

**Jici Wang
Lixia Mei**

Dynamics of labour-intensive clusters in China: Relying on low labour costs or cultivating innovation?

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International Institute for Labour Studies
Geneva

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Abstract

This paper provides an analysis of the labour dimension of China's industrial clusters which produce a large share of the country's export goods. The paper begins with a general overview of China's numerous labour-intensive industrial clusters, as regards their formation, distribution, and division of labour from both the local and global perspectives. The labour market dynamics within China's clusters are highlighted. Structural changes, especially the rising labour shortage in China's coastal clusters which was experienced acutely prior to the current global economic crisis, as well as the causes and impacts of this shortage of semi-skilled and skilled labour within clusters are analyzed in two case studies of the Wenzhou footwear cluster and the Lecong furniture cluster. While on the one hand the tight labour markets for semi-skilled and skilled workers at that time contributed upward pressure on wages, the study finds that this also uncovered many deep-seated economic and social problems of contemporary China which require the attention of firms, government, and labour. The paper argues that industrial relocation based exclusively upon low labour costs is not an effective way to address the labour shortage, nor the need to move into higher value-added operations in global production; only investing in human capital via extensive training and education, as well as improving the innovative capacity of clusters within a process of both economic upgrading for firms and social upgrading for labour can support the competitiveness of these clusters in global markets.

Key Words: clusters, migrant workers, labour shortage, industrial relocation, China.

1. Introduction¹

Since its economic reforms and opening to the outside world in the late 1970s, China has been industrializing at a rapid pace. Already by 2005, China had become the leading global exporter in 774 items and was ranking among the top five exporting countries for 1,972 other items (Yang et al. 2006). However, this explosive growth, at least until recently, had been driven primarily by low wage manufacturing of consumer goods. Many Chinese factories have only supplied OEM (Original Equipment Manufacturing) products for “global buyers”(Gereffi, 1999), but have not yet established a position in international markets for innovative and high-value-added products (Hamilton and Feenstra 2006; Hamilton and Petrovic 2006). After China’s admission to the WTO in 2001, global pressure on labour and environmental issues, the energy deficit, foreign trade disputes (particularly anti-dumping suits) and currency appreciation all placed China in a difficult position regarding its reliance upon low value-added exports based on low-wage, low-skill manufacturing.

In the face of such problems, China’s central government developed a new policy framework based upon the strategy of “building an innovation-oriented nation”, which emphasizes economic restructuring and transition from labour-intensive and low value-added industries towards high-tech and higher value-added industries that are based on independent intellectual property rights and innovative capacity (China State Council, 2006). This policy initiative has begun to impact upon China’s enormous domestic labour market.

China’s rapid growth in industrial output has owed much to the impacts of globalization, in particular, the influx of foreign capital. Exploiting low-cost labour has been described in the literature as one of the key motivations for foreign direct investment (FDI) into China. The primary objective behind the early FDI that came from overseas Chinese in the 1980s was to exploit China’s low-cost labour in the manufacture of consumer products for export (Shi 2001; He 2003). Later on, in the late 1990s, the major Japanese and Western MNCs entered China with significant FDI for the same cost-based reasons. Surveys regarding the motivation of MNCs to establish R&D facilities in China also confirm that most of the FDI has pursued cost reduction by using more local raw materials as well as labour (Xue, et al. 2002). In 2005, China ranked No. 3 in attracting foreign investments, just behind the UK and USA; and No. 2 in attracting venture capital, behind the USA; and most surprisingly, No. 1 in attracting Transnational Corporation’s R&D location with a highest prospective intention rate of 61.8%, according to a survey by UNCTAD (2005: 153). According to Cantwell and Iammarino (2000), MNC networks for innovation and location choices conform to a geographical hierarchy and regional system, which means MNCs are not reshaping but actually following the innovation capability of host countries. Hence indeed, China’s central government policy of shifting to higher value-added and knowledge-intensive sectors via enhancing national innovation capability began to make sense, in terms of the increasing interests of MNCs to investment in China.

Evidence suggests that Marshallian industrial districts are common in China’s development mentioned above.² When Alfred Marshall firstly originated the notion of industrial districts based on the industrial agglomeration phenomena in Lancashire, Manchester and Sheffield,

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² In a debate on the Italian model of industrial districts, Markusen (1996: 297) rejected the dominance of the Marshallian industrial districts in regional development. She identified three additional types of industrial districts, that is, the hub-and-spoke districts; the satellite platform; and the state-anchored districts. The industrial clusters in China in this paper refer to the Marshallian industrial districts. Marshallian industrial districts are usually found in sectors with a standard technology that produce final consumer goods. These sectors are generally positioned in the maturity phase of the product’s life cycle.

England in his work *Principals of Economics* (1920), he depicted three main features of this organizational structure: (a) a large skilled pool of local labour, (b) a myriad of supporting auxiliary industries (suppliers, technicians, financial, transport, marketing, etc), and (c) firm specialization in different processes and stages of production, resulting in positive external economies (Marshall, 1920: 267-271). As regards these three features in Chinese clusters, so far there is a large literature on the latter two features (Wang, 2001), and a growing body of work on Chinese migrant workers (Fan, 2004; Pun, 2005). However, the issue of labour within Chinese clusters has been under-researched thus far. Indeed this issue only received wider public attention when the labour shortage within China's most labour-intensive clusters became apparent around 2004, and raised far-reaching impacts for clustered firms and Chinese workers, as well as for MNCs and global buyers outside China.

Clustering has been seen as setting new frontiers for industrial development planning by offering new opportunities pursue a 'high road to development' (Pyke and Sengenberger, 1992), in the sense that industrial districts not only enable clustering firms to exploit dynamic competitive advantages deriving from the existence of external economies and collective action (Marshall, 1920; Schmitz, 1999), but also to provide better working conditions and wage levels for labour. Empirical studies about Italian industrial districts show that Italian industrial districts often offer a good standard of living for workers, with higher wages and employment levels, and higher rates of wage growth. These favourable conditions for workers were observed, even during the hard times after 2000 when many of the Italian SME based industrial districts confronted decline of employment in manufacturing sectors because of intensifying global competition (Muscio and Scarpinato, 2007: 774-775).

Unlike the innovative clusters which rely on innovative capability based on flexible specialization in Italy, China's manufacturing clusters have mostly competed on the basis of low price, cheap materials, numerical labour flexibility and low-cost labour. This situation has been extensively criticized, and suggestions for Chinese clusters to upgrade from the bottom of global value chains to upper levels has now become a hot topic among Chinese and international scholars (Humphrey, 1995; Schmitz and Nadvi, 1999; Gereffi, 1999; Wang, 2007).

Given the above, the purpose of this paper is to step further in exploring the labour dynamics of labour-intensive industrial clusters of China in recent years, in terms of changes in China's international competitive advantage. The paper aims to explore the following research questions:

- Why is clustering in China such a favourable model for boosting regional development and employment growth, especially in some places called "supply chain cities"?
- What are the basic circumstances and causes behind the labour pools formed within Chinese industrial clusters?
- What kind of structural changes have impacted upon workers in Chinese clusters? And the impact upon firms?
- What are the policy implications for government, firms, and workers?

To answer the above questions, we return to the title of this paper, which asks whether China's competitiveness in global markets will be based continually on low-wage labour, or could the development of innovative capability help to upgrade these clusters from their current dependence upon low-cost production capability?

The paper is organized as follows: the following section provides a theoretical context of clustering both in developed and developing countries. In Section 3, the features of Chinese clusters, including the formation, distribution, and local division of labour within them, will be discussed, with an emphasis upon labour dynamics. In order to further examine changes in patterns of labour supply and utilization, two case studies are presented - the Lecong furniture

cluster and the Wenzhou footwear cluster. Section 4 describes the trend toward industrial relocation of the clustered firms from the coastal clusters to the inner provinces, as well as its implication for both clustered firms and their workers, in terms of rising labour costs and the labour shortages in the leading industrial clustering areas. A general conclusion and discussion follow in the final section.

2. Theoretical context

Industrial clusters and regional development

The notion of industrial clusters is widely known and discussed but still a somewhat fuzzy concept. Firms and industrial activity in general tend to be spatially concentrated in certain locations and form clusters. The term “cluster” refers to a group of firms and associated institutions that are both geographically proximate and functionally related³ (Porter, 1990; Wang, 2007). Scholars have long been interested in the significance of such a phenomenon. This literature has grown and increasingly has examined the structure and competitive behaviour of clusters in developing countries (Ernst, 2000; Humphrey, and Schmitz, 2000; Bair and Gereffi, 2001).

Observation suggests, however, that different groups and different mixes of activities tend to be clustered together in different places (Gordon, 2000). In some places, clusters have an impact on the capacity of the member firms to innovate, thus enhancing their potential for productivity growth. There is growing emphasis on the importance of local knowledge flows, inter-firm collaboration and networks to build the innovative capabilities in those clusters (Ernst and Kim, 2002). But in other places, clusters’ impact on economic growth and innovative capability is very limited. Nevertheless, how the productive capabilities based on low-wage labour can be translated into innovative capability based on human capital has received little attention, although it seems essential to those developing nations to upgrade within global value chains (Humphrey and Schmitz, 2000, 2004).

On the other hand, industrial clusters are part of a dynamic environment in which each sector plays an important role in the region’s economic efficiency and prosperity. Clusters that compete nationally and internationally drive the regional economy and have a far greater long-term growth potential. In a sense clusters, especially export-orientated clusters, can promote local workers’ incomes and purchasing power and, in turn, boost long-term development by stimulating local effective demand (SANDAG, 1998). As they compete at a global level, opportunities for growth in these industrial clusters are not constrained by the limited size of the local market, but expand far beyond it to the global market. In addition, export-orientated businesses bring outside dollars into the domestic region, and these dollars drive the regional economy as firms buy products and services from other sectors in the domestic market. Workers spend their paychecks locally, at supermarkets, restaurants and the like, which ensures long-term economic growth in the area. Therefore, the ability to create wealth and high-quality jobs throughout the entire economy is dependent on the health of these industrial clusters and the good working conditions and wages of their labour force.

