.

The members of the managing committee of the Danyang Market sometimes jointly cope with the QC problem. Every year, a quality contest is held in the market under the sponsorship of the QC department, AIC, tax office, and the local village. The winner of this contest is given a certificate, which is displayed in a noticeable place in their booth. This certificate attracts consumers, as it is a guarantee of quality. This provides the booth keepers with a strong incentive for QC.

Because of the effort of the members of the managing committee, the examination pass rate increasingly rose. In 1998, the examination pass rate for lenses was 85%, and

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<sup>34</sup> But the parts are not inspected.

<sup>35</sup> This information on punishment is based on an interview with a booth keeper in Danyang Market in April 2001.

<sup>36</sup> This information on the AIC is based on an interview with a booth keeper in the Danyang Market in April 2001.

89% for frames (JPZCCE Office 1999). In 2000, Danyang Market won the title of *Jiangsu Shopping Rest Assured Specialized Market*<sup>37</sup>. In April 2001, the examination pass rate of the top 406 booths of Danyang Market was 95% for lenses, 98% for frames<sup>38</sup>, and 59.8% for reading glasses.<sup>39</sup> The improvement in quality restored Danyang Market's reputation. As a result, more and more eyewear merchants began to invest in the manufacturing sector.

## 5 Yuyao: A Case Study of the Mould Industry

### 5.1 Profile of Yuyao's Mould Industry<sup>40</sup>

Yuyao is a *county-level city* located in Ningbo, Zhejiang province. This city is one of the largest plastic products and mould clusters in China<sup>41</sup>. The origin of Yuyao's plastic industry was in the 1960s when a few small Bakelite plastic factories made appearances in the city. Accompanying the development of the plastic industry, the demand for moulds rapidly increased. As a result, a large number of factories began to specialize in mould production in the 1980s. According to the China Die and Mould Association, in the mid-1980s, the capacity of Yuyao mould production and injection accounted for one fourth of all of China. Since that time, Yuyao has been called the "Home of Plastic" and the "Kingdom of Moulds"<sup>42</sup>.

In the beginning of the 1990s, China Light Industry Association (CLIA) invested more than 30 million Yuan in Yuyao to build a model company named the Zhejiang Moulds Production Center (ZMPC). ZMPC received a complete suite of mould machines, with the capacity for integrated production. However, because the capacity

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<sup>37</sup> There were only 4 markets that won this title in Jiangsu Province.

<sup>38</sup> The remaining 2% are imitation goods.

<sup>39</sup> The rest of the booths' glasses (the majority are sun glasses, reading glasses, and parts) were usually purchased from other eyewear clusters such as Wenzhou. The pass rate of these booths was 60%, which is still low.

<sup>40</sup> This part is mainly based on the author's interview with the vice manager of the managing committee of the Yuyao Market and the vice president of the moulds association of Yuyao in July 2006. In the following paragraphs on the profile of Yuyao's mould industry, sources are only written when being cited from other authors.

<sup>41</sup> Huangyan Cluster in Taizhou city, Zhejiang is also famous for its moulds industry.

<sup>42</sup> The information on China Die and Mould Association is cited from CPCIC (accessed January 17, 2007).

was not fully utilized and for other managerial reasons, this company soon went bankrupt. This left many skilled workers in Yuyao<sup>43</sup>.

In order to sustain daily life, most of these workers started their own business. At this time, price competition was very intense. However, due to poor linkage with other firms and social intermediate organizations, these SMEs were not able to immediately obtain raw materials, or place orders with outside suppliers for parts for the manufacturing process to lower costs. Thus, they remained stagnant for a length of time. In order to give them the support required to survive this situation, the Yuyao government established a market specializing in moulds named China Light Industrial (Yuyao) Moulds City in 1995, in cooperation with CLIA<sup>44</sup>. The location of this market was decided to be an area where 150 of these SMEs informally clustered.

After that, the SMEs in the moulds industry developed very rapidly. As indicated in Table 6, during the period from 2001 to 2005, the number of mould companies in Yuyao increased from more than 1,000 to more than 1,300, and the number of workers increased from more than 20,000 to more than 50,000. At the same time, mould production volume increased from 800 to 3,000 million Yuan. Except for the top 16 companies, who export 70-80% of their products, most of the SMEs received orders from the domestic market.

By comparing the number of mould companies in the Yuyao cluster and in the Yuyao Market, we can easily observe the correlation between the Yuyao Market and the development of Yuyao Mould Cluster. As Table 6 indicates, the number of newly started businesses in the Yuyao Market is larger than in the Yuyao Cluster. The number of companies in the Yuyao Market increased more rapidly. This means that besides the fact that most of the newly started companies are located in the Yuyao Market, many outside companies have moved into this market too.

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<sup>43</sup> The information on ZMPC is partially cited from Shao and Ding (accessed January 17, 2007).

