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Innovation and Spatial Dynamics**

Can the Textile Industry in Zhejiang Learn from Taiwan's Post-1985 Experience

Jieru Liu

jieru.liu.870@student.lu.se

Abstract: In 2005-2008, the textile industry in Zhejiang has encountered the similar economic situation of currency appreciation and rising labor cost with the post-1985 Taiwanese textile industry. The output, exports and employment of them in each region has been impacted. This paper finds the similar type of SMEs in both textile industries. The textile enterprises in Zhejiang can learn the experience of more high-tech production or to relocate overseas like their Taiwanese equivalents.

Key words: Textile industry, appreciation, labor cost, impact, Zhejiang, Taiwan

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Supervisor: Maria Stanfors, Tobias Karlsson

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1. Introduction

During the recent years, due to the rise of labor cost and the appreciation of currency in China, many factories, especially those under the control of multi-national enterprises, which produce export-oriented products, e.g. textiles, have moved out from southeastern China, e.g. Zhejiang province, to Southeast Asian countries, like Laos and Vietnam etc.

In addition, reports of labor shortage cropped up in late 2004, indicating that China's supply of cheap labor is limited. The labor shortage has boosted wages in manufacturing sectors in China. As stated in a January report by the American Chamber of Commerce in China, the increasing labor cost has squeezed margins by 48 percent of U.S. manufacturers on the mainland (Dexter, 2006). On July 21, 2005, China switched from dollar-peg exchange rate regime to a new one in which the Chinese Yuan is pegged to a basket of currencies. By July 21, 2008, the exchange rate between the Chinese Yuan and the U.S. dollar has cumulatively appreciated by over 21 percent, from a fixed rate at 8.11RMB/USD to 6.83 RMB/USD. This dramatic appreciation of RMB has sharply decreased the volume of exports of Chinese products according to the official statistics.

Export sectors are suffering from the increase of labor costs and appreciation of RMB, hence the decrease of orders for export-oriented industries and firms in China. The textile industry, a labor intensive and very important industry for the economy, has been hit because of the rising labor costs and the appreciation of RMB ever since 2005.

Taiwan experienced the similar situation between 1985 and 1992 to what mainland China is experiencing since 2005. Rising labor cost has emerged with the "economic miracle" of Taiwan. Average earnings of employees in sector of textile mills have doubled from 1985 to 1992, according to the official data from the statistic yearbook. The Taiwan dollar appreciated 5.3 percent against the U.S. dollar in 1985-1986. In 1987, it appreciated by 19.2 percent. By 1992, the appreciation has accumulated to 58 percent against the U.S dollar (Xu, 2008). This dramatic appreciation undoubtedly hit the export-oriented sector in Taiwan seriously. The annual growth rate of

merchandise exports, obviously including the exports of textiles, decreased significantly from 34.4% to 1.5% between 1987 and 1990 (Xu, 2008).

It was said that many enterprises in textile industry in Taiwan have been relocated to Southeast Asia and mainland China ever since 1988. This relocation was pushed by the lower labor cost in mainland China and accelerated by the rise of labor cost in Taiwan due to the appreciation of Taiwan dollar. The basic affinity of language, close geographic distance between the mainland and Taiwan as well as the favorable local policies in both regions also encouraged the relocation of textile enterprises.

The provinces in southeastern mainland China share many characteristics of the Taiwanese economy and industries when the appreciation occurred in 1986-1992. Zhejiang, located in southeastern China, is a typical export-oriented province and a major actor in the field of textile manufacturing and exporting in China. As a labor intensive industry, the textile industry has greatly contributed to the employment and amount of exports of Zhejiang. With 28 000 textiles manufacturing firms, the employment of the whole textile industry in Zhejiang, whose manufacturing employment was about 8.73 million, was over 2.06 million, according to the official statistics from the Report of Main Statistics of First Economic Census in Zhejiang Province in 2005.

The data of Chinese customs shows that the value of major textiles exports in Zhejiang was about 24.43 billion U.S. dollars in 2005. It increased to about 29.74 billion U.S. dollars in 2006, about 35.60 billion U.S. dollars in 2007 and about 42.25 billion U.S. dollars in 2008. However, the value has declined by 6.46 percent in February, 2008 and declined by 0.92 percent from January to November, 2008, compared to the same periods respectively in 2007. The increase of volume of textiles exports between 2007 and 2008 was 18.66 percent, compared to 19.72 percent in 2006-2007 and 21.74 percent in 2005-2007. This result indicates the declining growth rates of textiles exports, though the extent of this decline is not very significant at present. Moreover, another figure need to be pointed out is that, in January 2009, the value of exports has decreased by 0.12 percent, compared to it in January 2008.