However, clusters in developed countries and developing countries present very different features and hence raise different policy issues. Innovative and dynamic clusters in developed countries tend to specialize in higher value-added niches and help increase information flow and the likelihood of innovation and new business spin-offs, downstream, upstream and in related industries, while clusters in developing countries tend to serve the lower end of the market where competitiveness is determined by price. In the latter case, entrepreneurs seldom share

³ This definition of clusters is consistent with the definitions adopted in the literature of business economics, innovation studies, and economic geography. For example, Porter (1998, p. 18) defines clusters as “geographic concentrations of interconnected companies and institutions in a particular field.” In a special issue of *World Development* on clustering and industrialization, Schmitz and Nadvi (1999) use both sectoral and spatial concentrations of firms to define clusters.

information or discuss common problems that they face; levels of trust may not be very high, leading to cut-throat competition. In such a case, only by the careful adoption of coherent policies and strategies can a cluster upgrade, avoiding the “low road” and instead seeking the “high road” to development. “Clustering matters in developing countries” (Humphrey and Schmitz, 1995: 31), however, public sector interventions play an important role as far as labour markets are concerned, as Wolfe and Gertler (2004: 1074) concluded:

“Public interventions that seem to have the most effect in seeding the growth of a cluster are ones that contribute to the development of the asset-base of skilled knowledge workers.” (Wolfe and Gertler, 2004: 1074).

The growth experience of local clusters in the Third Italy is valuable for clusters in China. The following attributes of clusters are summarized from a useful international debate on the Italian experience: geographical proximity; sectoral specialization; a predominance of small and medium-sized firms; close inter-firm collaboration; inter-firm competition based on innovation; a socio-cultural identity which facilitates trust; active self-help organizations; and supportive regional and municipal government (Humphrey, 1995). More importantly, transnational linkages are often attributed as the main driving force of local industrialization in clusters in developing countries. The policy emphasis of local development has shifted from mere market deregulation to instead actively promote the construction of localized backward supply chains and enhancement of knowledge spill-overs between foreign agents and local producers (UNCTAD, 2001).

Labour agglomeration and labour shortages

The research topics of industrial clusters and labour are closely interrelated. Studies in the clustering literature that address labour and employment have approached the issue from different angles including the local division of labour (Pyke and Sengenberger, 1992), labour attraction and local mobility that channels knowledge transfers or spillovers between clustered firms, thus contributing to growth and competitiveness (Combes and Duranton, 2001; Fosfuri et al., 2004). The specialized clusters, called job catchment areas [*bassin d’emploi*] by Auer et al. are entities which are not recognized in labour law, nor are they territories designated for anticipating restructuring, or tackling unemployment. Such poles should be built around innovation. Their comparative advantage in social terms would lie in better occupational training and in retraining schemes that could also become a focus of social promotion (better jobs, higher wages, better social protection scheme associated with the job, helping people to obtain high-level qualifications, fostering mobility, hiving off various functions and creating specialized firms), reflecting the demand for retraining and redeployment that is created by off-shoring and restructuring (Auer et al., 2005).

In terms of “labour shortage”, indeed we should put the term in the unique context of China as a vast developing and transition country in the increasingly global economy. According to the neoclassical models of supply and demand, labour shortages are “*a market disequilibrium between supply and demand in which the quantity of workers demanded exceeds the supply available and willing to work at a particular wage and working conditions at a particular place and point in time*” (Barnow, Trutko and Lerman, 1998:7). This definition of “labour shortage” stresses the shortfall in supply relative to demand at the prevailing wages and conditions. However, this paper argues that the labour shortage which appeared in eastern and southern China is rather a relative and structural shortage due to low wage rates but not an absolute shortage due to a gap between labour supply and demand.

The notion of “*decent work*”, as well as “*decent work deficits*”, as proposed by the International Labour Organization (ILO, 1999), provides another helpful conceptual framework as well as policy tool with which to build a bridge between the “labour pool” and industrial clusters in China and to include the perspective of the quality of employment that is being offered to workers within clustered firms. The essence of decent work addresses the promotion of good quality and quantity of jobs through employment generation, respect for rights at work,

fostering opportunities for social dialogue, supporting the organization of workers to gain voice and representation and ensuring social protection for all workers including in the informal economy (ILO, 1999; and reinforced by the ILO 2008 Declaration on Social Justice for a Fair Globalization).

Following China's reform of the household system (*Hukou*) and deregulation of rural-urban migration in the late 1980s, large numbers of farmer-turned-migrants moved from rural to urban areas to find jobs (Fan, 2004) and became the majority of the low-paid workers within Chinese clusters. Among these, women migrants (accounting for approximately one-third of rural migrant workers) went to work predominantly in light manufacturing factories, producing goods such as apparel and textile, toys and electrical products. Meanwhile, male migrant workers were mostly hired in the harshest industrial sectors such as construction, smelting, machine tool production, auto manufacturing. From the standpoint of decent work, most of these rural migrant workers belong to a "vulnerable group" (*Ruoshi Qunti*), which means that they are disadvantaged, low-paid, lacking social protection, often with delay (or non-payment) of their salary and without the identity of citizenship. Therefore, the question of how to promote decent work in China, especially in these labour-intensive clusters, may be related to the labour shortages experienced in eastern and southern China, and will surely become a major emerging topic for research in China.

3. Features and dynamics of labour-intensive clusters in China

Manufacturing clusters are pervasive in China in sectors such as apparel, footwear, furniture, TV sets, home electrical appliances, toys and motorcycles, most of which are labour-intensive sectors. The labour-intensive clusters analyzed in this paper involve such labour-intensive sectors. The literature has highlighted the success of China's clusters at the grassroots⁴ and has analyzed the factors contributing to their impressive economic performance. People are looking for the real story behind China's "supply chain cities", or as newspapers have described them, these "niche cities":

"Buyers from New York to Tokyo want to be able to buy 500,000 pairs of socks all at once, or 300,000 neckties, 100,000 children's jackets, or 50,000 size 36B bras. Increasingly, the places that best accommodate orders are China's giant new specialty cities. The niche cities reflect China's ability to form 'lump' economies', where clusters or networks of businesses feed off each other, building technologies and enjoying the benefits of concentrated support centers." (Barboza, 2004).

This general characterization does not capture the whole range of industrial agglomerations existing in China. There are other clusters in the auto industry and information and communications technology (ICT) industry, as well as cultural and creative industries. Furthermore, economically significant agglomerations of SMEs are found in the metalworking industry, as in Tangshan or in Handan (Hebei Province, northern China). These are very heterogeneous clusters and thus it is beyond the scope of this paper to discuss labour and employment in the full and diverse range of clusters found in China.⁵

3.1 Geographical distribution of China's clusters

The extreme diversity among China's regions adds a geographic dimension to the process of capability building (Rawski, 2005). Foreign investment, industrial exports, and expansion of

⁴ Grassroots, means the local peasant-entrepreneurs, like the globally distributed Wenzhou businessmen, who were born in local places as peasants and don't have much high-education, but are very successful in business. Noted by author.

⁵ In a debate on the Italian model of industrial districts, Markusen (1996: 297) rejected the dominance of the Marshallian industrial districts in regional development. She identified three additional types of industrial districts, that is, the hub-and-spoke districts; the satellite platform; and the state-anchored districts. The industrial clusters in China in this paper refer to the Marshallian industrial districts or the Italian model of industrial districts.

manufacturing capability have concentrated in China's dynamic coastal areas, creating numerous labour-intensive clusters largely in provinces such as Guangdong, Zhejiang, Jiangsu and Fujian, most of which are located in east-south coastal areas of China.

Several different methods have been used to define and measure Chinese clusters, including quantitative methods such as the index of Location Quotient, which is directly related to industrial output and employment, or using a combination of qualitative and quantitative methods. Nevertheless, we consider the most significant characteristics of a cluster to be geographical proximity and industrial linkages (Wang, 2001; Wang, 2007).

Table 1 indicates the number of labour-intensive clusters in 15 Chinese provinces, which, according to our data calculation and research, hosted more than 90% of labour-intensive clusters in China in 2006. Among the 536 industrial clusters in these 15 provinces, the average scale per cluster included 923 enterprises, 5 billion *Yuan* (approximately US\$ 0.62 billion) sales revenues, and 51,883 workers.⁶ The scale and size of each cluster differed across the regions geographically.

Table 1: Geographical distribution of labour-intensive clusters in 15 provinces of China

Label1	Provinces	Number of clusters	Population of the province in 2005 (Unit: million)	GDP of province (Unit: 100 million <i>Yuan</i>)	GDP Ranking in China
	Zhejiang	136	48.98	13438	4
	Guangdong	73	92.48	22367	1
	Jiangsu	70	74.75	18306	3
	Shandong	53	91.94	18517	2
	Fujian	45	35.35	6569	9
	Hebei	37	68.51	10196	6
	Henan	25	93.80	10587	5
	Hunan	25	63.26	6511	11
	Hubei	24	57.10	6520	10
	Sichuan	15	82.12	7385	8
	Jiangxi	9	43.11	4057	14
	Anhui	7	61.20	5375	13
	Liaoning	7	42.21	8009	7
	Heilongjiang	6	38.20	5511	12
	Shaanxi	4	37.20	3676	15
	Total number	536	930.21	147024	--

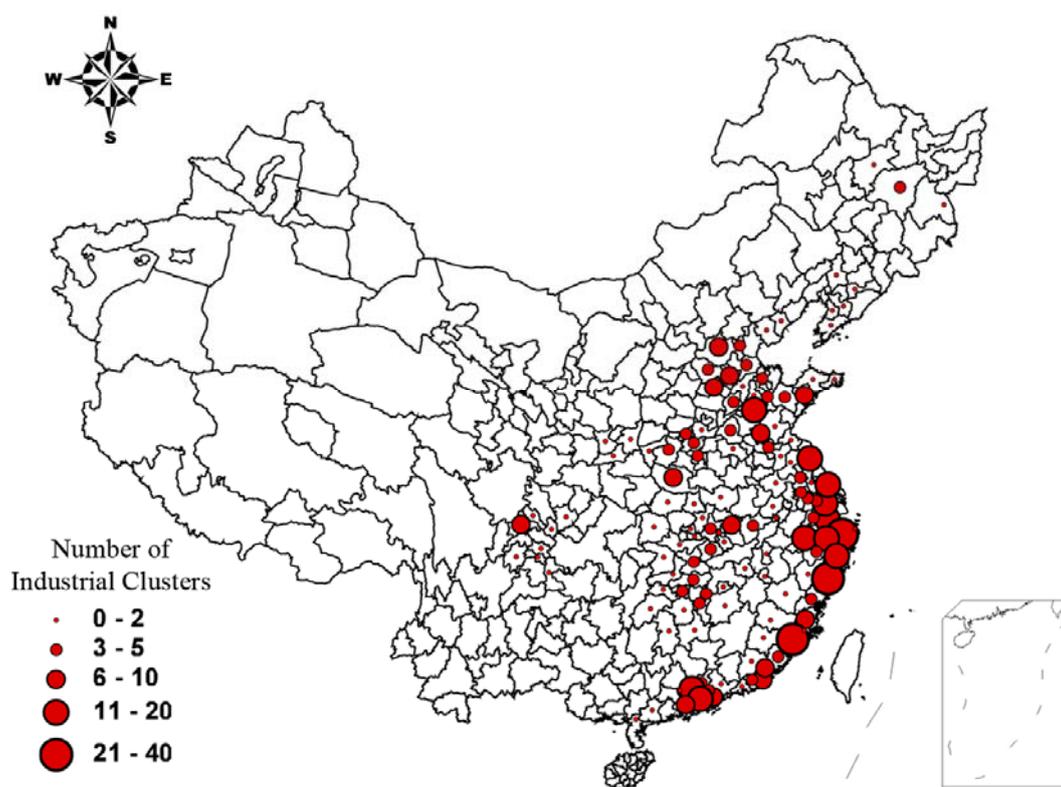
Sources: Population and GDP data are from China Statistical Yearbook 2006; the numbers of clusters are according to authors' calculation and research.

