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Industrial Agglomeration and Dispersion in China: Spatial reformation of the "workshop of the world"*

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Abstract

With rising labor costs in China, some scholars assert that its labor-intensive industries will succumb to latecomer economies, and China's era as the "workshop of the world" will end. There is, however, little agreement regarding whether labor-intensive industries, now concentrated along the coast, are relocating to other regions. How does agglomeration affect this relocation? How does this relocation process affect the Asian Production Network (APN)? To approach these issues, this paper examines the determinants of industrial relocation in China by using province- and city-level data from 2004 to 2010, which some scholars call the "post-Lewisian turning point." We particularly focus on the significant gap in economic development in China, especially in regard to industrial agglomeration and dispersion. The results show that the capital–labor ratio is positively related to industrial growth in the coastal areas but negatively related in the central regions. Although agglomeration economies have been weak, the absolute scale of local industry includes a positive effect. In sum, both dispersion and agglomeration forces are observed, suggesting the existence of multi-force dynamics of spatial relocation in China.

Keywords: Location of industry, Agglomeration and dispersion, China, "Domestic flying geese pattern"
JEL classification: R12, O14, O53

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1. Introduction: the End of China as the Workshop of the World?

During the 2000s, China played a central role in so-called "Factory Asia" by assembling a wide range of manufacturing products utilizing regional intermediate good production network in Asia (ADB, 2013). Since labor costs in China have dramatically increased since the mid-2000s, numerous Chinese scholars and foreign observers have begun discussing whether China has reached its "Lewisian turning point" in economic development which implying losing low cost advantage (Cai, 2010; Golley and Meng, 2011). Certain scholars assert that China's labor-intensive industries, with its high labor costs, will succumb to latecomer economies, and China's era as the "workshop of the world" will end[1]. There is, however, little agreement regarding whether labor-intensive industries, now concentrated in coastal China (eastern China), are relocating to other regions. How does agglomeration affect toward this relocation? How does this relocation process affect Global Value Chains (GVCs) and Asian Production Network (APN)?[2] To examine these issues, this paper investigates the patterns of domestic industrial relocations in China by utilizing province- and city-level data from 2004 to 2010 and two case studies in China.

With regard to industrial relocations from coastal China, Lin (2011) insists on the possibility of industrial relocation to sub-Saharan Africa. In contrast, partially due to the significant benefits of the existing industrial agglomerations in Asia and China, Collier (2007) argues that there are many obstacles to shifting production to lesser developed countries. Another perspective in recent literature is the "domestic flying geese pattern," which focuses on the large gap in economic development and factor endowments between China's coastal and interior regions (Ruan and Zhang, 2010; Cai, et al, 2009). These issues are important to debates on the stability and continuity of China's economic growth as well as to Asian and global economies, especially in regard to the industrialization of late comer economies (Hanson and Robertson, 2010; Wood and Mayer, 2011).

The theory of economic geography insists that the dynamic process of agglomeration economies typically includes three major benefits (information sharing, labor market polling, and input material sharing), which contribute toward industrial clustering (Cohen and Paul, 2009). On the other hand, input factor prices such as wage and land use costs increase with the rapid growth of the economy, resulting in industrial relocations across regions and countries (Puga and Venables, 1996; Fujita, et al, 1999). In the case of Japan, during the rapid growth period between 1955 and 1970, manufacturing industries shifted from the core Tokyo Area to surrounding Kanto region. This relocation led to the formation of the Pacific industrial belt in Japan (Fujita and Tabuchi, 1997; Mano and Otsuka, 2000). In the case of China, however, the land mass of China is 26 times larger than that of Japan, which included two major industrial cores such as the Pearl River and Yangtze Deltas; therefore, spatial reformation can be significantly more

[1] China has been called as "workshop of the world" since the early 2000s which typically meaning a large amount of export in a wide range of manufacturing products (from labor-intensive to capital-intensive products) to all over the world. This labelling is actually "Made in Japan." Zhang ed. (2006), Gao (2012), and Xinhua News Agency(2004) all mentioned the naming is imported from Japanese media and METI's reports.
[2] Regarding facts and features of Asian production network, see Kimura and Obashi(2011).

complex and multilayered (Chan, et al, 2008). To approach industrial relocations in China, this paper (using province- and city-level data) particularly focuses on labor-intensive industries, conducts empirical estimations of inter-province relocations, and performs two case study on intra-province relocation in Guangdong.

The rest of this paper is structured as follows. Section 2 summarizes China's global competitiveness in labor-intensive products and the basic situation of domestic industrial locations in China. Section 3 specifies the regression model and Section 4 presents the results. As additional case studies, Section 5 investigates the case of Guangdong and Electronics Manufacturing Service (EMS), and Section 6 concludes the paper.

2. Global Product Shares and Domestic Industrial Relocations

2.1. *China's global shares*

Before examining domestic industrial locations in China, we briefly summarize the global competitiveness of China's labor-intensive products. Figure 1 shows the export specialization indices of selected emerging economies in labor-intensive products from 1995 to 2010.[3] During this period, China gradually increased its export competitiveness to 0.8 on the export specialization index. During the 2000s, the indices of no other developing economies increased and China's export dominance was obvious.[4] Table 1 provides the global export shares of Chinese products in more detailed product categories. Until 2010, China's shares were generally high and displayed a continuous upward trend. Although, they declined from 2010 to 2011 in product categories such as travel goods and footwear, China's shares were still significantly higher in 2011 than in 2000, presenting a clear dominance as the "Workshop of the World."

Figure 1

Table 1

2.2. *Domestic relocations: literature, data, and policy actions*

The spatial economics provides a series of theory regarding locations of industry, which pay attention to the agglomeration force with input-output linkage, dispersion force including wage gaps, and other factors such as trade costs (Ottaviano and Puga, 1998; Fujita, et al, 1999). Some of contributions in this field are highly suggestive to examine the case of China. First, Puga and Venables (1996) describes

[3] The export specialization indices are calculated as (Export – Import) /(Export + Import) by product categories.
[4] Milberg and Winkler (2010) also show that China expanded its global market shares after the global financial crisis in 2008.

the pattern of spread of industry which concluding the labor intensive industries tend to leave first from the core region due to the higher cost pressure. In addition to that, Puga (1999) shows that the lack of labor mobility plays dispersion force of industry ("if workers do not move, firms move"). As Golley and Meng(2011) points out, China's labor market is not perfectly mobile due to the institutional restrictions (Hukou system), some call as "temporary working visa system" or "guest worker system," and wage are rapidly increasing during the 2000s. Thus, it is valuable to examine the China's pattern of spatial relocations.

Empirical researches on China's industrial location show that industries agglomerated to coastal areas from the 1980s onward, however, due to the rapid rise in labor and land costs in such areas, they began dispersing toward interior regions in mid-2000s. Figure 2 shows coastal share of industrial output from the 1950s to the 2000s. Historically speaking, the recent trend of decreasing coastal share is a totally different pattern from that of so-called "Reform and Opening" period starting from 1980s. As for spatial feature of "Reform and Opening" period, Long and Zhang (2011) utilizing China's economic census data, shows that China's industrialization pattern from the 1990s to 2004 was cluster based and the rapid industrial growth of coastal regions resulted in a high degree of spatial concentration in China.

Figure 2

Regarding to recent change, The Institute of Industrial Economics of CASS (2012) examines China's industrial location during the 2000s and demonstrated that the coastal industrial output share began declining in 2005. Figure 3 shows the coastal area's share of manufacturing output value in China from 2003 to 2010. In seven selected industries, industrial productions are clearly concentrated, with 70%–95% of production in 2004 and 2005 being from coastal areas, while its share dropped after the late 2000s. In this process, the central region increased its output shares by 2%–5%, while the coastal regions' shares generally decreased.

Figure 3

As theoretical prediction tells, there are transportation development, migrant mobility, and remaining wage gap behind the industrial relocations. First, China's transportation infrastructures, namely the length of each transportation channels, such as railway, road and highway, river transport, and air route have been developed drastically during the 2000s. The biggest development has been observed in public road and highway, expanding 1.67 million km in 2000 to 4.23 million km in 2012 (*China Statistical Yearbook, 2013*). Second, at the same time, the mobility of migrant worker is decreased in terms of distance during the 2000s. Table 2 indicates the number of migrant by destinations. The most impressive change is the total number of intra-province migrant surpassed that of inter-province migrant in 2011. The rural

peasants are now choosing the more closed-distance job opportunities from their home town. Third, despite the decades of vast migration among China, as Figure 4 shows, there is still large income gap, especially between urban and rural region.