As Zhejiang is a more developed province due to its geographical coastal location, the labor cost of manufacturing industry has climbed significantly recent years. With the rise of labor cost, the shortage of skilled employees has been one of the largest problems in Zhejiang textile industry (Dexter, 2006). With regard to the costs of textile industry, the rising raw material costs are also important factors affecting the textile industry. The overall purchasing price index of raw materials increased 8.5 percent per year on average in 2004-2006 (Kim and Kuijs, 2007). But they will not be analyzed in this paper. Another background for this study should be pointed out is that in August 2007, the U.S. subprime mortgage crisis broke out. It has spread rapidly as a global financial crisis since September 2008. The global economy has been shocked and sunk into the crisis. The global financial crisis exacerbates the decline of exports growth in Chinese textile industry. But no such crisis occurred in 1985-1992 to impact the textile industry in Taiwan.

The appreciation of new Taiwan dollar in 1986-1992 and its short-run and long-term impacts on the Taiwan's economy have been researched by Xu (2008). He compares the current appreciation of Chinese Yuan with the appreciation of new Taiwan dollar and finds the relevancy of Taiwan's experience regarding how to manage RMB appreciation and the transition towards a more flexible exchange rate regime. He also states that certain moderate pace of real appreciation can push the Chinese economy to move into activities that generate higher value added as Taiwan has experienced. The study of new Taiwan dollar appreciation in this paper is based on his research mentioned above. Whereas Xu studies the impact of the appreciation on production and employment in the Taiwanese export sector as a whole, I have chosen to focus on how the appreciation has affected the textile industry. Moreover, this paper further focuses on the activity of overseas relocation of textile enterprises under the circumstance of currency appreciation as well as the rising labor cost.

The relocation of enterprises in textile industry from one region to lower labor cost region is a phenomenon need to be understood empirically within its context of increase of labor cost and appreciation of currency. Mainland China at present has confronted a very similar situation of rising labor cost and appreciation of currency in Taiwan during its period between 1986 and 1992. In such circumstance, the problem of losing comparative advantage of lower labor cost has become more and more

serious due to the appreciation of RMB. Since the export-oriented textile industry is so important for Chinese economy, I am quite interested in what will occur in this industry in mainland China.

The purpose of this thesis is to compare Zhejiang's textile industry in the period 2005-2008 with that of the Taiwanese textile industry after 1985. What are the similarities and dissimilarities of the textile industries in these two regions? What are the impacts of currency appreciation and rising labor costs on output, exports and employment? I also intend to discuss whether the textile enterprises of Zhejiang will relocate to lower labor cost region like their Taiwanese equivalents and if there are possibilities to upgrade to more high-tech production. Can textile enterprises in Zhejiang learn from the experience of Taiwan; if so, what could be learned?

The rest composition of this paper contains the following sections. The next section presents the review of related theory and previous research. In section 3, the method and data of the present paper are shown. The section 4 describes the definition of textile industry termed in this paper. In section 5, the Taiwan's post-1985 experience is discussed, which covers the analysis of the impacts of appreciation of Taiwan dollar and rise of labor cost on textile industry in Taiwan and the feature of textile industry in Taiwan. The section 6 presents similar impacts of appreciation of Chinese Yuan and increase of labor cost on mainland China, particularly on Zhejiang. This section also looks at the feature of textile industry in mainland China as well as in Zhejiang. The section 7 seeks to find the experience of Taiwan's relocated textile enterprises for Zhejiang's textile firms to learn. The final section concludes.

2. Theory and previous research

A theoretical framework about the phenomenon of industry relocation or cross-national expansion on a macro-level is the product life cycle theory by Vernon (1966). The product life cycle theory indicates the dynamic nature of international trade and investment that new products are introduced and produced in developed or high income countries. When the production matures and standardizes the location of production transfers to less developed countries to obtain more profits from lower labor cost. Wells (1983) has applied this theory to Third World Multinational

enterprises (TWMNEs). But Dowling and Cheang (2000) state that the product life cycle theory is from the perspective of developed countries. Moreover, Sim and Pandian (2003) indicate that this theory has been inapplicable, since new products have been originating from undeveloped or low income countries other than from the home country after the relocation of the old production in the MNEs network. And the theory does not apply to foreign direct investments (FDI) which are resource-based, efficiency-seeking and strategic asset-seeking. However, they argue that the product life cycle theory is still useful in explaining MNEs from developing countries that invest in other less developed countries, which can be applied for the Taiwan's MNEs in the textile industry.