As seen in Table 1, labour-intensive clusters have been unevenly distributed across the 15 selected provinces and remain concentrated in the provinces with higher GDP. Zhejiang Province have hosted some 136 industrial clusters, followed by Guangdong, Jiangsu and Shandong, with 73, 70 and 54 industrial clusters (districts), respectively. Demonstrating poor economic performance and lagging behind other provinces in economic reforms, the inland provinces such as Anhui and Shaanxi had only a few industrial clusters (districts).

⁶

Data on industrial clusters is limited. Our data collection ranges from 1999 to 2006 through using reports, government documents, etc.

Figure 1: Geographical distribution of industrial clusters in China



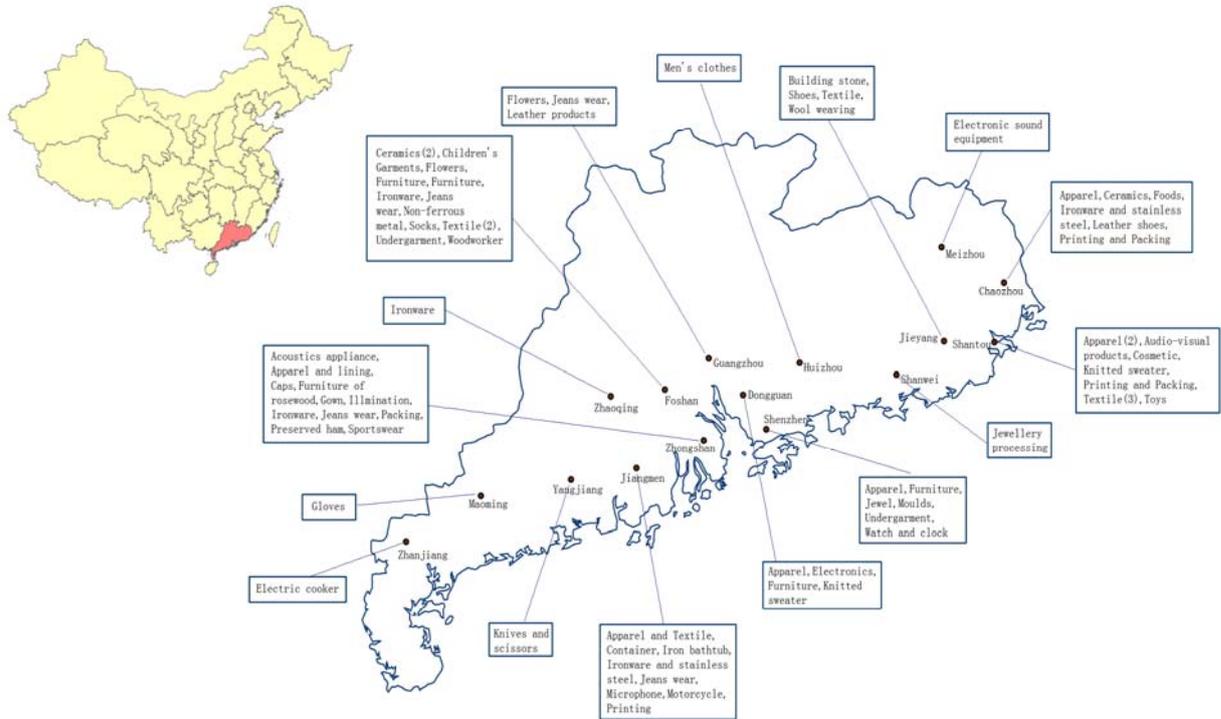
Source: Author's calculation based on survey data.

The geographical distribution of industrial clusters in Zhejiang, Jiangsu and Guangdong provinces of China is presented in Figure 2 and Figure 3, which show the production sites for most of the low-cost, labour-intensive products usually associated with Chinese export industries, such as apparel and textiles, toys, bicycles, shoes, etc.

In terms of labour, Guangdong Province has accommodated the largest migrant workforce from other provinces of China. According to the Fifth Population Census of China conducted in 2000, there were 15 million migrant workers from other provinces working in Guangdong, which accounted for 17.4% of the total population of 86.42 million in Guangdong Province.⁷ This large number of workers was distributed mainly in the labour-intensive clusters (see Figure 2).

⁷ Development and Reform Commission of Guangdong Province, available at: http://www.gddpc.gov.cn/common_file/show_file.asp?id=14369&lanmu=39 [27 Nov. 2009].

Figure 2: The distribution of clusters in Guangdong Province



Source: Author calculation from various sources.

It is worth noting that 60% of the migrant workers in Guangdong province at that time were young women between 18 and 25 years of age, who are referred to as “Dagongmei”(Pun, 2005), or “new rural daughters” (Zhang, 2007) in the literature on China’s migration. According to Pun Ngai (2005),

“Cheap labour and low prices for land are not the only reasons for the current relocation of transnational capital to China. Diligent, well-educated Chinese women workers who are willing to toil for twelve hours each day, who are suitable for just-in-time global production, and who are potential consumers for global products are all factors that contribute to tempting transnational capital to relocate to China.”

—Pun Ngai (2005: 4).

This is another issue which lies beyond the scope of this paper, in terms of the massive rural migrant workers and their social lives. In contrast, the situation is different in Zhejiang Province, which has been home to the largest number of clusters in China. Small and medium-sized firms, mainly from former rural households, are clustered in neighborhoods, usually around a marketplace, for their production. Starting with simple manufacturing products such as food, apparel, footwear, and ball-pens, and skill acquisition via learning by doing, the rural, grassroots firms in Zhejiang Province have become enterprises creating brand-name products at home and broad.

Global Perspective

The emergence and development of clusters in China should be understood above all from the global perspective. It is important to pay more attention to the concentrated dispersion caused by offshore outsourcing (Guerrieri and Pietrobelli 2004). It is China's participation in the global economy that has led to the rise of these clusters. Chinese clusters are readily subjected to the fragmentation of production associated with the "global factory" concept related to the global shift of international manufacturing (Dicken, 2003), as well as the offshoring of global jobs (Gereffi, 2006) from advanced economies.

The emerging clusters of firms in China have been increasingly involved in the international fragmentation of production. This fragmentation of production as well as the know-how in different industrial activities carried out by firms in different places, have brought opportunities for learning and upgrading (Schmitz and Knorringa, 2000). Given the rich components of any single cluster, it may either occupy a single segment (e.g. manufacturing of parts and components in a particular industry) or cover multiple segments (R&D, completion of a high-value-added product, marketing) of a value chain anchored to a locality (Chen, 2006). Generally speaking, Chinese production has so far been located primarily at the bottom of global value chains, typically involving assembling, processing, and manufacturing.

Local Perspective

The location of existing manufacturing capacities in China refutes the conventional wisdom that low labour costs are the sole source of manufacturing advantage. While the impact of global outsourcing has been important, local agglomeration economies also matter, as well as the path-dependent nature of the evolution of localized clusters. The Marshallian "labour pool" effect can best be seen within China's clustered regions.

In a context of increasing integration with global networks, the origins of local clusters in China differ from case to case, reflecting the complex transition of China's reform. The development process of many clusters in coastal China began in the 1980s but each cluster displays distinctive features that have contributed to its take-off. Such clusters serve both domestic and foreign markets (Wang, 2001).

In a big country with a population of more than 1.3 billion, labour-intensive cluster regions not only open the door of China to the rest of the world, bridging and restructuring global-local economic ties, but greatly augment Chinese labour market challenges.

The tension between localization and globalization is shown in each cluster's development. Capital investments originating from both Hong Kong, China as well as Taiwan, China have accounted for nearly two-thirds of FDI received in China and was the initial impetus to the formation of clusters in Guangdong Province and Fujian Province. However, many clusters in Zhejiang Province originated from the economic strength of local peasant-entrepreneurs and have developed by consanguinity, affinity and geographic ties with Chinese characteristics. Due to the combined effects of global outsourcing for low-priced land and labour and peasant-entrepreneurs, many labour-intensive clusters have thrived from the EPZs located in coastal opening cities, as well as many inland villages and small towns where local peasant-entrepreneurs have been very active in starting-up their own businesses. Illustratively, a hundred clusters of textile and apparel industry production have grown along coastal townships and are export-oriented.

In Guangdong Province, hundreds of export-oriented "specialty towns (industrial clusters)" have emerged. Since the policy reforms⁸ and early liberalization, such regions started their

⁸ Policy advantages of reform in China's coastal areas usually include tax exemption and favorable land use advantages and infrastructure, relatively loose labour regulation, and similar measures, all in favour of attracting new investment, especially foreign direct investment (FDI). In the early years of China's economic reform, only those Special Economic Zones, like Shenzhen, Zhuhai, Xiamen, Shantou, and Hainan enjoyed such policy advantages; afterwards, most of China's inland cities were opened to the world market and such policy advantages become all-pervading.

business with “processing and compensation trades” (*Sanlai Yibu*) in the late 1970s. Firms inside such labour-intensive clusters usually provide processing trade or supply to OEM global buyers and rely on the global market. Guangdong’s initial development relied on clusters of local and overseas firms that employed unskilled, mainly immigrant workers and were funded by foreign capital (mainly from Hong Kong, China and Taiwan, China), and firms created by local entrepreneurs. These clusters have made Guangdong and, more specifically, the Pearl River Delta, a region that has achieved one of the fastest growth rates in the world, with a high degree of foreign trade dependence. The net GDP of Guangdong Province grew exponentially from RMB 24.965 billion *Yuan* in 1980 (approximately US\$ 16.64 billion)⁹, to 2237 billion *Yuan* (approximately US\$ 279 billion) in 2005.