<sup>44</sup> Yuyao Market is one of Zhejiang's above-mentioned 68 markets. Because buyers usually go to this market and directly place orders, this area is treated as a specialized market in this paper. It must be noted that as most booth keepers produce moulds inside this market, sometimes the Yuyao Market is called an industrial zone.

**Table 6 Profile of the Yuyao Moulds Cluster**

| Year | Production volume in Yuyao Cluster (Million Yuan) | No. of workers in Yuyao Cluster | No. of companies in Yuyao Cluster | No. of companies in Yuyao Market |
|------|---|---------------------------------|-----------------------------------|----------------------------------|
| 2001 | 800   | More than 20000                 | More than 1000                    | 220                              |
| 2002 | 1530  | More than 30000                 | More than 1200                    | 521                              |
| 2005 | 3000  | More than 50000                 | More than 1300                    | 658                              |

Sources:

2001: CPCIC (accessed January 17, 2007);

2002: Zhongguo qingong moju wang (accessed January 17, 2007);

2005: Gong and Wan (accessed January 17, 2007).

## **5.2 Upgrading in the Production System**

The Yuyao Market is managed by a committee which has staff from Yuyao's government as its members. By analyzing the activity of this committee, we can understand how the Yuyao Market upgraded the Yuyao cluster in detail <sup>45</sup>. In concrete terms, this committee has taken following measures:

Firstly, the managing committee built two raw material submarkets in the 1990s. They invited domestic and overseas raw material producers to setup their sales outlets within these markets. As Table7 indicates, during the period from 2001 to 2005, the number of raw material companies nearly doubled. The transaction volume and the weight of raw materials increased correspondingly. The price for China's metal raw materials drastically increased during this period. However, because the clustering of companies offering the same products caused competition, the price of raw materials in Yuyao Market has risen no further than 1.1times.

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<sup>45</sup> This part is mainly based on the author's interview with the vice manager of the managing committee and the vice president of the mould association of Yuyao in July 2006. In the following paragraphs on the Yuyao Market, sources are only written when being cited from other authors.

**Table 7 Raw Material Businesses in Yuyao Market**

| Year | No. of raw material companies | Transaction volume of raw material (million Yuan) | Weight of raw material (1000 t) |
|------|-------------------------------|---|---------------------------------|
| 2001 | More than 40                  | More than 500                                     | Less than 60                    |
| 2005 | More than 80                  | More than 900                                     | 100                             |

Sources:

2001: CPCIC (accessed January 17, 2007);

2005: Gong and Wan (accessed January 17, 2007).

Secondly, the managing committee has built a 5,000 square meter precision processing zone, at the cost of 50 million Yuan. They encouraged the top companies in Yuyao to put their unused machines in this zone so that the local SMEs could share the excess capacity<sup>46</sup>. On the other hand, students of local colleges can also make use of this precision processing zone as their training center. By 2006, more than 40 sets of machines had been introduced to this zone.

Thirdly, the managing committee established a training center for skilled workers, in cooperation with the Baotou Technology College and the Yuyao education department. By September 2006, this center had trained more than 200 mould workers. It also has introduced 33 students who learned mould technology such as CAD/CAM in college<sup>47</sup>.

Fourthly, the managing committee built a mould technology and machine exhibition center. More than 100 types of moulds from Yuyao's top 12 companies and those of other SMEs are being exhibited in this center currently<sup>48</sup>. Since 1999, this center also

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<sup>46</sup> If there is only one of the machines in Yuyao, the zone will be used without requiring a fee, and the owner will receive subsidies. If there are no less than two of the same type of machine in Yuyao, the owner is required to pay a small fee for using the space. Of course, the SMEs must pay the rental fee.

<sup>47</sup> The details about the training center are cited from Gong and Wan (accessed January 17, 2007).

<sup>48</sup> The information on the usage of the exhibition center is cited from Gong and Wan (accessed January 17, 2007).

has held a yearly trade fair for moulds<sup>49</sup>.

Fifthly, the managing committee established an information center in 2003, in cooperation with the science department of Zhejiang province. It also established its own website. By 2006, this center had accepted 133,200 members and announced more than 300,000 bits of information<sup>50</sup>.

Sixthly, the managing committee established an inspection and measurement center, so that they would be able to provide authoritative reports to solve technological related problems. This center is in cooperation with the following two departments:

1. The Weapon Science Academy Ningbo branch for analyzing the ingredients of metal materials;

2. Yuyao QC center for measuring the length and cubic content of moulds.

Seventhly, the managing committee established an R&D center for mould innovation in August 2006. Currently, it is in cooperation with the following three institutes:

1. The Automobile Institute of Zhejiang University for the recommendation of new technologies;

2. The Beijing Machinery Institute for the development of new software;

3. The National Level Laboratory of Moulds in East China Science University for researching the fundamental theory of moulds.