The more theory for developing countries is the flying geese theorem, which was developed by Kaname Akamatsu in the 1930s and was popularized in 1961 in English (Kojima, 2000). The theorem has been used to explain the rapid economic growth in East Asia, which depicts the shift of direct investments and activities from one level of economies to another, commencing from Japan, followed by the newly industrialized countries (NICs; i.e. Korea, Taiwan, Hong Kong and Singapore), and then by the rapidly growing countries including Indonesia, Malaysia and Thailand. Akamatsu (1962) states that the less-advanced geese are chasing those ahead of them, either gradually or rapidly, following the course of industrial development in a flying geese pattern. The advanced geese, which are in the lead flying onward, increasingly achieving technological innovations and intending to maintain a certain distance of heterogeneous (or dissimilar) difference from less-advanced ones.

Rana (1990) states that learner economy (i.e. the less-advanced geese), which is gradually equipped with a rising competitive advantage, imports technology from the teacher economy (i.e. the advanced geese). But the latter one is losing this competitive advantage. The teacher economy would turn to newer industry, which has an innovative edge, with more advanced technology (cited in: Geda and Meskel, 2008). Kojima (2000) points out that flying geese theorem explain the catching-up of industrialization in latecomer economies, and the diversification to more capital-intensive key industries and later the rationalization of mature economy in order to adopt more efficient mode of production, since physical and human capitals had been accumulated. Ozawa (2001) points out that through statistical analysis of prewar

industrial development of textile industry, Akamatsu uses the flying geese theorem to explain stages of industrial upgrading in a basic pattern and in a variant pattern. The former pattern is that a simple industry grows tracing out the three successive curves of import, production and export; the latter one is that industries are diversified and upgraded from consumer goods to capital goods and/or from single to more sophisticated products. The textile industry in Taiwan has experienced both patterns of the flying geese theorem.

Another theory, the Investment Development Path (IDP) (Dunning, 1981, 1986) defines the net outward investment of a country according to its stage of economic development. In the first stage of low level of economic development, there is little cross-board investment. When the country develops to the second stage, foreign investment goes in actively and some investments flow into countries at lower stages of development. As the country develops further, outward investment increases, while net inward investment goes in the contrary direction. Outward investment inclines to rise to countries at lower stages of development to maintain low cost advantage in labor intensive industries. They also seek markets or strategic assets. Taiwan and South Korea are defined to be at this stage. In the fourth stage, net outward investment becomes positive with the multinational production. When it comes to the final fifth stage, as a result of “the shift from advantages based on factor endowment to those based on internalizing international markets”, outward and inward investments converge. Hoesel (1999) points out that the theory of IDP still does not explain the precise relationships between the underlying advantages and the pattern of inward and outward foreign direct investment or stage of IDP.

Other theories about the relocation or expansion across national boundaries of individual enterprise on a micro-level are the Eclectic paradigm (Dunning, 1977, 1988, 1993, 1995) and the Uppsala model (Johanson and Weidersheim-Paul, 1975; Johanson and Vahlne, 1977). These theories were based on western multinational to a large extent.

The Eclectic Paradigm, which is the most popular explanation of international production, has listed a configuration of three sets of advantages to explain the determination of international production. The first set of advantages of the

configuration is the “ownership or firm-specific advantages, such as proprietary technology, products, expertise and skills” (Sim and Pandian, 2003, pp.29). For example, the enterprise which maintains the particular patent or intellectual rights of a specific technology possesses this advantage to develop its international production. The second one is the “internalization of these advantages across national boundaries to overcome market imperfections or failures, reduce transaction costs and maximize economic returns (Buckley and Casson, 1976)”. It means that enterprises which have equipped with the ownership advantages, should internalize these advantages in the local market of host country. The last aspect of advantages is the location advantages of host and home countries. This means that it is better for the enterprise to produce in the host country rather than exports its product to the country. The possible reasons are either the impediment factors of export to the host country, such as the tariff and non-trade barrier; or it is more profitable to produce locally, for instance, the host country owns lower labor cost or issues policies to attract foreign investment. This theory answers the question that why firm internationalizes, but it neglects the dynamic process of internationalization. Fortunately, the Investment Development Path (IDP) has complemented this weakness with a dynamic dimension.