In 2007, nearly 95% of the production values in Zhejiang Province came NOT from SOEs or FDI, but rather, from local private peasant firms with the help of Shanghai engineers. Take the case of Wenzhou, the Shoe Capital of China, as an example, which was described by Cody (2006):

“Wenzhou people only want to be the boss...you will never see a Wenzhou person in the factory making a shoe. They would rather be the head of a small company than a worker in a big one.”(Cody, 2006: 30).

This quotation reflects the strong business spirit of local entrepreneurship in Zhejiang Province. This leads us to expect that, at least in Wenzhou city, the majority of workers in clustered firms are not local, but instead, migrants from other provinces, although most of the employers are local peasant entrepreneurs.

Box 1: The formation of apparel clusters in Guangdong and Zhejiang

Firms in the Dalang wool spinning cluster in Dongguan, Guangdong Province, and in the Ningbo apparel cluster in Zhejiang Province (Tan, 2007), respectively have received global outsourcing orders from firms in Shanghai and Hong Kong, China and dispersed their orders to supplier firms. The local division of labour between clustered firms largely emerged in this way.

After the 1980s, the apparel industry in East Asia gradually lost its cost advantage and began to transfer overseas. At the same time, mainland China started its reform process and open door policy, so the Pearl River Delta became the export-oriented area of apparel firms based in Hong Kong, China. The main pattern of participation in global production networks is by “receiving orders from Hong Kong, China or Taiwan, China producing in the mainland, transiting through Hong Kong, China, and selling overseas” (Chen, 2006). The formation of the Dalang textile apparel cluster benefited from accepting materials from firms in Hong Kong, China for processing.

In 1979, the first woolen factory based in Hong Kong, China was established in Dalang Town, and many farmers started to work there. Some of these workers accumulated capital to start their own business and set up various mills around the town. Thus, the division of labour of “receiving orders from Hong Kong, China and producing in Dalang” came into being. The woolen mills did not only receive orders from Hong Kong, China but also set up shops, which finally formed a specialized sweater market. Thereafter, fabric and woolen firms began to set up their sales bases. Nearly 3,000 woolen firms operated in this cluster, employing over 160,000 workers, producing over 250 million sets of sweaters a year and supplying 30% of the domestic market in 2005. The total output value of Dalang wool and sweater industry that year was RMB 8.4 billion *Yuan* (approximately US\$ 1.04 billion)¹⁰, and export values surpassed US\$ 490 million, with products exported to Europe, America, Russia, East Asia and South Asia. Dalang has received the title of “China’s famous sweater township” by the China Wool Textile Association (CWTA).¹¹

Distinct from the Dongguan cluster originating from Hong Kong, China, the Ningbo apparel cluster originated from Shanghai. “Apparel stores in Shanghai, apparel factories in Ningbo”, as the Chinese phrase goes. The origin of the Ningbo apparel cluster is due to the township apparel start-ups, which mostly have had the experience of processing for the state-owned firms in Shanghai. However, after China’s admission to WTO, the Ningbo apparel cluster rapidly improved its global market share and became an export-oriented sector. In 2004, the Ningbo apparel

⁹ The exchange rate between US\$ and RMB in 1980 was 100:150, while in 2005 was 100:807.9

¹⁰ According to Bank of China, the exchange rate between US Dollars and Chinese RMB on Dec. 30, 2005, was 100:807.09, www.boc.cn [27 Nov. 2009].

¹¹ Brief introduction and primary data for Dalang wool and sweater cluster, “Dalang: China’s Famous Sweater Township”, http://www.cwta.org.cn/mz_4.htm [27 Nov. 2009].

cluster exported RMB 15.2 billion *Yuan* (approximately US\$ 1.84)¹², about 74% of the total textile productive values of Ningbo city (Tan, 2007).

At the end of the 1970s and the beginning of the 1980s, there was once a popular saying in the Shanghai apparel sector, “work depends on the bumpkins”. These firms ran the sales and accepted orders from overseas, and subcontracted with the rural firms, factories and family workshops. With the local governments’ support, many township firms and the local state-owned firms, like Youngor, Shanshan and Romon, had smoothly transformed to private firms, and implemented the “joint stock system reform”¹³ in the early 1990s (Tan, 2007).

In Ningbo, 439 of the total 2,000 apparel firms in the cluster in 2004 reached the annual revenue of RMB 5 million *Yuan* (approximately US\$ 0.6 million in 2004), which is the minimum above designated. Among these, the national brand-name firms have numbered less than 40. Most of the firms are engaged in processing work. The small processing firms have generally been unable to directly receive large orders from foreign buyers, so they mainly receive processing orders from brand firms, foreign trade companies and the nearby processing firms via personal relationships. But the large-scale processing firms have already founded their own foreign trade companies with export rights. So these large-scale processing firms may not only directly accept processing orders, but also trade directly. Even famous brand firms like Youngor, Shanshan and Romon similarly have undertaken the massive processing service. These brand firms have generally received large orders, and have directed these through their own outsourcing factories, that have generally numbered over 20. In order to guarantee quality, these firms have sent their own technicians to the processing factories.

Around certain large firms in Ningbo, it was easy to find dozens of processing firms. For instance, the apparel firm with the trademark of “Orient-hongye” in Ningbo, could count upon more than 30 embroidery factories, 20 printing and dyeing plants and 10 laundering factories within a five kilometers radius. The bosses and managers in this region tended to know each other, so they often needed no official contract, but instead made deals via telephone call or social activity. Therefore, the transaction costs could be reduced and the transaction process could be shortened, thus reducing information loss and raising reaction speed to market.

Many similar examples could be found of a detailed local division of labour between clustered firms, such as those labour-intensive clusters of Ningbo and Dongguan cities. In another case, in Cangnan County, south-west of Zhejiang Province, a label and badge cluster had emerged. Local producers had divided the production procedures into sets of independent but inter-related activities. In this way, they coordinated all activities in the production process, from the raw material to the finished product, including the design, melting, writing, engraving of the mould, plate copying, hammering, drilling, making the needle, assembly and packing. This entire process was undertaken by over 800 independent firms and workshops. All semi-manufactured goods were exchanged through the market which formed the entire local production system which was responsible for producing 89% of the country’s cafeteria magnetism cards, 91% of the unit credentials, most of the famous white spirits bottle marks and packing boxes in China, even the labels and badges for 340,000 US policemen, the UN peacekeeping force and Chinese troops in Hong Kong, China.

The role of government and business associations in cluster development

Both central government and provincial (local) government in China consider clustering to be part of national or local development strategies, in terms of attracting investments, increasing exports, and creating employment opportunities.

In the beginning of 2006, China’s central government outlined a strategic decision of building China towards an “Innovation-Oriented Economy”. Among the key themes of this strategic decision were highlighted, boosting local firms’ indigenous innovation capability and upgrading industrial production to more knowledge-intensive and higher value-added sectors. The term “industrial cluster” appeared four times in the final report of China’s National 11th Five-Year Science and Technology Plan, which stresses the cultivation of high-tech and

¹²

According to Bank of China, the exchange rate between US Dollars and Chinese RMB on Dec. 30, 2004, was 100:827.65, www.boc.cn [27 Nov. 2009].

¹³

In terms of the “Joint-stock system reform” of China, please refer to the introduction from Reform magazine, 2007-06-06, http://www.reform.net.cn/book_r.php?bid=6&tid=37 [27 Nov. 2009].

innovative clusters based on China's current 54 national high-tech industrial parks (China State Council, 2006).

Local governments tended to play a significant role in promoting cluster development via diversified cluster policy. For instance, in the case of Guangdong Province: by the end of 2007, there were 229 "specialty towns", or "industrial clusters", in China and 108 "technology innovation platforms" set up with special funding from Guangdong Provincial government. Such a localized cluster policy not only subjected all the local clustering firms to fierce global competition, but has also helped firms to improve their technological capability and innovative capacities.

Business associations in clusters have acted as a bridge between the government and firms, usually by playing another kind of important role of enlarging the influence and enhancing the reputation of the clusters. The business association passed the policy to firms, and in the other direction, also transmitted the requirements of firms to government. The business association has held lectures on learning techniques, introducing equipment, and has also provided information to its member firms. The business association has held international exhibitions with local governments, helped to penetrate international markets, and introduced their member firms to other companies in order to learn from them.

Cluster research and study in China: what's new?

It is puzzling that the number of academic studies on Chinese clusters falls far below the relative significance of these labour-intensive clusters in terms of worldwide industrial output. Among the large number of research studies on industrial clusters around the world, relatively few have examined Chinese clusters until recently.

In order to reinforce communication between researchers across different disciplines and countries, and to improve the long-term development of Chinese industrial clusters, a group of Chinese scholars joined together in order to organize the *1st International Conference on Industrial Clustering and Regional Development* which took place in the City of Hangzhou at Zhejiang University in 2004. Following that first conference, six other conferences have been held respectively in Guangzhou, Jinan, Shanghai, Beijing, and Guangzhou. These conferences have dealt with issues such as what is a cluster, where clusters are located, how to boost clustering and how to develop Chinese cluster research and policy.¹⁴ These annual conferences have attracted far-ranging participation primarily among Chinese scholars but also international scholars from the fields of economics, geography, sociology, management science, and public affairs. These conferences contribute to both academic research and policy design as regards China's cluster development.

How to learn, innovate and upgrade from OEM to ODM (Original Design Manufacturing) and OBM (Original Brand Manufacturing) in developing countries, particularly in China, has been a great challenge for firms, researchers and governments. On the one hand, being an OEM supplier involves labour-intensive production and dependency upon orders from buyers, while on the other hand OBM stimulates knowledge-intensive and indigenous innovative capability – it may be difficult for supplier firms to find a balance between both. This challenge is shared by supplier companies in other developing economies such as India, East Asia, and Latin America.