Table 2

Figure 4

Combining the decreasing mobility of worker, rapid development of transportation (which means decrease of transportation cost), and remaining wage gap together, recently labor intensive industries tend to relocate to inland provinces as Puga(1999) theoretically predicted ("if workers do not move, firms move"). This type of domestic industrial dispersion, called the "domestic flying geese pattern" in China, has been empirically investigated by some Chinese scholars. This perspective implies that labor-intensive industries relocated from core coastal regions to interior regions because of the higher input cost in the developed regions. Cai, et al (2009) and Zhang and Liang (2010) estimate production functions by region and discover that, due to the high-unit labor productivity per wage, industries in the central region have greater potential to develop during the mid-2000s. Ruan and Zhang (2010), using manufacturing output data of China's textile and apparel industries, examine the applicability of the "domestic flying geese pattern," finding that domestic industrial location began in coastal regions and relocation to interior regions commenced in 2005.[5] Furthermore, since 2005, China's central and local governments have established several industrial relocation programs called *chanye zhuanyi zhengce* (产业转移政策, see Table 3). Interior regions such as the Sichuan and Henan provinces attempted to attract manufacturing industries from the coastal areas. In contrast, coastal provinces such as Guangdong have promoted intra-province industrial relocation programs since 2004.

Table 3

As mentioned earlier, although researchers such as Cai, et al (2009) and Ruan and Zhang (2010) have propounded that the domestic industrial relocation model in China, and found an interesting pattern of relocation, they did not quantitatively evaluate both the agglomeration and dispersion forces proposed by special economics simultaneously. China includes substantial industrial agglomerations as well as large factor price gaps. Thus, this study particularly focuses on the multi-force of industrial relocation in China.

[5] Bao et al (2013) pay particular attention to the role of market potential in China, however, their argument focuses on the concentration toward the coastal region. In this paper, our primary interest is to investigate the regional and structural changes among China's industrial location especially after the late 2000s.

3. Model, Data, and Methodology

3.1. *Model*

To examine both agglomeration and dispersion forces in China, this paper estimates the following specification presented Hanson (1998) and Gao (2004). The industrial output in *i* region *j* industry can be written as

$$Y_{ij} = y\left(w_{ij}, A_{ij}, E_{ij}, O_{ij}\right), \qquad (1)$$

where w_{ij} is the wage rate, A_{ij} is the technology level, E_{ij} denotes external effects in the local industry, and O_{ij} indicates other factors. Taking logarithmic form and differencing Eq. (1), we have

$$\Delta\log(Y_{ij}) = \alpha\Delta\log(w_{ij}) + \beta\Delta\log(A_{ij}) + \sum_{k=1}^{K}\gamma_k \Delta log(E_{ij}^k) + \sum_{m=1}^{M}\delta_m \Delta log(O_{ij}^m). \qquad (2)$$

Based on Eq. (2), we empirically estimate role of dynamic externality of agglomeration and dispersion forces. The variables are defined in Table 4. The dependent variable is the annual relative output growth in the *i* province *j* industry relative to the national industry average. The independent variables are as follows. The first and second terms are regarding industrial dispersion forces which capture the w_{ij} and A_{ij} in Eq. (2). The first term, relative wage, is the province-industry wage relative to the national average wage in the previous year to avoid the simultaneity problem. The second term, "relative KL ratio," is the province-industry capital labor ratio relative to the national average of all industry capital labor ratio.[6] If labor intensive industry tends to grow faster in the Central and Western areas, the estimated coefficient will be negative. By contrast, in the coastal area, the coefficient will be positive due to the structural upgrading of industry at the advanced region. Since that, we hypothesize the positive coefficient in the coastal area and the negative coefficient in the Central and Western areas.

The third to fifth terms represent dynamic externalities by the agglomeration economies. The third term, absolute scale of local industry, is the national employment share of *i* province *j* industry, while the fourth term, the local industrial specialization, is measured as the share of province output in the industry relative to the share of national output in the industry. A higher value of this index indicates more industrial specialization relative to the national average of the industry. The fifth term, the third source of agglomeration economies, is the local industrial diversity that measures the sum of the square of province output shares for all industries, also known as the Hirschman–Herfindahl index. In this regard, a higher

[6] If the relative KL ratio is calculated by that of relative to the average *j* industry capital labor ratio, a part of the province-industry variable at a labor-intensive industry (for example, an apparel industry in x province) becomes larger than that of a capital-intensive industry (for example, a communication equipment industry in y province), evaluating the former is more "capital intensive" than the later. To avoid this problem, we adopted the KL ratio relative to the national average.

value indicates less industrial diversity in the province. The sixth to seventh terms include other factors that may affect output growth. The sixth term denotes the relative scale of establishment calculated by employment. Finally, the eighth term, profitability of the province-industry, measures the return on assets related to the industry average.

Table 4

3.2. D*ata and methodology*

Since the *Statistical Yearbook of the Chinese Industrial Economy* (original title is *China Industry Economy Statistical Yearbook*) does not provide some regional two-digit level industry data, we use the *Michigan University China Data Centre Database*, which contains two-digit Chinese industrial classification industries for all provinces, autonomous regions, and municipalities.[7]

The unit and level of analysis, definitions of regions as well as the descriptive statistics are shown in Tables 5–6. We constructed the dataset with 28 two-digit industry classifications of 30 province-level areas for the period from 2004 to 2010. Because of outlying observations, we removed the data for the Tibet autonomous region. The summary statistics indicate that, during the studied period, relative output growth was highest in the central region, while relative wage and relative KL ratio were highest in the eastern region. With regard to agglomeration proxies, the average absolute scale of province-industry by region is highest in the eastern region. By contrast, the local specialization and local industrial diversity indices are higher in the western and northeastern regions.

Table 5 and 6

Before presenting the results of a regression analysis, Figures 5 and 6 show basic features of the relative output growth and KL ratio. In Figure 5, the horizontal axis indicates the KL ratio of the industry relative to the national industry average, and the vertical axis indicates annual output share changes of the aggregated eastern region in the national industry (definitions of sub-region are shown in Table 5). The clear positive correlation implies that growth rates of labor-intensive industries tend to be lower in the eastern region. At the same time, as Figure 6 shows, the relation between relative output growth and KL ratio is unclear when decomposed to the province-industry level in the eastern region. Therefore, to fully understand the determinants of industrial relocation at the province-industry level, it is necessary to regress to more comprehensive variables.

[7] In the case of the *Statistical Yearbook of the Chinese Industrial Economy 2011*, although it provides 27 of 39 two-digit industry data by province, it does not contain some major labor-intensive industries such as manufacturing of leather products, timber products, and furniture, as well as production of craftwork and cultural, educational, and sports articles. Since industrial agglomerations and relocations are rapidly progressing in these industries in China, estimations on industrial relocation without this industry data is misleading.

Figure 5 and 6

Since the Breusch–Pagan–Godfrey test does not reject the existence of heteroscedasticity, the Feasible Generalized Least Square (FGLS) estimations with control variables (such as year dummy) are conducted. We estimate both the national and regional regressions to investigate the regional differences. During the examined period, the Chow test indicates statistically significant structural changes of parameters at the 1% level, and the strongest support is observed while t = 2008. Thus, we also estimated the first and second halves of the period separately.

4. Results and Discussions

4.1. *Estimation results*

Table 7 presents the baseline results for national regressions with and without semi-macro regional dummies such as the eastern, central, western, and northeastern regions. Results suggest that the relative wage generally had a negative effect on relative output growth, which means that the industrial growth rate was inversely proportional to the relative wage in the industry. By contrast, the parameters of the relative KL ratio are inconsistent and not statistically significant because its roles varied across regions as we see in the following step. Next, with regard to agglomeration forces, the parameters of the absolute scale are negative in columns [1], [3], and [5], but they are positive after controlling the semi-macro regional dummy variable as columns [2], [4], and [6]. Since the eastern region dummies are generally negative and statistically significant, the absolute scale of province-industry positively influences relative output growth. A part of reasons for negative parameters of the eastern region dummy would be the effect of policy adjustments taken by the central government on the regional development. On the other hand, both the local specialization and concentration of local-industry-composition indices are generally negative, indicating that the specialization and concentration has a negative effect.