The Uppsala model, a model containing gradual incremental steps to international business expansion, explains the dynamic process of internationalization of individual firms (Johanson and Weidersheim-Paul, 1975; Johanson and Vahlne, 1977). The steps are based on a series of incremental decisions, whose “successive steps of increasingly higher commitments are based on knowledge acquisition and learning about the foreign market” (Sim and Pandian, 2003, pp.30). The first step of foreign activities was to export to a country via independent representative or agent. The successive step is to establish sales subsidiary. And the final step is to product in the host country. The psychic distance, including difference in language, education, business activities, culture and industrial development, is the factor influencing the firm’s foreign activities and its internalization. With closer of the psychic distance between the home country and host country, it is easier for a firm to enter the market of host country. The initial entry is to a closer market with shorter psychic distance and then to foreign markets with greater psychic distance. The incremental expansion of market commitment, in terms of entry mode, means that the initial entry usually is certain form of low commitment mode, such as minority joints venture. The

successive entry is higher commitment mode, like majority joint venture and wholly owned subsidiary. On the other hand, in terms of level of ownership in different markets, commitment is also similarly related to the psychic distance. The attractiveness of the Uppsala model is the perspective of intuitive nature and evolutionary learning.

The above mentioned theories are not satisfactory to explain the internationalization of Asian MNEs. They neither explain the relation between the exchange rate and relocation of enterprise or upgrading productivity for the enterprise.

The Asian multinational enterprises (MNEs) are firms from the Asian capital exporting countries which has been or are operating international and multinational business activities. Western theories on internationalization have ignored the active role of state and the institutional perspective of the Asian MNEs. For example, in Singapore, the government uses government linked corporations (GLCs) to regionalize and supports with tax incentives, finance schemes and training program to push the rapid development of local entrepreneurship (Sim and Pandian, 2003). The GLCs are also used to encourage the relocation of production to other countries, such as the build of Singapore-Suzhou Industrial Township in Suzhou, China. In Taiwan, the government also uses policies to encourage the internalization of Taiwanese industries, such as the policy of “go south” to encourage their enterprises to invest Southeast Asia in 1993. This characteristic is quite different with the benign and indirect role of western state. The institutional and cultural factors are important to explain the Asian MNEs’ activity. The social and ethnic network is essential for Asian MNEs. The internationalization of Asian enterprises tends to be conducted in similar institutional or cultural context with their home country. They bear the similar ethnic beliefs and spirits and are helped with the local personal relationships and networks to operate overseas.

Porter (1990) has indicated that the competitive advantage factor should be change in accordance with the development of industry sector. The competitive advantage of low labor costs would disappear with the industrialization of an economy. Jin (2004) states that cheap labor, which has been the main source of competitiveness of East Asian NICs- including Hong Kong, South Korea and Taiwan, cannot be a viable

factor any more for these countries. Xu (2008) argued that, under the circumstance of appreciation of Taiwan dollar, it was no longer possible for most labor-intensive enterprises to remain stay in Taiwan. Some of them chose to move production offshore to locations with lower labor costs. The rest were forced to upgrade production. The investments mainly first moved to the South East Asian economies, and later to mainland China, because of the difficulty of operating in a foreign environment in former economies and the attraction of a familiar and more business friendly environment in the later one. As to textile industry, the changes of share of value added of industries show that, textile mill products decreased from 8.6 percent to 5.1 percent and wearing apparel, accessories and other textile declined from 6.3 percent to 1.9 percent in 1985-1995. Clifford and Moore (1989) have stated that total Taiwanese investment in textile industry of mainland China had been at \$100-200 million though it was not legalized by the Taiwan authorities. Moreover, Yang and Zhong (1996) points out that in the 1980s, mainland China seized export growth in textile industry from Hong Kong, South Korea and Taiwan, as the labor costs were elevated and they developed comparative advantage in more technologically advanced industries.

The relevant theoretical framework for the relation between real exchange rate and productivity growth in tradable goods sector is provided by the Balassa (1964)–Samuelson (1964) hypothesis (BSH). The nominal exchange rate is the price in foreign currency of one unit of a domestic currency. The real exchange rate is defined as the nominal exchange rate multiplies the ratio of domestic price level to the foreign price level. The standard theory of purchasing power parity (PPP) states that all shocks to relative prices between countries will be transitory and the relative prices in different countries should be stationary over time. However, the BSH argues that, due to sectoral differences between tradable and non-tradable sectors, differences of productivity growth rates between countries within the traded goods sector may lead to permanent deviations from PPP. One country's currency will experience a real appreciation, when there is an anticipation for the relative rise of this country's non-traded goods prices to those of another country, as the productivity of one country becomes more than another. The BSH generates that the productivity growth in traded goods sector may result in the real appreciation of currency, which implies that the

productivity growth in textile industry can contribute to the appreciations of Taiwan dollar and Chinese Yuan.