3.3 Labour dynamics within Chinese clusters

As described earlier, clusters in China are highly specific in terms of location, emergence, and path dependence. The agglomeration of labour is also embedded within the geographical agglomeration of clustered firms in China. The thickly dotted clusters distributed along China's

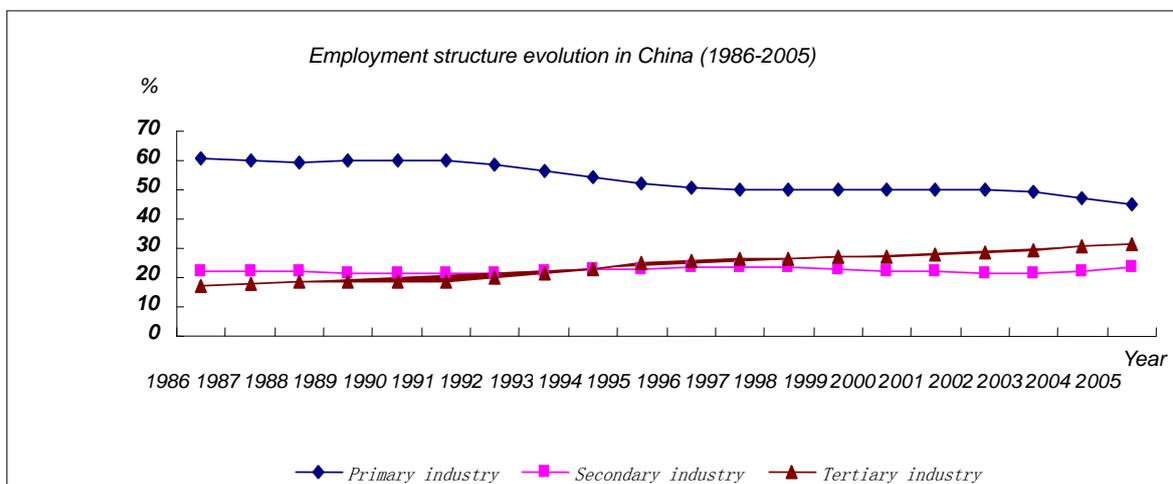
¹⁴ The Fifth International Conference was hosted by Peking University, Beijing, July 14-17, 2006 and drew more than 350 participants, including domestic scholars, graduate students, government officers, enterprise managers, and invited foreign scholars, to discuss the topic of "Innovation and upgrading of China's industrial clusters". Many presenters considered that learning, innovating and upgrading from OEM to ODM and OBM along global value chains is one of the possible ways for China to break through the low-cost, low price, "race to the bottom" cluster development pattern.

coastal areas (see Figure 2 and Figure 3) has not only provided the world market with massive consumer products but has also provided nearly two-thirds of China's labour-intensive employment. This paper focuses on the most typical clusters in Zhejiang and Guangdong provinces, with the aim of identifying the labour dynamics that lie behind the industrial dynamics of clustered firms. In doing so, we must place the labour dynamics of clusters in the broader context of the evolution of China's employment structure.

Employment Structure evolution of China as a whole

China is experiencing rapid industrialization and mass urbanization, with the employment structure evolving under the Theorem of Petty & Clarke, which states that the labour proportion of primary industry will continually decrease, while in secondary industry it will increase to some extent and thereafter decrease. Meanwhile, tertiary industry will gradually and continually rise. The evolution of China's employment structure over the past two decades has followed a very similar trajectory to the Theorem, as shown in Figure 4.

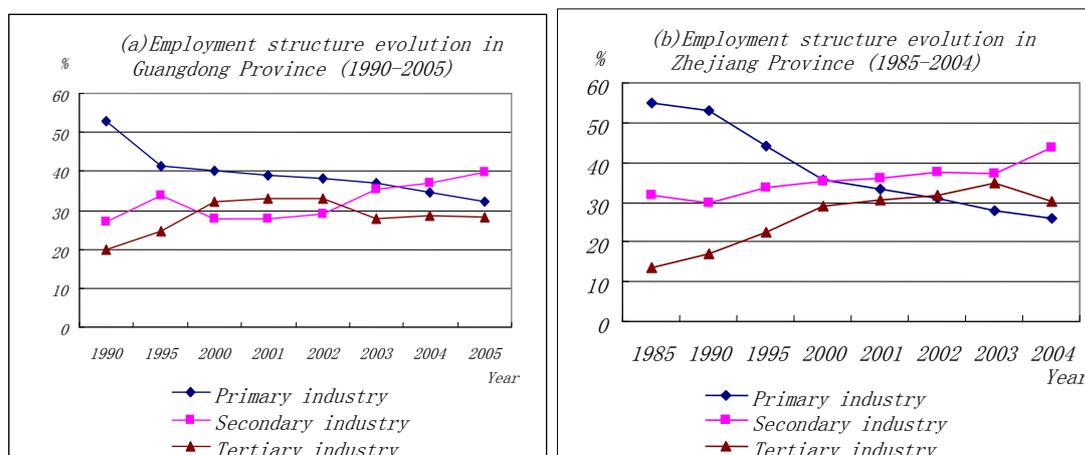
Figure 4: Employment structure evolutions according to industrial sectors (1986-2005)



Source: China Labour Statistical Yearbook (2006)

In Guangdong and Zhejiang provinces, where most of China's labour-intensive clusters are located, the employment structure evolution matches the general dynamics of China, although the trends of secondary industry based on clusters in Guangdong and Zhejiang have grown much faster than the Chinese average (See Figure 5 (a) and (b)).

Figure 5: Employment structure evolution in Guangdong Province (1990-2005) and Zhejiang Province (1985-2004)



Source: Guangdong Statistical Yearbooks (2006) and Zhejiang Statistical Yearbook (2005).

Profile of employment in China's labour-intensive clusters

In Table 2, we present the approximate employment data within different clusters in Zhejiang (ZJ) and Guangdong (GD) provinces. From Table 2 we can see that the average number of firms in ZJ Province and GD Province are comparable, with the former totaling 3550 firms and latter including 3263 firms. With regard to total employment, GD clusters accommodated more workers (193,333 workers for each cluster on average) than ZJ clusters (138,763 workers for each cluster on average). By taking the average output/per labour of ZJ and GD into consideration, we find that GD clusters were more productive than ZJ, with the Average output/per labour (RMB 1256.90 Yuan, approximately US\$ 157) nearly twice of that in ZJ (RMB 672.91 Yuan, approximately US\$ 84).

Table 2: Average number of firms and employment in Zhejiang and Guangdong clusters

Location	Industry sectors or primary products	Number of clustered firms	Total Employment	Output (Unit: Million Yuan, Year)
Zhejiang Province				
Wenzhou	footwear	4500	400,000	280 (2002)
Ningbo	men's clothes	2000	300,000	135 (2001)
Zhili	children's clothes	5700	120,000	35 (2002)
Yueqing	low voltage apparatus	1000	86,000	28 (1999)
Haining	leathers	4000	60,000	39 (2000)
Datang	socks	8700	52,000	130 (2002)
Shengzhou	neckties	2000	50,000	80 (1999)
Wenzhou	cigarette lighter	500	42,100	20 (1999)
<i>Average size of ZJ clusters</i>		<i>3550</i>	<i>138,763</i>	<i>93.375</i>
<i>Average output/per labour in ZJ</i>		<i>672.91(Unit: Yuan)</i>		
Guangdong Province				
Humen	women's clothes	1200	350,000	120 (2005)
Shunde	home appliances	8000	300,000	800 (2006)
Dongguan	toys	3082	300,000	140 (2002)
Chenghai	toys	2300	100,000	78 (2002)
Lecong	furniture	3500	70,000	300 (2002)
Guzhen	lamps and lanterns	1500	40,000	20 (2004)
<i>Average size of GD clusters</i>		<i>3263</i>	<i>193,333</i>	<i>243</i>
<i>Average output/per labour in GD</i>		<i>1256.90(Unit: Yuan)</i>		
<i>Total average size of ZJ and GD</i>		<i>3427</i>	<i>162,150</i>	<i>157.5</i>

Source: Collected and calculated by the authors from various sources.

Labour shortages: what has happened to labour-intensive clusters and the labour force?

Starting from around 2002, factories in Southern China have been facing difficulties in securing a sufficient number of workers, and the shortage has rapidly intensified since the spring of 2004 (Inagaki, 2006). At that time, media over the world reported on China's labour shortage and its impact upon the labour-intensive firms, especially around the Pearl River Delta (PRD) regions.¹⁵ This labour shortage was comprised mainly of young women workers and felt most acutely among apparel-related manufacturers (Inagaki, 2006).

“That kind of behavior (the labour shortage) was unheard-of as recently as three years ago, when millions of young people were still flooding into booming Shenzhen searching for any type of work”.

—The New York Times

(“Labour Shortage in China May Lead to Trade Shift”, 2006/04/03).

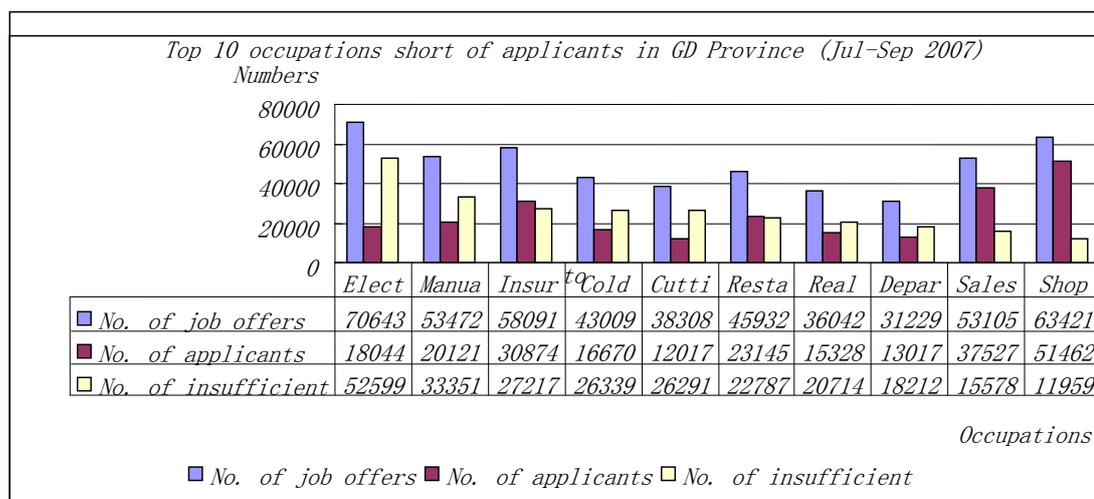
It may seem difficult to explain the labour shortages, in the context of China's huge population and massive migration of workers from rural to urban areas. According to the statistical analyses from the Guangdong Bureau of Labour and Social Security, the supply and

¹⁵ China Daily, 2004-08-25, “Labour shortage puzzles experts”, http://www.chinadaily.com.cn/english/doc/2004-08/25/content_368566.htm [27 Nov. 2009]; The New York Times, 2006-04-03, “Labour Shortage in China May Lead to Trade Shift”, <http://www.nytimes.com/2006/04/03/business/03labor.html?pagewanted=1&r=1&th&emc=th> [27 Nov. 2009].

demand of occupations in Guangdong Province in the 3rd quarter of 2007 proved that labour shortages in PRD areas were severe. According to a 2005 survey conducted in Guangdong Province, although a third of the manufacturers there had tried to solve the labour shortage by raising wages and benefits, overall demand still exceeds supply by more than one million job vacancies.