Table 7

This study primarily investigates the regional differences among industrial relocations in China. Table 8 indicates the results of regional regressions. The most important result is the role of the relative KL ratio; positive results are obtained in the eastern region (columns [1]–[3]). In contrast, negative coefficients are observed in the central region (columns [4] and [6]). These results suggest that the capital-intensive industries grow faster in eastern regions while labor-intensive industries grow faster in central regions especially after the 2007, which support the progression of the “domestic flying geese

pattern" in industrial relocation based on the relative KL ratio. In addition, although the local industrial specialization results in slower growth during this period, the absolute scale of the province-industry has a simultaneous positive effect, suggesting existence of an agglomeration effect

Table 8

In sum, the results suggest that, during this period, both diversion and agglomeration forces affect industrial relocation in China. To assess the robustness of the results, estimations with provincial dummies are conducted, as shown in the appendix. These results also support that both the previously mentioned forces are effective.

4.2. *Discussion*

The empirical results describe the general features of the "post-Lewisian turning point" pattern of industrial relocations in China. First, as the relative KL ratio has varying effects across regions, the "domestic flying geese pattern" has been observed. Labor-intensive industries in the central region may have grown faster based on cheaper wages relative to coastal regions. Second, although these dispersion patterns have been observed, agglomeration forces and other factors such as profitability is also important to understanding industrial relocation in China. Thus, the viewpoint of the "domestic flying geese pattern" stated by the related literatures is biased. Therefore, we should approach China's domestic industrial relocations using a more complicated, multilayered perspective.

5. Additional Case Studies

5.1. Intra-province relocations in Guangdong Province

To deeply understand industrial relocations in China, additional case studies are helpful. An aspect that the above provincial-level analysis cannot examine is intra-provincial relocations, that is, city- and county-level relocations. As Table 4 shows, Guangdong initiated intra-province relocation programs in 2005, immediately after rapidly rising wages were observed in the Pearl River Delta.[8]

Major policy initiatives undertaken by the Guangdong provincial government are presented in Table 9. Their policy aimed to relocate labor-intensive industries from the six "core" cities (Guangzhou, Shenzhen, Dongduan, Zhongshan, Zhuhai, and Foshan) to eastern, western, and "mountain areas" in order to promote the development of more high-tech and research and development (R&D) based industries in the core region.[9] Such policy tools include preferential tax treatment, administrative treatment, and

[8] Another well-known intra-provincial relocation emerged in the Jiangsu province of the Yangtze Delta; some industries relocated from the southern part of Jiangsu (*Sunan*) to its northern part (*Subei*).
[9] Policy documents refer to these six cities as the "core six cities of the Pearl River Delta (*Zhusanjiao Hexin liushi*)."

establishment of Industrial Relocation Parks. These parks have been the most direct tool for intra-province relocation; 24 were established by June 2008, and they increased to 36 by December 2011.

Table 9

Although it is difficult to construct the city-industry level dataset nationwide, in the case of Guangdong, we can utilize city-industry level data provided by the *Statistical Yearbook of Guangdong Province*. Table 10 summarizes the shares of the six core cities, especially with regard to the number of firms and industrial output in the selected industries. In the case of labor-intensive industries, these core cities generally decrease shares, while substantial increases have been observed in electronics and communication industries. The core cities develop more capital- or technology-intensive industries compared to the remainder of the province.

Table 10

Figure 7 presents the industrial output shares by cities in cultural, educational, and sports products manufacturing industries, a labor intensive industry. Certain core cities, such as Guangzhou, Dongguan, and Shenzhen, decreased their output shares, while non-core cities, such as Shantou and Qingyuan, increased its output by 6% to 9%. Shantou, in western Guangdong, contains developing toy clusters in Chenghai[10]. Since the toy industry in Guangdong dominates—with a 60% share in cultural, educational, and sports products manufacturing industries—these share changes are primarily caused by newly growing clusters outside the core of the Pearl River Delta. From 2005 to 2009, the Pearl River Delta (Guangdong) increased its national output share by 1.05% in spite of the average labor-intensive industry dropping its shares in coastal China. In addition, China's global shares exhibited an upward trend in product categories such as toys and sporting goods during the same period (see Table 1).

Figure 7

By contrast, there are also developing clusters of labor-intensive industries within the core of the Pearl River Delta. Figure 8 shows the city-level output shares in craftwork and other industries in Guangdong. Figure 8 clearly presents Shenzhen's rapid share expansion from 2004 to 2010. Similar to the case of the cultural, educational, and sports product industry, Guangdong's share in this industry's national output has increased, proving that, even in the core cities in the coastal China, some local

[10] Author also conducted field interviews in Chenghai city in 2011. Local government officers suggest that Chenghai has grown more rapidly after the financial crisis in 2008, partially because of decline of Dongguan city, an well-known toy manufacturing city in Pearl River Delta. Another reason was relatively low-cost land price and wage in Chenghai.

labor-intensive industries are continuously growing.

Figure 8

The above facts reflect that growth of city- or even county-level industrial clusters in and outside the core cities were a primary cause for the expansion of Guangdong's domestic share and China's global competitiveness. Although a regression analysis suggests that capital-intensive industries tend to grow faster in coastal areas, there is significant divergence within the coastal labor intensive industry clusters as some of them continue developing (due to the high capabilities of local industrial clusters) and some lose competitiveness, especially after 2004.

5.2. Impact of EMS relocation on Asian Production Network

To examine the impact on Global Value Chain and Asian Production Network driven by relocations of Chinese industry, another case study on Electronics Manufacturing Service (EMS), such as Foxconn, an well-known Taiwanese assembler of Apple products, is especially informative. Since the 2010, Foxconn decided to invest inland China regions instead of coastal region, started up massive scale factories in Zhengzhou city (Henan province), Chengdu city (Sichuan province), Chongqing city (a municipal city), and etc. Each factory has over 100,000 employees and exporting a large amount of electronics products including i-phone and i-pad. These relocations are driven by mainly Taiwanese EMS companies, and resulting a sky-rocketing export boost in inland cities as Figure 9 present. Export value of inland major cities increased dramatically after the 2010.

Figure 9

In the case of Zhengzhou city in Henan province, since there was no notable electronics industry and other exporting industry, its trade volume increased by multi-hundred percent in recent years. Noteworthy, Foxconn's set up and export of Apple products completely changed the trade structure of whole Zhengzhou city. Electrical Apparatus for telephone (HS 8517) dominates 94.3% export share of Zhengzhou city in 2012 while the share was just 0.1% in 2009 surprisingly. Figure 10 shows the shares of import partner of the city from 2007 to 2012. Remarkable share increases of Korea, China (means import from China's Free Trade Zones), Japan, Taiwan, Vietnam, and Malaysia have been observed. Details of import by HS 8 digit level are shown in Table 11. To produce IT products, Apple products including i-phone 4 for example, Zhengzhou imported a large amount of intermediate goods including processor memory from Korea and Taiwan, phone parts from Free Trade Zones of China, cameras from Vietnam and Korea, and machining center from Japan. It is noteworthy that major imported products in 2012, all

the products in listed Table 11 except iron ores from Australia, accounted for 41.69% of Zhengzhou's import in 2012 (7771 million USD), however, it accounted for only 1.43% in 2010 (58 million USD), just two years ago.

Figure 10

Table 11

This import structure clearly presents a new adjustment of Asian Production Network. Note that the domestic industrial relocations in China expanded the spatial frontier of Asian Production Network. The old-fashioned "China as workshop of the world" largely meant "made in coastal China" in the 2000s, however, it is not a case anymore. In the 2010s, the China's domestic industrial relocations show a new spatial feature, and it also has large impacts on reformation and adjustment of Asian Production Network, in other word, Factory Asia.