As stated above, the managing committee intentionally played the role of organizer in the mould production system of the Yuyao Cluster<sup>51</sup>. They not only provided raw materials, machines, and information, but also set up the training center, QC standards, and the R&D institutions. Thus, a strong external linkage between the SMEs of the Yuyao Cluster and China's various domestic institutions has been formed.

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<sup>49</sup> The information on trade fair is cited from Zhongguo qingong moju wang (accessed January 17, 2007).

<sup>50</sup> The data on the number of members and information is cited from Gong and Wan (accessed January 17, 2007).

<sup>51</sup> Indeed, the managing committee itself called the second to seventh measures "five centers and one base." They expected the Yuyao Market to work as a platform to stimulate the innovation in Yuyao's mould industry.

**Table 8 Division of Labor in the Yuyao Market**

| Year | Total no. of companies in the Yuyao Market | No. of mould production companies | No. of mould processing companies |
|------|--|-----------------------------------|-----------------------------------|
| 2001 | 220  | 50                                | 100                               |
| 2005 | 658  | More than 100                     | More than 300                     |

Sources:

Total no. of companies in the Yuyao Market: Same as Table 7;

No. of mould production and processing companies in 2001: Shao and Ding (accessed January 17, 2006);

No. of mould production and processing companies in 2005: Interview with the vice president of moulds association of Yuyao in July 2006.

As Table 8 indicates, this intervention resulted in a deeper division of labor in the Yuyao Market. During the period from 2001 to 2005, the number of mould production companies more than doubled. At the same time, the number of mould processing companies increased by more than a factor of three. It can be estimated that the number of companies of other types increased as well. Currently, the production of moulds in Yuyao Market is divided into design, software development, wire cutting, NC line, tools, parts, and so on. Each manufacturing process is taken care of by specialized companies.

The deepening of the division of labor directly caused a lower production cost. It was said that the mould prices in Yuyao were only one third of those in Japan and half of those in Guangdong province in 2002. The difference in estimated prices between the companies in Yuyao Market in this year is not outside the scope of 10-15%<sup>52</sup>. It is clear that the local government has instructed the SMEs of the Yiwu cluster in a different way to survive price competition.

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<sup>52</sup> The information on mould prices in Yuyao is cited from China Moulds Net (accessed January 18, 2006).



## 6. Conclusion

China's huge domestic market is constantly expanding, and is low-end demand oriented and highly dispersed. It is taken for granted that under these market conditions, price competition will more easily occur than qualitative upgrading. However, as described throughout this paper, the local public sector played a crucial role in upgrading industrial clusters within this market.

The specialized market is an appropriate focal point in observing how the domestic market and the local public sector interacted. In contrast to the transaction markets in other developing countries, the specialized markets developed with the industrial clusters simultaneously. A large number of important actors take part in the business of the specialized markets, including small producers, small buyers, and public sector-controlled managing committees. Specialized markets can be treated as a microcosm for China's domestic market.

By analyzing how the managing committees supported SMEs in upgrading in the specialized markets, we can arrive at the following conclusions:

Firstly, China's domestic market is not only very large, but also has surprising variety, especially in the daily necessities industries. For industrial clusters, this means SMEs must be able to treat the commodities as diverse as they can. However, too many types of commodities concentrated in a confined space will usually cause a chaotic environment that can hurt the efficiency of transaction. Under these circumstances, as the Yiwu case showed, only the local public sector had the ability to solve the problem. The AIC, as a member of the managing committee of the Yiwu market, has worked out a plan named *Hua Hang Gui Shi*, namely classifying a large number and type of commodities by industry and location. In spite of the strong resistance from booth keepers, they successfully carried this method out. Consequently, the competition between the booth keepers became even stronger, and every booth keeper was forced to specialize. This stimulated the further development of the market. As a result, at least eight huge industrial clusters have formed within Yiwu.

Secondly, the majority of China's domestic market is composed of members of the lower class, to whom price is usually thought to be more important than other factors.

However, the consumers in this market are also sensitive to the qualities of some products that affect one's health. As the same time, they can make their requirements for quality known through the *Zhongguo Zhiliang Wanlixing*. As the Danyang's case indicated, in China, the local public sector was extremely sensitive to the great pressure derived from this social movement. Thus, they had to attempt every means available in order to help the booth keepers improve their QC. This not only led to progress in the quality of eyewear, but also raised the share of local products in the Danyang Market, consequently upgrading the whole industrial cluster.

Thirdly, China's domestic market is more price-oriented than technology or quality-oriented, especially in supporting industries such as moulds. Usually, this characteristic will become an obstacle for the upgrading of industrial clusters. However, the Yuyao case suggests that price-oriented markets can also stimulate the improvement of the production system. In Yuyao, local government was the only actor who has both the ability and the incentive to carry it out. They have established the Yuyao Market, and intentionally asked the managing committee for this market to play the role of organizer in providing raw materials, skilled workers and promoting R&D. As a result, the division of labor in the Yuyao Market became deeper and deeper, which established the cost advantage of the Yuyao moulds industry.

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