The top ten occupations short of labour forces are shown in Figure 6. The job opening rates ranged in 2007 from 1.23 to 3.92: electronic parts manufacturing workers (job opening rate: 3.92), manual workers (2.66), insurance service workers (1.88), cold processing technicians (2.58), cutting/sewing workers (3.19), restaurant workers/chefs (1.98), real estate clerks (2.35), departmental managers (2.40), sales man (1.42), and shop clerks/cashiers (1.23).

Figure 6: The top ten occupations short of applicants in GD province (July to September, 2007)



Source: Guangdong Bureau of Labour and Social Security, Analysis of the Supply and Demand of Occupations in Guangdong Labour Market in July to September, 2007.

What had happened to China’s labour market? How had a labour shortage of more than 150 million migrant workers appeared? Why was this taking place in Guangdong Province, which used to be the place where millions of young people came from all around the country in search of any type of work, and where firms suddenly could not recruit enough low-cost labour?

Population economists tend to ascribe the labour shortage to the so called “structural shortage”, which shed light on the shortage of skilled labour; and the declining of “population dividend”, which has much to do with the structural changes of China’s population in its fast-paced process of economic development. Particularly, the most frequently-cited explanations with regard to the labour shortage in eastern and southern China include the following (Inagaki, 2006):

- ① Low wages and adverse working conditions of factories;
- ② The sharp rise in demand for labour in the manufacturing sectors;
- ③ The economic development model of China is reaching a turning point;
- ④ The rise of job opportunities in the services sector and the rising preference among workers for jobs in services;
- ⑤ The spread of mobile telephones is facilitating communication and the exchange of information among workers;

- ⑥ The decline of the young population, due to the “One Child Policy” of China; and
- ⑦ The increasing popularity of agriculture, given the rise of incomes.¹⁶

Among the above factors, “low wages and adverse working conditions” ranked first, which has much to do with the extensive form of economic development that has been pursued, as well as the social transition process taking place in China. It has been commonly believed that China has an infinite supply of cheap labour, regarded by neoclassical economists as a “comparative advantage”; however, the labour shortage appears to challenge what was once held as conventional wisdom.

According to our observations on China’s industrial clusters, we argue that the labour shortage which appeared in eastern and southern China was rather a relative and structural shortage because of low wage, lack of training and promotion, and the decent work deficit, but not an absolute shortage because of the gap between labour supply and demand.

3.4 Decent work deficits within labour-intensive clusters

A survey conducted by the National Bureau of Statistics of China estimates that more than 140 million rural migrant workers had either migrated or were planning to migrate into cities to work, accounting for 15.5% of the total 900 million farmers in China (National Bureau of Statistics of China, 2005). Most of these migrant farmer workers came from western and central provinces of China, such as Henan, Guangxi, Sichuan, Hunan, Hubei, Anhui and Jiangxi and had swarmed into cluster areas located mostly in the Pearl River Delta and the Yangtze River Delta. In early 2004, the China State Council proclaimed that “migrant farmer workers had become an important part of the industrial labour force of China”.¹⁷ However, as migrant labour in cities, these workers could hardly attain decent work conditions of employment, and fell into a “decent work deficit”, as defined by ILO (1999) for some of the reasons considered below.

Low-wages as a factor of labour shortages

In early 2004, China’s Minimum Wage Order (*Zuidi Gongzi Guiding*) was enacted, and took effect from March 1st 2004. In view of price rises, the Order requires that each province or city shall adjust the monthly minimum wages every two years. Below we display the official monthly minimum wages in some provinces and cities of China, mainly in clustering areas, to provide a general view of average wage levels in China.

¹⁶

To improve China’s rural and peasants’ income has become a key theme for the current China government over the last five years. A series of “No.1 Documents” in favor of policies to increase rural income have been released since 2000 by China central government, including the policy of canceling agricultural taxes, enhancing agricultural subsidy, augmenting transfer payment to rural areas, and “Building New Socialist Countryside”, and so on. These policies really better and improve rural people’s incomes in certain extent.

¹⁷

Chinese State Council Policy on the Promotion of Farmers’ Income Growth (Zhonggong Zhongyang Guowuyuan Guanyu Cujin Nongmin Zengjia Shouru Ruogan Zhengce de Yijian), Feb. 8, 2004. <http://www.china.com.cn/chinese/PI-c/493311.htm> [27 Nov. 2009].

Table 3: The minimum wages in selected provinces and cities of China, 2008

City/Province	Minimum wages (Unit: Yuan RMB)					Starting date (yyyy/mm/dd)
Beijing	730	-	-	-	-	2007.07.01
Shanghai	840	-	-	-	-	2007.09.01
Shenzhen	850	750	-	-	-	2007.10.01
Jiangsu	850	700	590	-	-	2008.02.20
Zhejiang	850	750	700	620	-	2007.09.01
Guangdong	860	770	670	580	530	2008.02.20

Source: Ministry of Labour and Social Security, PRC, 2008.

Notes:

(1) The reason for one place with more than one minimum wages relates to local geographical disparity on income and prices.

(2) Exchange rate between US\$ and RMB on 2007/07/01 was 100:760.75; on 2007/09/01 was 100:756.07; on 2007/10/01 was 100:751.06; on 2008/02/20 was 100:714.52.

Although the aim of the “minimum wage” is to protect the basic wage rights for workers, a majority of employers may pay their workers only minimum wages or even under the minimum level in some cluster areas.

A research report on “China’s rural migrant workers” conducted by the Research Office of the State Council of China (2005) concluded that the average monthly wages of rural migrant workers was between 500~800 Yuan RMB (about US\$ 60-100) at that time. However, for this sum, workers within many labour-intensive clusters worked over 10 hours a day, sometimes either 6 or 7 days a week, in some cases without overtime pay, which reduced their average hourly wage. That is compared with the US minimum wage of \$5.15 per hour at the same period (although since then, the US federal minimum wage was raised to \$7.25 per hour as of 24 July, 2009 according to the US Department of Labour).

Delayed wage payment had become so widespread in many locations and sectors, that the Premier Wen Jiabao signed a series of official documents in 2004 designed to protect rural migrants’ basic right to receive their wages on time. This central government intervention helped large numbers of rural migrant workers in China to receive their earned wages.

The literature on China’s rural migrant workers (Fan, 2004; Pun, 2005) has indicated that, in addition to earning low wages, legislation that links civil rights to where one is born has made it difficult for rural migrant workers to obtain the urban household rights (*Hukou*) or social security benefits in the area where they have migrated to work. As a result, these migrant workers face great hardship in obtaining access to basic services such as housing, medical insurance, and education for both their children and themselves. Without the right to an urban household, these migrant workers can hardly gain basic citizen rights in a new location where they may have worked for years. Few migrant workers within clusters have access to job training and career education, and often are poorly informed regarding labour legislation and their statutory labour rights.

3.5 Case study

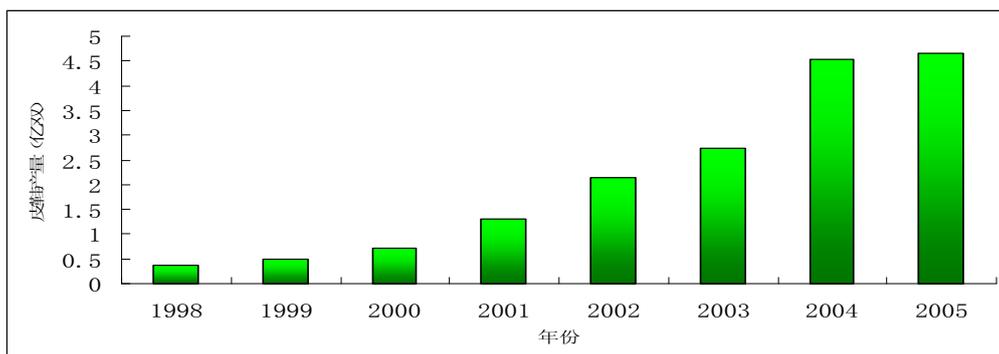
Case 1: Wenzhou footwear cluster and labour force transformations

The city of Wenzhou, in Zhejiang province, is located nearly 500 kilometres from Shanghai (as seen in Figure 3) and is famous for its grassroots entrepreneurship. Wenzhou was named “the

Shoe Capital of China” in 2001 by the China Light Industry Association, as the footwear produced in Wenzhou accounts for nearly 25% of total Chinese output, including the output for export and for domestic market, with over 4,500 shoemaking firms located within the Wenzhou footwear cluster.

Figure 7 displays the rising annual output of leather shoes in Wenzhou footwear cluster, which grew from 60 million pairs in 1998 to 460 million pairs in 2005. Along with production growth, the number of firms and employment also grew. By 2005, more than 420,000 workers were employed in the factories comprising the Wenzhou footwear cluster.

Figure 7: Production of leather shoes in the Wenzhou footwear cluster (1998-2005)



Source: Wenzhou Statistical Yearbook (2006).

Note: The vertical axis unit is 100 million pairs of leather shoes.