6. Concluding Remarks

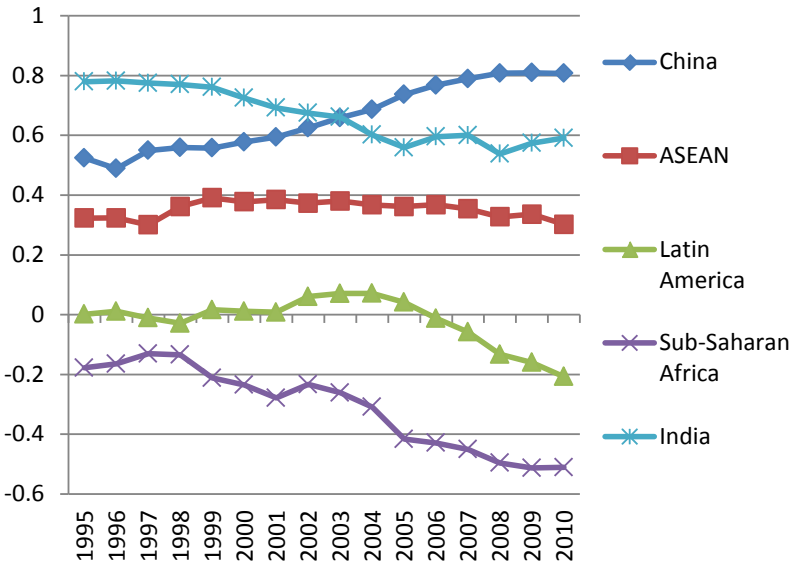
This paper examined the patterns of domestic industrial relocation in China. Many recent studies have argued the "Lewisian turning point," which presents the exhaustion of rural surplus labor. However, few studies have examined the patterns of industrial relocation during the late 2000s. Following the perspective of spatial economics, this paper focused on the dynamic role of both agglomeration and dispersion forces. The regression results show that the capital–labor ratio is positively related to industrial output growth in coastal areas but negatively related in the Central region. Although agglomeration economies have been weak, the absolute scale of local industry includes a positive effect, suggesting both of the dispersion and agglomeration forces influenced local industrial growth during the late 2000s. Thus, so-called "domestic flying geese pattern" view which typically insists only the dispersion force, is one-sided. As a continental state often called the "workshop of the world," China's spatial economy shows both substantial agglomerations and dispersion forces.

It is noteworthy that the same pattern was observed in the case of the Guangdong intra-province relocations. As presented earlier, some labor-intensive industry clusters are continuously growing in and around the core of the Pearl River Delta. From the view point of a firm, there are several options to choose; relocate within a province, relocate to other province, and upgrading without moving. At the same time, policy makers including the central and local governments have different policy goals of industrial relocations in China. At least we can point out that there are domestic mechanisms, namely domestic relocation and agglomeration economies sustaining the global competitiveness even in labor intensive industries in China.

A case study on Foxconn in Zhengzhou city also suggests expansion of a spatial frontier toward inland China and a massive impact on Asian Production Network. Although some asserts the end of "China as workshop of the world," it is more reasonable to have a hypothesis that "Factory Asia" and "China as workshop of the world" are stepping into a next stage, say "Factory Asian version 2.0" which connecting inland China and ASEAN countries with a larger amount of manufacturing trade. To examine new changes of Asian Production Network after the late 2000s, China's multi-force dynamics, namely China's local agglomerations, domestic relocations, factor price gaps, and related industrial policies should be further investigated.

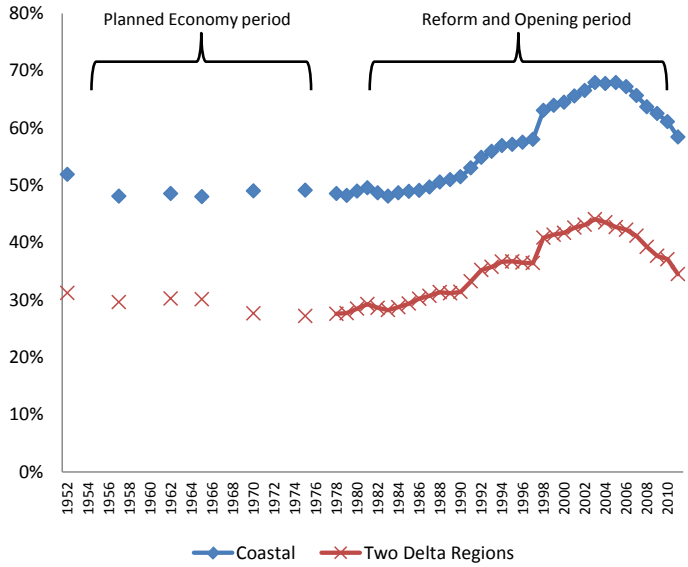
Figures and Tables

Figure 1. Export specialization index
of labor intensive products in selected countries and regions



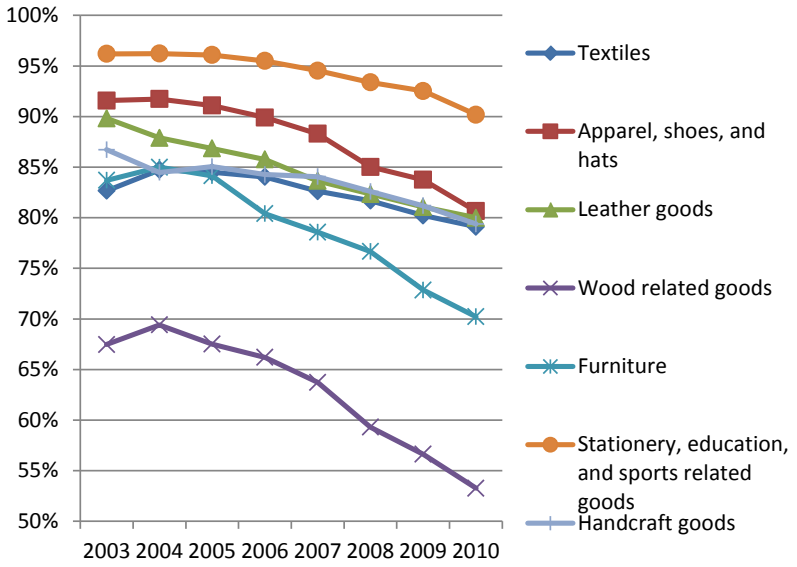
Source: UNCTAD database.

Figure 2. Industrial output share by coastal and two delta regions



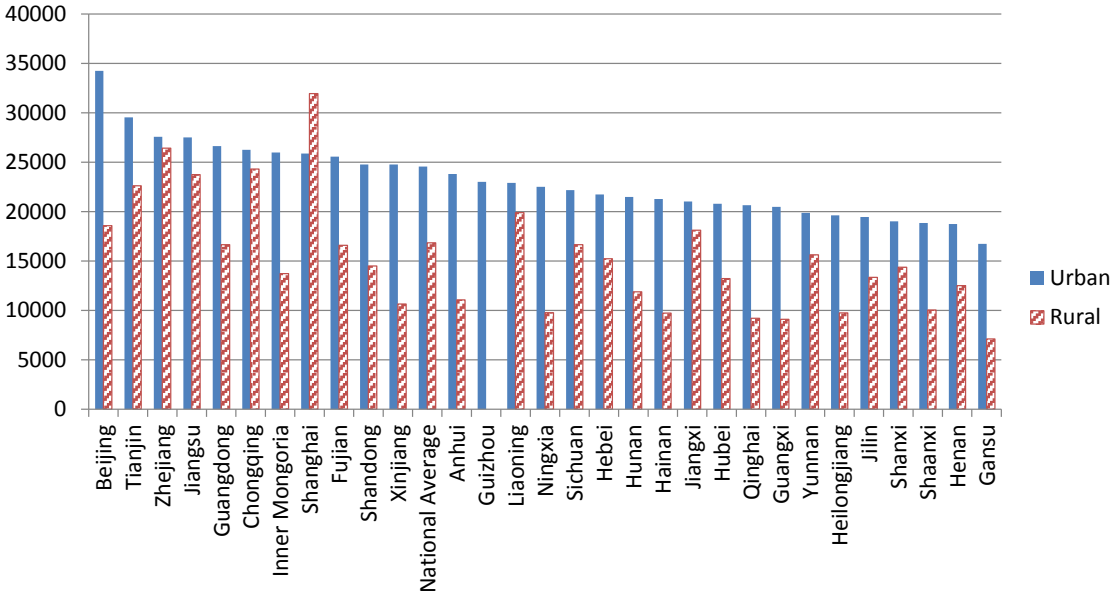
Note: Coastal Region includes Beijing, Tianjin, Hebei, Shandong, Jiangsu, Shanghai, Zhejiang, Fujian, and Guangdong, and Two Delta Regions include Jiangsu, Shanghai, Zhejiang, and Guangdong. Since there are many missing data of Guangdong before the 1978, only limited years are shown during the 1950s to 1970s.
Source: University of Michigan, China Data Centre Data Base.

Figure 3. Falls of coastal output in labor intensive industries



Source: University of Michigan, China Data Centre Database .

Figure 4. Yearly wage of private manufacturing enterprises by province (2011, RMB)



Note: Rural data of Guizhou is not available. Rural wage in Shanghai exceeds that of urban in original data.
Source: Urban wage data is from *China Statistical Yearbook*, and rural data is from *China Township and Village Enterprises and Agricultural Processing Industry Yearbook*.