In brief, productivity growth is more rapid in the tradable goods sector than in the non-traded service sector. Wages in the tradable goods sector rise with productivity growth, which means labor cost are elevated in the sector. While the textile industry is a characteristic export-oriented sector, rise of labor cost in this industry is inevitable.

Moreover, Hua (2008) points out that the real exchange rate determines the value of wages measured in international currency which is the most relevant labor cost in internationally tradable activities. A real appreciation of currency will raise the labor cost even higher as it means a rise in the remuneration of real labor expressed in tradable goods. It would increase the capital/labor intensity of tradable goods and the unemployment, which implies the structural change from labor intensive industry to capital intensive industry, accomplished in the context of productivity growth with higher capital/labor intensity. Therefore the labor intensive textile industry would be forced to be more productive.

Marston (1987) and Schnabl and Baur (2002) have examined the BSH by analyzing the interaction between appreciation of yen and productivity growth in Japan and have found that the appreciation of yen was very meaningful to force Japanese exporters to improve their productivity growth. Ito, Isard, and Symansky (1997) have obtained positive evidence to testify the relevancy of the BSH in Japan, Korea and Taiwan. In the case about appreciation of Taiwan dollar in 1986-1992, Xu (2008) also point out that manufacturing labor productivity, which was measured in terms of the ratio of manufacturing production and employment, has been raised by the structural transformation due to the appreciation. The growth of manufacturing labor productivity was 5.8 percent in 1986–1992, compared to 3.9 percent in 1981–1985 before the appreciation, 4.5 percent in 1993–1998 and 4.6 percent in 1999–2004 after the finish of appreciation. And it was accomplished in the context of declining manufacturing employment.

Mckinnon (2006) argues that to preserve the exchange rate anchor, labor cost in China in terms of money wages had to grow in line with its rapid productivity growth. From 1994 to 2004, money wages in manufacturing increased 11.7 percent in China per year. This wage growth differential approximately reflected growth of labor productivity: about 9.5–12 percent in China. Much of this extraordinary growth in Chinese wages reflects the upgrading of skills and greater work experience of the manufacturing labor force. Xu (2008) also states that appreciation of Taiwan dollar has raised the labor cost of manufacturing in Taiwan.

On one hand, the theories and previous researches on the relocation of industry and internalization of enterprises, including the product life cycle theory, the flying geese theorem, the Eclectic paradigm, the Investment Development Path, the Uppsala model as well as the studies of Asian MNEs, will guide me to study the overseas relocation and expansion of Taiwan's textile industry. Moreover, the Eclectic paradigm, the Uppsala model and the previous researches of Asian MNEs help to figure out the dynamic process of relocation of Taiwan's textile enterprises. The BSH, on the other hand, instructs me to analyze the reciprocal relationship between appreciation of Taiwan dollar and productivity growth of Taiwan's textile industry, particularly the causal chain from the former one to the latter one. All these theories and researches are facilitated to find out whether Zhejiang's textile firms can learn from Taiwan either to relocate overseas or to upgrade productivity.

3. Method and data

This paper utilizes the approach of comparative case study, which belongs to the theory-driven academic research. Russett and George have indicated the advantage of case study that it allows a close examination of historical sequences in the search for causal processes. The causal variables can be identified in the analysis of case study, which is a fundamental process to build and test theory. It may contribute novel empirical inductions to challenge existed theories. Comparative case studies can revise and reform theories to explain more phenomena.

It is stated by Hakim (2000) that general principles for the design and conduct of comparative studies are influenced by the disciplinary perspective that researchers

bring to the task and by the different issues and questions on which each social science focuses. In general, the paper is mainly designed and conducted as a study of situation of textile industry in Zhejiang under the circumstance of increasing labor cost and the appreciation of Chinese Yuan since 2005, compared to the condition of the Taiwan's textile firms which have relocated to lower labor cost region when it faced the appreciation of Taiwan dollar in 1986-1992. Comparative research can be based on secondary analysis of previous case study. The previous case study will be utilized in the section of condition of Taiwanese textile firms moved overseas in 1986-1992. The sample firms have been studied as the Asian MNEs in the previous researches and are qualified as firms which have relocated in the sample period. The main aim of this paper is to find out what could be learned for textile firms in Zhejiang from the experience of Taiwan's post-1985 relocated firms.