It has been difficult to obtain reliable employment data on an annual basis for the Wenzhou footwear cluster. Nevertheless, it is possible to note an important labour force transformation. The majority of workers in the footwear cluster are local inhabitants, not migrant workers, due to the fact that some industries have relocated from Eastern to Western China, where employers can find even cheaper local labour than migrant labour, as will be described in greater detail below.

Firms moving from Eastern to Western China: shifting from migrants to local workers

After 2004, Zhejiang Province began to feel the impacts of the trend of the labour shortage, making it difficult to continue producing low-cost shoes in terms of rising labour costs, as well as other price pressures for limited land, water, electricity, and raw materials. However, a large number of clustered firms were relocating from Eastern to Western areas of China in search of lower production costs, especially to those provinces that originally were the source of out-going migrant workers like Sichuan, Hunan, Jiangxi provinces and Chongqing City (the fourth Municipality of China, after Beijing, Shanghai, and Tianjin), as they offered acres of undeveloped land, a large and low-cost local labour force, and favorable investment policies. The antidumping taxes by the European Union against Chinese leather shoes which started as of October 7th 2006 added further pressure for footwear firms to transfer their production from Eastern to Western China to reduce costs. Already in 2006, over 300 footwear producers had relocated to Chengdu, Sichuan Province.

Two leading firms within Wenzhou footwear cluster, Aokang and Red Dragon, have relocated to Bishan and Tongliang, Chongqing City, respectively, in 2003. The former invested more than 1 billion (approximately US\$ 120 million) RMB in Bishan County to build a “Shoe Capital of the West”; and the latter invested 200 million *Yuan* (approximately US\$ 24 million) in Tongliang Country to build a “Western Shoe Production Base”. As two of the largest firms inside Wenzhou footwear cluster, both Aokang and Red Dragon tried to persuading a group of supplier firms in Wenzhou City to relocate to Chongqing City with the big two firms. For instance,

Aokang succeeded in lobbying 27 inter-related shoemaking firms and Red Dragon brought over 30 supplier firms to Chongqing City, in which several new footwear clusters were coming into being.

In addition to this relocation of leading firms from within the Wenzhou footwear cluster to inner provinces in China, there has been a similar trend of skilled labour moving from the economically developed provinces on the Eastern coastal area back to their rural hometowns, where more local and low-wage workers could find work in the shoe factories without migrating to other places. In 2007, there were 120,000 shoe workers in Chongqing City and most are local labour.

“We have to pay more than 1000 Yuan each month to those skilled workers, however, we only pay 500 Yuan each month for the same kind of labour here (in Chongqing city).”

—A Wenzhou footwear producer

Indeed it has been reported by local TV stations that some of these returning workers, called “local entrepreneurs”, have started up their own business, either as a shoes merchant or small supplier for larger firms. However, we were unable to obtain more detailed information as to whether these returning workers would be considered “skilled workers” and receive a higher wage than other unskilled rural workers or not.

In a nutshell, the case of Wenzhou footwear clustered firms relocation implies that the gap between supply and demand of labour in Wenzhou City that has driven the relocation strategy of the clustered firms – however, we would argue that they have relocated to reduce costs and tap new markets in the inner provinces. On the one hand, low-cost advantages may also decline in western and middle areas of China, and clustered firms which have relocated to inner provinces may face greater difficulties, as they find a less developed network of supplier firms available than in their original clustered location. To upgrade the innovative capacity could be the only viable option. On the other hand, with the spatial shift of clustered firms, workers either from local areas or migrant workers from inner provinces would face greater challenges, although they also may find new opportunities.

Case 2: Lecong furniture cluster and the labour changes in the Southwest of Guangzhou, Guangdong Province (See Figure 8)

Lecong has been regarded as a “world furniture centre”. In fact, Lecong has not been a furniture production centre, but a trade centre with more than 4,000 furniture merchants (See Figure 8) and surrounded by a succession of furniture “supply chain cities” (Gereffi, 2006). In 2004, Lecong Town was entitled “capital of the furniture trade of China” by China Light Industrial Association.

Figure 8: A View of the market area along the 325 National Road in Lecong Furniture Cluster



Photo by Lecong Government, Guangdong Province, 2006. Used by permission.

At the time of the research, the local population of this small town was no more than 100,000 people; meanwhile, the town had received over 110,000 migrant workers, nearly half of them working in the furniture industry. After 2004, the labour shortage also began to trouble the Lecong furniture cluster. Reportedly 30% of the migrant workers who used to work in Lecong furniture cluster did not return to work after the 2006 Spring Festival, which forced employers to raise wages and recruit un-skilled labour, in case of a possible delay in delivery of their foreign orders, which might have caused huge market loss.

“I have to work for more than 12 hours a day in very adverse conditions, only to get about 1,000 Yuan in Lecong; however, now the Central Government abolished agricultural taxes, and I can earn almost 1,000 Yuan in my hometown without any transportation fee, and what’s more, I can stay with my family more often. Of course, I prefer to work locally.”

— a migrant worker from Sichuan Province.

In the face of labour shortage, as well as other cost inflation factors such as rising raw material prices, limited land available, antidumping taxes, RMB appreciation. Some of the Lecong furniture clustering firms considered moving to inland China to reduce costs. However, after a few months, these companies returned to Lecong, as they failed to find a sufficient number of supplier firms comparable to the integrated production environment within the cluster in Lecong Town – this increased their difficulties to control production costs.

What we can conclude from the story of Lecong furniture cluster relocating is that, those firms who have returned to Lecong Town prove that cheap labour and policy subsidies are not sufficient for clustered firms to stay competitive on global market. The pressures are so great, that the employers would have been obliged to pay their workers better and improving their working and living conditions. Especially for large leading firms inside clusters, this might be the only possibility. In doing so, not only the massive cheap labour can reproduce themselves as better labour forces. In addition, clustered firms can as a result to improve the human capital of their industries, which is only way for labour-intensive industries of developing countries to accumulate innovative capacities and thus to upgrade on global value chains.

4. The impacts of the labour shortages on clusters

From the cases described above, we can see that many clustered firms may consider relocation as a solution to the problem of the labour shortage and rising cost pressures, rather

than consider innovating with more investment in labour-substituting machinery, or improved training for a smaller but better-paid and higher-skilled labour force.

As has been shown, the impacts of the labour shortage for China are comprehensive and far-reaching. The impacts upon labour-intensive clusters can be classified as both direct and indirect aspects, with the former raising implications primarily for clustering firms and labour, and the latter aspects raising implications for local and national government and global buyers and their governments.

4.1 The direct impacts of the labour shortages in China

Firms in clusters: relocation to keep racing to the bottom or innovation to stay rooted at home?

Firms agglomerate in special spaces in terms of their labour pool and knowledge spill-over effects, as Marshall has put it, “[e]mployers are apt to resort to any place where they are likely to find a good choice of workers with the special skill which they require; while men seeking employment naturally go to places where there are many employers who need such skill as theirs and where therefore it is likely to find a good market” (Marshall, 1920: 271). However, the labour shortage emerging in China has broken up the basis on which many Chinese clusters have based their competitive advantage, namely, by relying upon low-cost labour, creating intense competition for workers.

Most enterprises in industrialized countries have replaced human labour with advanced machines in the face of the labour shortage or rising wages. However, this has posed a difficulty in current China’s labour-intensive clusters, as their tight profit margins have left little capital to invest in new machinery.

Scholars have suggested clustered firms to innovate and upgrade from OEM to ODM and OBM (Gereffi, 1999; Humphrey, and Schmitz, 2000) to change the basis of their competitive advantage from low-cost production to innovative capability. This seems to be an ideal and reasonable way to solve the problem of labour dynamics within China’s clusters in the long run, in particular for those big leading firms inside clusters.

However, most small firms with an average life span no more than 5 years and vulnerable to market fluctuation, would prefer to relocate to other low cost areas for cheaper labour, rather than invest more on R&D to improve innovative capability. For these firms, the options are either “move or die”. Hundreds of small labour-intensive clustered firms have reportedly closed in the PRD area. By moving to an inland province, such firms could obtain cheaper land, favorable taxes, and proximity to local markets, which would provide them with new opportunities. On the other hand, if they persisted with a low-cost strategy that might be vulnerable to the race to the bottom in the global game, such firms might need to relocate again.

According to research data from the Federation of Hong Kong Industries, 37.3% of firms based in Hong Kong, China already located in the PRD area were planning in 2007 to transfer whole or part of their business to inland China. In 2007, over 57,500 firms in Hong Kong, China invested in the PRD area, accounting for 72% of the total number of FDI firms in the PRD area, and hiring more than 9.6 million migrant workers in those labour-intensive clusters.

With the leading footwear firms relocating from Zhejiang province to western areas of China, more upstream and downstream suppliers are expected to transfer as well. A similar phenomenon occurred in early 1990s when a flock of lead firms from Taiwan, China have relocated to mainland China, bringing their supplier networks that have relocated together with the leading firm.

Seen in this light, industrial relocation in search of low-cost labour has not been a solution to the more structural factors underlying the labour shortage facing of China’s labour-intensive clusters. Rather, only improvement in the clusters’ innovative capability could unleash a process

of both economic upgrading for firms and social upgrading for labour. What is more, between big leading firms and small following firms, they have to take on different roles in light of their different market positions and capacities. Big leading firms are supposed to take more responsibilities in improving workers' welfare and firm R&D, thus to accumulate social capital and enhance innovation capability. On this point, the labour social upgrading is in line with the economic upgrading of clustered firms.

Government intervention: different concerns at central and local levels

While focusing on building an "Innovation-oriented Economy", China's central government never has forgotten the existence of its huge labour force of migrant workers.

From 2004 to 2006, when the labour shortage began to emerge in certain areas of China's coastal provinces, the Chinese central government paid much more attention to rural rights, based on three documents enacted in succession, requiring all establishments and employers to sign working contracts with workers and protect their basic rights guaranteed by law. From January 1st 2006, China's central government decided to abolish the Agriculture Tax over the next five years all over the country – an unprecedented act in more than 2600 years of Chinese agricultural history. As a result, more and more rural farmers who used to be migrant workers looking for jobs in the cities now preferred to stay in their hometown.

“Now the national policy for agriculture is better and better. The agriculture tax has been abolished. Why not stay at home farming? Why should I go so far away to find a job in the city? In cities we have to work long hours everyday, and often extra work without pay; even worse, we always receive our salary with delay.”

——a former migrant worker from Hunan Province.