Figure 5. KL ratio and regional output share changes of the aggregated eastern region (2004-2010)

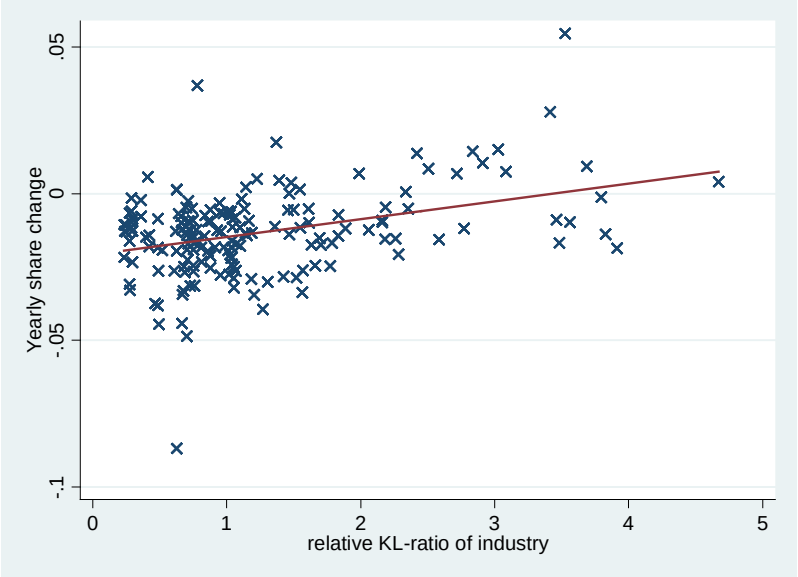


Figure 6. KL ratio and regional output share changes of individual province-industry in eastern region (2004-2010)

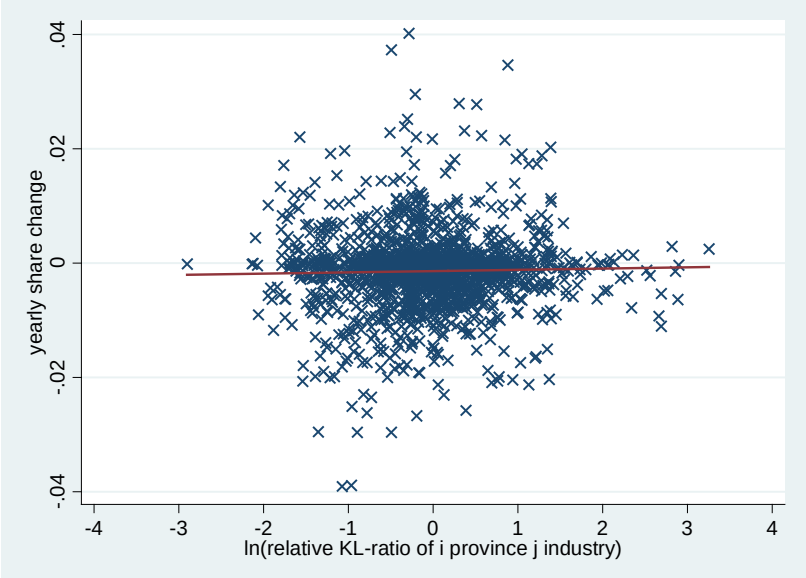
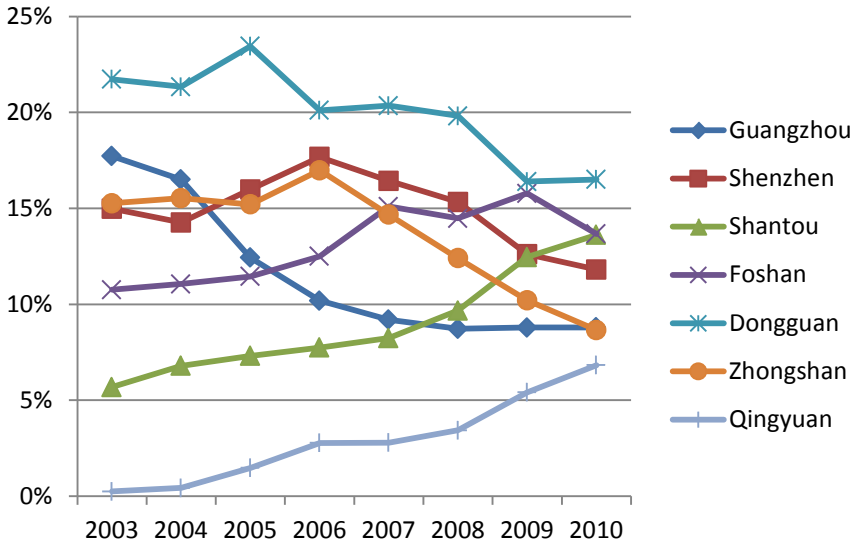


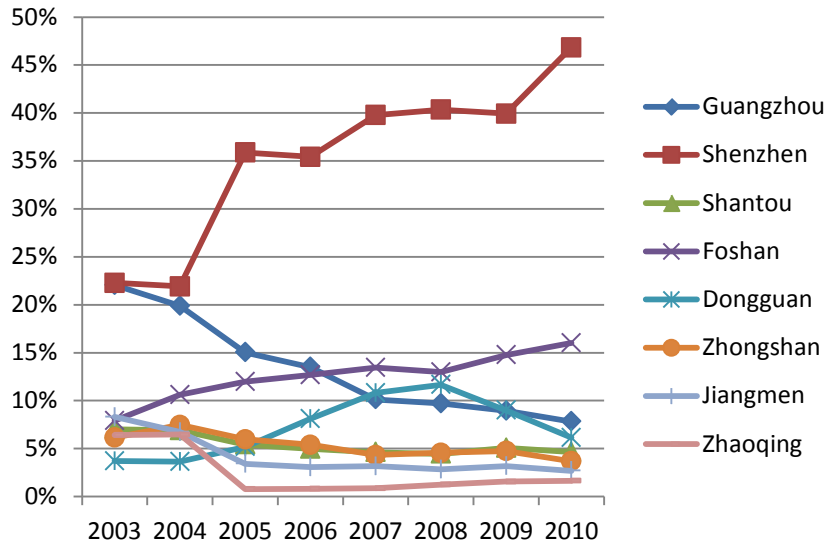
Figure 7. City-level output shares of cultural, educational, and sporting goods industries in Guangdong



Note: Cities with less than 5% share in the province are omitted.

Source: *Statistical Yearbook of Guangdong Province*.

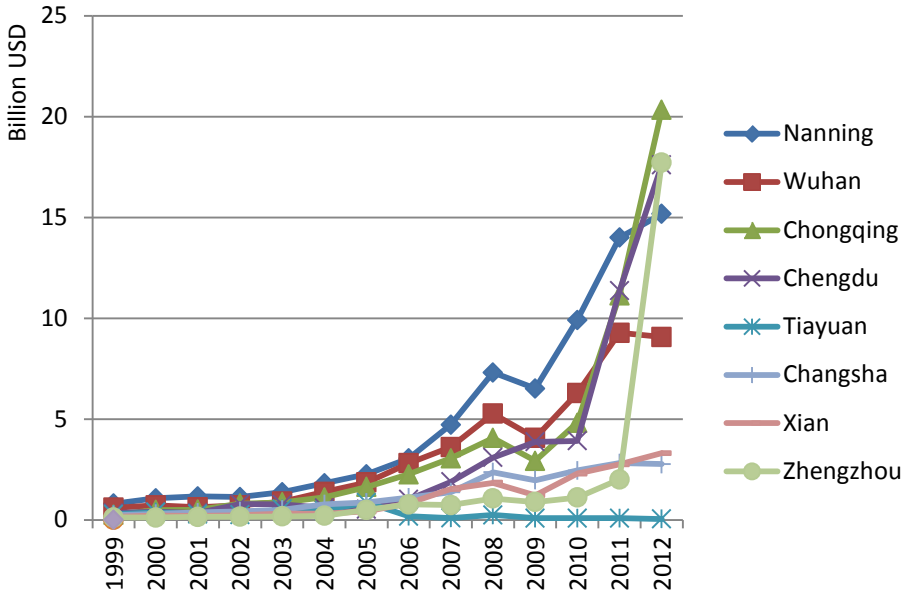
Figure 8. City-level output shares of craft and other industries in Guangdong



Note: Cities with less than 5% share in the province are omitted.

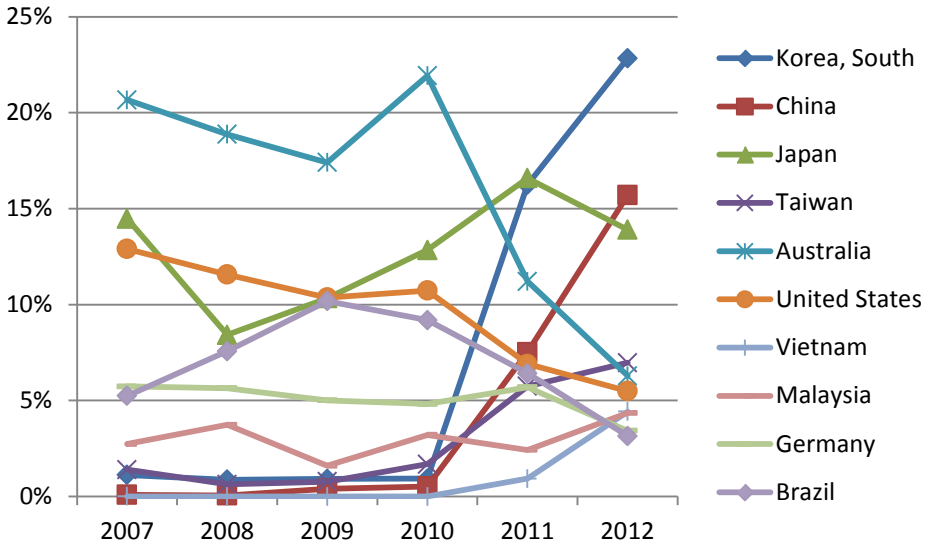
Source: *Statistical Yearbook of Guangdong Province*.

Figure 9. Export by Chinese inland cities



Source: GTA data.

Figure 10. Import partner change of Zhengzhou city, Henan province



Source: GTA database.

Table1. China's global export share in labor-intensive products

Product	1995	2000	2005	2006	2007	2008	2009	2010	2011
Leather products	3%	6%	13%	14%	12%	10%	11%	11%	12%
Manufactured wood products	4%	8%	13%	15%	16%	17%	17%	19%	20%
Paper and paper related products	1%	2%	4%	5%	6%	6%	6%	7%	8%
Textile related products	10%	12%	21%	23%	23%	25%	27%	29%	29%
Lime, cement, fabrica, etc.	4%	7%	13%	15%	16%	16%	17%	18%	19%
Glassware	3%	6%	11%	12%	14%	15%	15%	17%	18%
Pottery	27%	39%	49%	52%	52%	53%	55%	59%	58%
Furniture and parts	7%	15%	27%	29%	29%	30%	31%	34%	32%
Travel goods, handbags, etc.	47%	54%	60%	60%	59%	59%	58%	60%	56%
Articles of apparel	22%	25%	35%	36%	38%	39%	41%	43%	42%
Footwear	33%	41%	46%	47%	46%	46%	47%	50%	48%
Baby carriages, toys, games, and sporting goods	40%	55%	61%	63%	66%	66%	66%	66%	64%

Source: UNCTAD database.

Table 2. Destination of migrant worker (%)

	National total		from Eastern Region		from Central region		from Western region	
	Intra-province migrant	Inter-province migrant	Intra-province migrant	Inter-province migrant	Intra-province migrant	Inter-province migrant	Intra-province migrant	Inter-province migrant
2008	46.7	53.3	79.7	20.3	29.0	71.0	37.0	63.0
2009	48.8	51.2	79.6	20.4	30.6	69.4	40.9	59.1
2010	49.7	50.3	80.3	19.7	30.9	69.1	43.1	56.9
2011	52.9	47.1	83.4	16.6	32.8	67.2	43.0	57.0
2012	53.2	46.8	83.7	16.3	33.8	66.2	43.4	56.6

Note: Eastern region includes Beijing, Tianjin, Liaoning, Shanghai, Jiangsu, Zhejiang, Fujian, Shandong, Guangdong, and Hainan, Central region includes Shanxi, Jilin, Heilongjiang, Anhui, Jiangxi, Henan, Hubei, and Hunan, Western region contains Inner Mongria, Guangxi, Chongqing, Sichuan, Guizhou, Yunnan, Tibet, Shaanxi, Gansu, Qinghai, Ningxia, and Xinjiang.
Source: China National Statistical Bureau "National Peasant Supervision Research Report," 2009, 2011, and 2012.

Table 3. Industrial relocation programs in China

	Date	Policy maker	Name of policies
Provincial government	Mar., 2005	People's government of Guangdong province	An opinion on strengthening cooperative industrial relocations in mountain, west, and east regions with Pearl River Delta in our province
	Aug., 2005	People's government of Sichuan province	An opinion on strengthening cooperation in receiving industrial relocations with Greater Pearl River Delta
	May, 2008	People's government of Inner Mongolia province	An instructive opinion on receiving industrial relocations from developed regions
	Aug., 2009	People's government of Henan province	A circular on a meeting on receiving industrial relocations of Taiwanese companies
	Dec., 2010	People's government of Hebei province	An implementation opinion on strengthening receiving industrial relocations
	Apr., 2011	People's government of Hainan province	An implementation opinion on receiving industrial relocations
	Jun., 2011	People's government of Qinghai province	A circular on plan of implementation of receiving industrial relocation from Eastern area
Central government	Jul., 2010	Ministry of industry and information technology of the PRC	An instructive opinion on progress the relocations of textile industries
	Aug., 2010	State Council of the People's Republic of China	An instructive opinion on receiving industrial relocations in Central and Western regions
	Dec., 2011	State administration for industry and commerce of the PRC	A working opinion on coherent register of receiving industrial relocations in Central and Western regions

Source: Each government's documents, local newspapers, and related domestic literatures.

Table 4. Definition of variables

The dependent variable	Relative output growth	$ln\left(\frac{Y_{ijt}}{Y_t}\right) - ln\left(\frac{Y_{ijt-1}}{Y_{t-1}}\right)$
Dispersion forces	(1) Relative wage	$ln\left(\frac{Wage_{ijt-1}}{L_{ijt-1}}\right) - ln\left(\frac{Wage_{t-1}}{L_{t-1}}\right)$
	(2) Relative KL ratio	$ln\left(\frac{Asset_{ijt-1}}{L_{ijt-1}}\right) - ln\left(\frac{Asset_{t-1}}{L_{t-1}}\right)$
Agglomeration forces	(3) Absolute scale of local industry	$ln\left({}^{L_{ijt-1}}/_{L_{t-1}}\right)$
	(4) Local industrial specialization	$ln\left(\frac{Y_{ijt-1}}{Y_{it-1}}\right) - ln\left(\frac{Y_{jt-1}}{Y_{t-1}}\right)$

	(5) Local industrial diversity	$\ln\left[\sum_j \left(Y_{ijt-1}/Y_{it-1}\right)\right]^2$
Other independent variables	(6) Relative scale	$ln\left(\frac{L_{ijt-1}}{EST_{ijt-1}}\right) - ln\left(\frac{L_{t-1}}{EST_{t-1}}\right)$
	(7) Relative profitability	$ln\left(Profit_{ijt-1}/Asset_{ijt-1} \Big/ Profit_{t-1}/Asset_{t-1} + 1\right)$

Note: t = initial period, i = province, j = industry, Y = output, L = employment, Asset = fix asset, T_Asset = total asset, EST = number of firms, Profit = total profit.