Furthermore, China's *Labour Law (Laodong Fa)* which was enacted in early 2008, largely extended the protection of legal rights for labour, particularly as regards overtime, delayed wage payment, and labour security. This legislation has the potential to support the process of more stable wage growth and recognition of social rights to access basic services to lead a decent life, especially for rural migrant workers in labour-intensive clusters, although challenges remain and come to light as the law is implemented.

At the same time, China's central government has positively encouraged industrial relocation from Eastern and Southern coastal areas to the middle and Western provinces, with the macroeconomic objective of improving inland development, as well as reducing the economic gap between coastal advanced areas and inland undeveloped areas. For example, the No. 44 Document promulgated by China's Ministry of Commerce and China Customs, with the title of "List of Restricted Commodities in Processing Trade" (*Jiagong Maoyi Xianzhilei Shangpin Mulu*), came into effect on Aug. 23 of 2007. According to this trade policy, a large amount of labour-intensive processed products are restricted to produce in coastal areas, but can stay in middle and western China, where local economies are lag-behind and call for more foreign and private investments. This policy caused companies in the coastal areas to grapple with a difficult choice: either to upgrade from low-cost to high-value-added production, or transfer to inland regions to continue low-cost production.

Local governments in coastal provinces and inland provinces have held on to different policy options with regard to different concerns. In general, both sides try their best to attract more high-value-added investment and create more job opportunities.

As for coastal provinces where firms have been planning to transfer, the local governments try to persuade firms to leave their headquarters or R&D centres locally and move the low-value-added, low-tech, and labour-intensive activities to other places. Some local governments have set up encouraging policies to motivate to firms transfer inside the province. For instance,

Guangdong provincial government has set up 23 government-driven “Industrial transfer parks” within the geographical range of Guangdong Province, which are mostly located in undeveloped and mountainous areas of Guangdong, beyond the advanced cities of Guangzhou, Shenzhen, Dongguan, Foshan, in order to retain these firms.

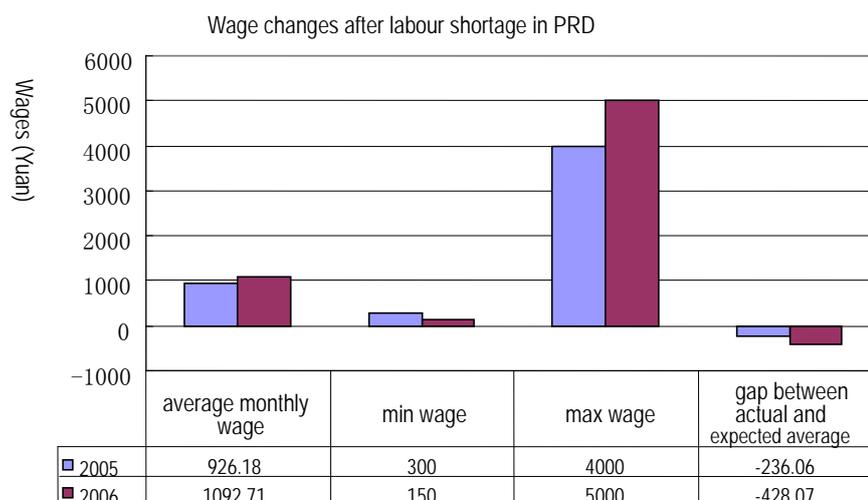
However, the situation is different for inland provinces where firms have tried to move. For these undeveloped areas, gradient industrial transfer undoubtedly has provided a good opportunity to attract investment and new firms. Officials from inland and neighboring provinces, such as Hunan, Jiangxi, Guangxi, Sichuan, Anhui, Yunnan, Hubei, all go to PRD and YRD areas to invite business and attract investment, even with their provincial governors or mayors leading the teams. In order to win the race of attracting firms and investments, these inland provinces emulate the coastal zone strategies by offering acres of cheap land and favorable investment policies to firms that are willing to relocate.

In this context, many labour-intensive firms have decided to relocate toward inland areas. For example, the Foxconn Group, one of the largest leading labour-intensive firms in the electrical industrial cluster of PRD and the world’s largest Contract Manufacturer providing EMS (Electrical Manufacturing Services) to iPod, Motorola and others global branders, which employs more than 100,000 workers in mainland China, has considered relocating from its original location in Guangdong to Hubei, Guangxi, and Hebei provinces. Its relocation strategy would on the one hand favour inland areas, but has on the other hand worried the Guangdong government considerably, because of the impact this would have upon of local GDP and employment loss.

Clustered labour: rising wages and more job opportunities

The direct impact of the labour shortage within China’s clusters relates to rising wages. According to a sampling survey based on 3,086 worker interviews in the PRD area conducted by Zhongshan University (Wu, Zhao, Li, etc., 2007), the advent of the “labour shortage”, has led to a decline in average working hours for migrant workers as well as in the delay in wage payment is less, and most importantly, the average monthly wages for migrant workers in 2005 increased RMB 166.53 Yuan (approximately US\$ 20.61), which exceeds the rates of 2005 by 17.9% (Wu, Zhao, Li, etc., 2007) (See Figure 9).

Figure 9: Average wage changes after the labour shortage in the PRD area (2005-2006)



Source: Wu, Zhao, Li, etc., 2007.

Aside from rising wages and shorter working hours, migrant workers have gained access to more job opportunities in other provinces, such as Beijing, Jiangsu, Fujian, Shandong and even in migrant workers' hometowns such as Jiangxi, Hunan, Guangxi and Henan.

More importantly, many migrant workers have recognized that professional education and training can help them improve their skills and incomes, which is why they have started to invest more money in joining evening school, training classes, and English courses. Many local governments have started to offer free training projects for migrant workers, called the "Sunshine Project" (*Yangguang Gongcheng*).

While some migrant workers chose to stay at home, others have opened their own business and others have gone back to farming with the Chinese government's new policies and incentives to encourage farmers in modern agriculture and to help them improve incomes.

4.2 The indirect impact inside and outside China

The indirect impact of the labour shortage within Chinese clusters has been felt both inside China and outside, as discussed below.

External impacts: may the labour shortage weaken China's competitiveness on world markets?

International media have presented different concerns with regard to China's labour shortage. According to the New York Times, the labour shortage might to some extent weaken China's competitiveness as a world production centre, as many trades might shift away:

"The shortage of workers is pushing up wages and swelling the ranks of the country's middle class, and it could make Chinese-made products less of a bargain worldwide. International manufacturers are already talking about moving factories to lower-cost countries like Vietnam."

—The New York Times.

("Labour Shortage in China May Lead to Trade Shift", 2006/04/03).

On the other hand, optimistic economists regard the changes within China's labour structure as progress, thinking that China is moving up the economic ladder, or upgrading in global value chains. Migrant workers may see more opportunities beyond simply being unskilled assemblers of the world's goods. Rising wages may also prompt Chinese consumers to start buying more products from other countries, helping to balance China's huge trade surpluses. The labour shortage may also spur Chinese clustered firms to improve labour conditions and to more aggressively recruit workers with incentives and benefits.

Internal impacts: industrial relocation, upgrading and indigenous innovation in China

Over the past thirty years, China has achieved fast and stable growth as part of its economic development and has attracted foreign and domestic investments. However, wages and working conditions have not necessarily improved along the economic upgrading path. Though the labour shortage within clusters may to some extent, in the short run, impair China's export competitiveness in low-end products, in the long run, it is going to catalyze China's struggling in economic structure evolution and industrial upgrading, with more emphasis on indigenous innovative capability.

The relocation of clusters to Central, Western and Northern China in search of lower labour costs may lead to a new internal division of labour between the developed and undeveloped regions. The coastal zones may become the locus of higher technology production and R&D centres and the outsourcers to lower-cost inner provinces. The inner areas may compete in attracting investments and industrial transfer from Eastern and Southern China, which may result in more complicated dynamics of labour changes in China. It remains to be seen whether the

relocation of firms in the Eastern and Southern coastal clusters implies upgrading and convergence between regions, or divergence between regions at different developmental levels.

As for the massive low-wage labour forces, in other words, primarily the large number of rural migrant workers in China, they need not only temporary wage rising, but more accesses and opportunities to get training and education, therefore to improve their human capital and the innovative capacity of the clustered firms, and finally the competitive advantages based on indigenous innovation capability of the nation.

5. Conclusion

This paper has briefly analyzed China's numerous labour-intensive clusters, in terms of their formation, distribution, and the division of labour between different regions of China from both global and local perspectives.

The labour dynamics within these clusters have been highlighted. The structural changes, especially the labour shortage, its causes and impacts within clusters, were analyzed by means of case studies of the Wenzhou footwear cluster and the Lecong furniture cluster. The main finding is that labour shortages reflect many deep-seated economic and social problems of contemporary China. Most attention has been directed toward attracting investment and stimulating economic development, while little priority has been given to the labour and social challenges, notably in terms of the upgrading of the social and regional impacts of clusters. Only when the labour shortages emerged did clustered firms, local governments and scholars become aware of its profound impacts.

We return to the question posed at the beginning of this paper: to what extent will China's competitive position in global markets continue to be based on low-wage labour, or is there room for moving up the value chain by exploiting the innovative capacity of the Chinese economy? The significant labour shortages within China's clusters reduces the possibility for firms to continue pursuing low labour costs as the key foundation of their competitiveness in global markets. In other words, low wages can no longer be the key pillar of sustainable growth in China. This reinforces the role of investments in R&D, education and training, as key drivers of future growth and the means to raise value-added of production. There remains a long way to go, but such a strategy would provide a viable alternative to the current low-wage growth model.

Industrial clusters used to be considered as a new universal model for industrial growth and regional development in China. These labour-intensive clusters located along China's Eastern and Southern coasts have promoted China's industrialization and helped employ a large number of migrant workers. However, experience from successful clusters in the industrialized countries proves that clusters are not necessarily innovative because of clustering, but indeed industries enter an innovative dynamic that can be additionally supported by the clustering process. Furthermore, this paper has emphasized that this process cannot be separated from the labour dynamics within clusters themselves. The process of industrial upgrading must be accompanied by a process of social upgrading for labour, which involves improved working conditions for workers, as well as providing social recognition and greater opportunities for education and professional training that would raise their skills, incomes and human capital. This process would fuel greater effective domestic demand, resulting in greater consumption capacity which would support a more balanced, domestic-demand led economic growth model for the country.

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