Table 5. Studied industries, areas, and period

Industries (28 two-digit)	Food Production; Beverage Production; Tobacco Products Processing; Textile Industry; Clothes, Shoes and Hat Manufacture; Leather, Furs, Down and Related Products; Timber Processing, Bamboo, Cane, Palm Fiber and Straw Products; Furniture Manufacturing; Papermaking and Paper Products; Priting and Record Medium Reproduction; Cultural, Educational and Sports Articles Production; Raw Chemical Material and Chemical Products; Medical and Pharmaceutical Products; Chemical Fiber; Rubber Products; Plastic Products; Nonmetal Mineral Products; Smelting and Pressing of Ferrous Metals; Smelting and Pressing of Non-ferrous Metals; Metal Products; Ordinary Machinery Manufacturing; Special Equipment Manufacturing; Transport Equipment Manufacturing; Electric Machines and Apparatuses Manufacturing; Communications Equipment, Computer and Other Electronic Equipment Manufacturing; Instruments, Meters, Cultural and Office Machinery Manufacture; Craftwork and Other Manufactures
Areas (30 provinces)	East: Beijing, Tianjin, Hebei, Shandong, Jiangsu, Shanghai, Zhejiang, Fujian, Guangdong, Hainan Central: Shanxi, Henan, Hubei, Hunan, Jiangxi, Anhui Western and North-East: Sichuan, Chongqing, Gansu, Guizhou, Ningxia, Qignhai, Shaanxi, Guangxi, Yunnan, Xinjiang, Inner Mongoria, Liaoning, Jilin, Heilongjiang
Period (7 years)	from 2004 to 2010

Table 6. Descriptive statistics

	National				the Eastern region			
	Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Min	Max
Relative output growth	1.034	0.299	0.048	11.315	0.970	0.212	0.299	7.138
Relative wage	0.969	0.512	0.161	9.623	1.122	0.642	0.290	9.623
Relative KL ratio	1.187	1.206	0.024	25.962	1.317	1.670	0.055	25.962
Absolute scale of local industry	0.001	0.003	0.000	0.038	0.003	0.004	0.000	0.038
Local industrial specialization	1.037	1.203	0.004	22.799	1.025	0.771	0.027	6.855
Local industrial diversity	0.114	0.050	0.054	0.259	0.104	0.039	0.054	0.208
Relative scale of establishments	1.275	1.231	0.100	26.769	1.065	0.836	0.237	9.001
relative profitability	0.906	0.754	−1.033	7.699	1.054	0.677	−0.659	7.062

	the Central region				the Western and Northeastern			
	Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Min	Max
Relative output growth	1.081	0.185	0.478	2.421	1.061	0.380	0.048	11.315
Relative wage	0.853	0.407	0.290	4.104	0.906	0.404	0.161	4.586
Relative KL ratio	1.047	0.815	0.109	9.012	1.152	0.877	0.024	9.398
Absolute scale of local industry	0.001	0.001	0.000	0.007	0.000	0.001	0.000	0.006
Local industrial specialization	0.984	0.776	0.004	5.736	1.070	1.581	0.005	22.799
Local industrial diversity	0.103	0.059	0.063	0.254	0.127	0.051	0.062	0.259
Relative scale of establishments	1.348	1.295	0.110	17.494	1.403	1.421	0.100	26.769
relative profitability	1.112	0.939	−0.657	7.699	0.695	0.652	−1.033	7.193

	National		Eastern		Central		Western and Northeastern	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
ln(Relative output growth)	0.009	0.213	−0.045	0.160	0.064	0.168	0.025	0.254
ln(Relative wage)	−0.118	0.390	0.026	0.383	−0.236	0.366	−0.174	0.374
ln(Relative KL ratio)	−0.111	0.739	−0.073	0.788	−0.191	0.691	−0.102	0.719
ln(Absolute scale of local industry)	−7.767	1.615	−6.942	1.623	−7.582	1.186	−8.491	1.444
ln(Local industrial specialization)	−0.390	1.009	−0.235	0.779	−0.325	0.872	−0.541	1.189
ln(Local industrial diversity)	−2.256	0.407	−2.330	0.378	−2.389	0.433	−2.137	0.382
ln(Relative scale of establishments)	0.023	0.597	−0.102	0.522	0.089	0.575	0.089	0.646
ln(relative profitability)	0.575	0.381	0.672	0.311	0.667	0.393	0.457	0.392

Table 7. National estimation results

	[1]	[2]	[3]	[4]	[5]	[6]
	2004−2010		2004−2007		2007−2010	
ln(Relative wage)	−0.0883	−0.0338	−0.1094	−0.0583	−0.0528	−0.0045
	[0.0070]***	[0.0071]***	[0.0096]***	[0.0099]***	[0.0105]***	[0.0102]
ln(Relative KL ratio)	0.0167	0.0052	0.0242	0.0142	0.0067	−0.006
	[0.0036]***	[0.0034]	[0.0050]***	[0.0048]***	[0.0052]	[0.0048]
ln(Absolute local industry scale)	−0.0022	0.0171	0.0022	0.0195	−0.0073	0.0139
	[0.0018]	[0.0020]***	[0.0024]	[0.0028]***	[0.0025]***	[0.0028]***
ln(Local industrial specialization)	−0.0077	−0.0218	−0.0046	−0.018	−0.0129	−0.0262
	[0.0033]**	[0.0032]***	[0.0045]	[0.0045]***	[0.0047]***	[0.0046]***
ln(Local industrial diversity)	−0.0229	−0.011	−0.0334	−0.0228	−0.0056	0.0047
	[0.0060]***	[0.0057]*	[0.0081]***	[0.0078]***	[0.0090]	[0.0084]
ln(Relative scale of establishments)	−0.0128	−0.0346	−0.0059	−0.0272	−0.0243	−0.0436
	[0.0040]***	[0.0040]***	[0.0056]	[0.0057]***	[0.0058]***	[0.0057]***
ln(relative profitability)	0.0523	0.066	0.054	0.0744	0.053	0.0506
	[0.0069]***	[0.0068]***	[0.0096]***	[0.0096]***	[0.0102]***	[0.0099]***
Eastern region dummy		−0.097		−0.0836		−0.1087
		[0.0079]***		[0.0117]***		[0.0107]***
Central region dummy		0.0147		0.0158		0.0169
		[0.0082]*		[0.0118]		[0.0114]
Western dummy (not include Northeastern)		0.0078		0.0076		0.0094
		[0.0082]		[0.0117]		[0.0115]
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes
Constant	−0.1097	0.0876	−0.1061	0.0637	−0.0884	0.1331
	[0.0210]***	[0.0224]***	[0.0282]***	[0.0307]**	[0.0308]***	[0.0321]***
Adjusted R square	0.0663	0.1515	0.0789	0.1387	0.0589	0.1748
Observations	4694	4694	2341	2341	2353	2353

Note: * indicates statistical significance at the 0.1 level, ** indicates statistical significance at the 0.05 level, *** indicates statistical significance at the 0.01 level.

Table 8. Regional estimation results

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
	The Eastern Region			The Central Region			The Western and Northeastern Region		
	2004-2010	2004-2007	2007-2010	2004-2010	2004-2007	2007-2010	2004-2010	2004-2007	2007-2010
ln(Relative wage)	-0.0658	-0.0668	-0.0541	0.0048	-0.0759	0.0804	-0.0295	-0.0494	-0.0002
	[0.0095]***	[0.0129]***	[0.0144]***	[0.0152]	[0.0226]***	[0.0203]***	[0.0175]*	[0.0252]*	[0.0246]
ln(Relative KL ratio)	0.023	0.0254	0.0185	-0.0221	0.0036	-0.0521	0.0019	0.0065	-0.0027
	[0.0044]***	[0.0061]***	[0.0065]***	[0.0082]***	[0.0115]	[0.0112]***	[0.0097]	[0.0145]	[0.0130]
ln(Absolute local industry scale)	0.0173	0.0209	0.0125	0.0056	0.0027	0.0089	0.0224	0.0234	0.0204
	[0.0025]***	[0.0035]***	[0.0035]***	[0.0049]	[0.0071]	[0.0066]	[0.0048]***	[0.0071]***	[0.0064]***
ln(Local industrial specialization)	-0.0186	-0.0179	-0.0188	-0.0107	-0.0039	-0.0252	-0.0246	-0.0149	-0.0378
	[0.0050]***	[0.0069]**	[0.0071]***	[0.0079]	[0.0110]	[0.0109]**	[0.0071]***	[0.0102]	[0.0097]***
ln(Local industrial diversity)	-0.0168	-0.035	0.0077	-0.0469	-0.0581	-0.0259	0.0034	0.0002	0.0069
	[0.0078]**	[0.0108]***	[0.0113]	[0.0140]***	[0.0183]***	[0.0215]	[0.0132]	[0.0194]	[0.0180]
ln(Relative scale of establishments)	-0.0074	-0.009	-0.007	-0.0524	-0.0297	-0.0679	-0.0361	-0.0265	-0.0491
	[0.0057]	[0.0078]	[0.0085]	[0.0084]***	[0.0132]**	[0.0104]***	[0.0087]***	[0.0130]**	[0.0115]***
ln(relative profitability)	0.0777	0.0624	0.0985	0.0158	0.0607	-0.0209	0.0594	0.0545	0.057
	[0.0107]***	[0.0147]***	[0.0158]***	[0.0134]	[0.0192]***	[0.0191]	[0.0148]***	[0.0209]***	[0.0216]***
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	-0.0099	-0.0196	-0.0133	-0.0174	-0.1086	0.122	0.1383	0.1363	0.1901
	[0.0269]	[0.0366]	[0.0392]	[0.0543]	[0.0745]	[0.0759]	[0.0560]**	[0.0822]*	[0.0743]**
Adjusted R square	0.0906	0.119	0.0688	0.1365	0.1491	0.1958	0.0719	0.0437	0.1011
Observations	1618	810	808	983	492	491	1606	797	809

Table 9. Intra-province relocation programs taken by the Guangdong provincial government

Date	Responsible unit of program	Name of programs	Major contents
Sep 27, 2002	People's government of Guangdong province	A decision on acceleration of the development in the mountain regions	Promoting infrastructure development and industrial development in moutain areas
March 7, 2005	People's government of Guangdong province	An opinion on strengthening cooperative industrial relocations in mountain, west, and east regions with Pearl River Delta in our province	Establishing the "Industrial Relocation Parks"
May 24, 2008	People's government of Guangdong province	A decision on promoting industrial relocations and labor migrations	Setting the policy goals and principle of programs, and presenting major policy tools
June 17, 2008	The Administration for industry and commerce of Guangdong Province	Carrying out "A decision on promoting industrial relocations and labor migrations"	Permitting the use of company name in relocated areas, and prohibiting relocation of pollutions, and minimizing the administrative cost of firm relocations
June 23, 2008	The Economic and Trade Commission of Guangdong Province	An Instructive opinion on the formation of industrial relocation in Guangdong province	Listing relocation-promoted industries and relocation-prohibited industries, and setting the main industries of each of "Industrial Relocation Parks"
June 24, 2008	The Economic and Trade Commission of Guangdong Province	A Trial law of policy targets and responsibility on industrial relocations in Guangdong province	Setting the evaluation system to city-level government actions toward industrial relocations
2009	The Academy of Social Sciences of Guangdong Province	A master plan of regional formation of industrial relocations in Guangdong province	Presenting the needs, priciples, targets, and overall plan of spatial relocations

Source: Local government documents and local newspapers.

Table 10. "Core" six cities' shares in selected industries in Guangdong province

	Number of firms				Industrial output			
	Shares in 2003	Shares in 2007	Shares in 2010	Share Changes in 2003–2010	Shares in 2003	Shares in 2007	Shares in 2010	Share Changes in 2003–2010
Texitile industry	62.81%	60.59%	60.83%	−1.98%	63.32%	64.55%	63.13%	−0.19%
Clothes, Shoes, and Hat manufacturings	67.81%	66.14%	60.92%	−6.89%	66.53%	71.44%	62.50%	−4.03%
Leather, Furs, Down and related producs manufacturings	62.05%	63.72%	64.19%	2.15%	68.06%	73.21%	64.64%	−3.43%
Timber processing and related products manufacturing	45.05%	47.32%	36.28%	−8.77%	45.28%	44.73%	39.11%	−6.17%
Furniture manufacturing	68.80%	79.27%	80.72%	11.92%	77.62%	80.77%	79.35%	1.73%
Cultural Educational and Sports Articles manufacturings	73.79%	67.21%	63.09%	−10.70%	82.61%	77.05%	61.28%	−21.33%
Craftwork and other manufacrturings	54.43%	56.94%	57.97%	3.54%	65.16%	80.36%	80.70%	15.53%
Electric Machines and Apparatuses Manufacturing	75.16%	83.66%	81.96%	6.80%	84.23%	88.05%	86.88%	2.65%
Communications Equipment, Computer and Other Electronic Equipment Manufacturing	78.45%	84.34%	82.53%	4.08%	85.50%	88.42%	87.01%	1.50%

Source: *Statistical Yearbook of Guangdong Province*.

Table 11. Zhengzhou's major import products (2010-2012)

	Partner	HS code	Product description	Import value (million USD)			Share in city's total import			Share change during 2010–2012
				2010	2011	2012	2010	2011	2012	
	Total	–	–	4091.7	9085.3	18641.5	100%	100%	100%	–
1	Korea, South	85423100	Processors And Controllers	2.0	875.9	3168.4	0.05%	9.64%	17.00%	16.95%
2	China	85177030	Parts Of Wireless Telephone Handsets (Excl. Antenna)	0.0	272.5	1030.7	0.00%	3.00%	5.53%	5.53%
3	Vietnam	85258013	Other Television Cameras, Not For Special Purposes	0.0	64.7	750.0	0.00%	0.71%	4.02%	4.02%
4	Taiwan	85423100	Processors And Controllers	6.1	120.3	674.6	0.15%	1.32%	3.62%	3.47%
5	Japan	84571010	Vertical Machining Centres	50.3	247.4	618.4	1.23%	2.72%	3.32%	2.09%
6	Australia	26011120	Non-Agglomerated Iron Ores & Concentrates	344.6	488.0	511.7	8.42%	5.37%	2.75%	−5.68%
7	Korea, South	85258013	Other Television Cameras, Not For Special Purposes	0.0	309.9	437.7	0.00%	3.41%	2.35%	2.35%
8	Korea, South	85423200	Memories	0.0	216.1	420.8	0.00%	2.38%	2.26%	2.26%
9	China	85423200	Memories	0.0	26.9	354.8	0.00%	0.30%	1.90%	1.90%
10	Taiwan	85423200	Memories	0.0	189.1	316.0	0.00%	2.08%	1.70%	1.70%

Source: GTA database.

Appendix table

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
	The Eastern Region			The Central Region			The Western and Northeastern Region		
	2004-2010	2004-2007	2007-2010	2004-2010	2004-2007	2007-2010	2004-2010	2004-2007	2007-2010
ln(Relative wage)	-0.0056	0.0219	-0.0226	0.012	-0.0353	0.0287	-0.026	-0.0343	-0.019
	[0.0138]	[0.0198]	[0.0196]	[0.0192]	[0.0284]	[0.0263]	[0.0181]	[0.0264]	[0.0255]
ln(Relative KL ratio)	0.0093	0.0038	0.0128	-0.0197	-0.0005	-0.0306	0.0006	0.0043	0.0008
	[0.0051]*	[0.0069]	[0.0074]*	[0.0086]**	[0.0118]	[0.0125]**	[0.0096]	[0.0144]	[0.0128]
ln(Absolute local industry scale)	0.0105	0.0074	0.0151	0.0186	0.0121	0.025	0.012	0.0142	0.0088
	[0.0033]***	[0.0046]	[0.0047]***	[0.0054]***	[0.0080]	[0.0071]***	[0.0060]**	[0.0087]	[0.0083]
ln(Local industrial specialization)	-0.0079	0.0032	-0.0187	-0.0252	-0.014	-0.0428	-0.0193	-0.0074	-0.0327
	[0.0053]	[0.0074]	[0.0075]**	[0.0084]***	[0.0118]	[0.0115]***	[0.0076]**	[0.0109]	[0.0106]***
ln(Local industrial diversity)	-0.0368	0.0184	-0.0994	-0.166	0.1469	-0.22	0.1629	0.0826	0.1008
	[0.0412]	[0.0834]	[0.0943]	[0.0785]**	[0.1207]	[0.1551]	[0.0693]**	[0.1345]	[0.1108]
ln(Relative scale of establishments)	-0.0347	-0.0453	-0.027	-0.056	-0.0413	-0.0564	-0.0346	-0.0249	-0.0436
	[0.0064]***	[0.0089]***	[0.0091]***	[0.0093]***	[0.0145]***	[0.0118]***	[0.0093]***	[0.0140]*	[0.0125]***
ln(relative profitability)	0.0436	0.01	0.0684	0.0574	0.0688	0.0628	0.0309	0.0105	0.0415
	[0.0125]***	[0.0171]	[0.0185]***	[0.0175]***	[0.0247]***	[0.0259]**	[0.0156]**	[0.0221]	[0.0227]*
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	-0.0697	0.0738	-0.1033	-0.309	0.5178	-0.1534	0.3854	0.2462	0.3017
	[0.1155]	[0.1494]	[0.1617]	[0.2138]	[0.3314]	[0.2229]	[0.1619]**	[0.3143]	[0.2465]
Adjusted R square	0.145	0.1622	0.1654	0.1869	0.1857	0.2496	0.1081	0.0771	0.1279
Observations	1618	810	808	983	492	491	1606	797	809

Note: * indicates statistical significance at the 0.1 level, ** indicates statistical significance at the 0.05 level, *** indicates statistical significance at the 0.01 level.

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