This comparative study firstly starts with analysis of appreciation of Taiwan dollar and rise of labor cost in 1985-1992 and quantitative analysis of impacts on production, employment, exports etc. of textile industry in Taiwan. Undoubtedly, the analysis of currency appreciation and labor cost rising as well as the similar quantitative analysis should be done for the Chinese textile industry. In particular, statistics of Zhejiang's textile industry will also be shown and related to the whole Chinese textile industry in order to obtain its proportion in the whole country and the relevancy of it for Chinese economy, and then to compare it with Taiwan. In order to eliminate the disturbance of the impact of global financial crisis, the data of textile industry in mainland China and Zhejiang are mainly not selected beyond 2007. The related data will be administrative data from the statistical annual or yearbook and the official database and from the previous works by research review. With the convenience of internet, these readily available records usually can be accessed from the official websites such as China Statistical Yearbook, Zhejiang Foreign Trade & Economic Cooperation Bureau and National Statistics of the Republic of China (Taiwan).

Certain cultural differences are anticipated in this comparative study due to the different writing of language in the two regions. The simplified character of Chinese is used in mainland China, while Taiwan applies the traditional character of Chinese. The problem of different wording of expression also appears in the process of data

collection and research reviews. Such problem has been overcome with the assistance of translation tools.

The study is a comparison of textile industry in Taiwan and Zhejiang in specific periods. I intend to explain the overseas relocation and the productivity growth of textile firms in Taiwan, and then to explore the possibility to learn from them for textile firms in Zhejiang. The information of characteristics of textile industry in Zhejiang will be collected based on the official statistics. To facilitate the comparison between Zhejiang and Taiwan, features of Taiwan's transferred textile firms in 1986-1992 should also be found by research reviews. In addition, economic circumstances, social and cultural contexts, policy factors for the textile industry in the two districts will be considered for the separate sample periods. For example, the extent of appreciation of Taiwan dollar against the U.S. dollar and change of the annual outputs, the overall employment and the labor cost in textile industry in Taiwan in 1986-1992, should be analyzed. The significant difference of political systems between Zhejiang and Taiwan could not be neglected as the different politics may have different preference to make policies for textile industry. Through comparison the similarity and differential features of industry in two districts, we will find out whether the Taiwan's experience is valuable for Zhejiang textile firms.

4. The definition of textile industry and the features of the textile industry in Taiwan and mainland China (Zhejiang)

4.1 Definition of textile industry

Liu and Gu (2007) firstly describe the definition of apparel industry which includes companies that “design, manufacture, market, and/or license brands for men's, women's, and/or children's clothing, footwear, and accessories” (Liu and Gu, 2007, pp. 14). Later they point out that apparel industry can also be called textile industry, as well as “footwear industry, textile and clothing industry, shoe industry, fashion industry, apparel manufacturing industry, and garment industry” (Liu and Gu, 2007, pp. 14). Textile also refers to “the yarns, threads and wools that can be spun, woven, tufted, tied and otherwise used to manufacture cloth” (Liu and Gu, 2007, pp. 14). In this paper, the textile industry is also defined in a broad sense, which includes the

apparel manufacturing industry, garment industry, footwear industry, textile and clothing industry, shoe industry and fashion industry.

4.2 Taiwan's textile industry

In the earliest period, the textile industry was out of the government's consideration and it was deemed to be better for local entrepreneur to import textiles from Japan than to produce them locally. But later, K.Y.Yin (Chung-yung Yin), the vice-chairman of the Taiwan Production Board, initiated government support through the U.S aid mission, bearing on his belief that importing "yarn rather than fabrics" and "cotton rather than yarn" (Pang, 1992). This belief encouraged Taiwan to import raw materials to manufacture domestic textile products, instead of importing finished textile products overseas. Textile industry therefore has become the main manufacturing industry in Taiwan until the mid-1980s as the Taiwan dollar appreciated since then.

Government guidance was critical for the development of Taiwan's textile industry. It was the textile industry that the first one to develop rapidly from import substitution to export-oriented growth under the "sectorial industrial policy" of the government (Levi-Faur, 1998). Sectorial industrial policy is aimed at changing investments patterns in specific industries by using more interventionist measures. As mentioned in the previous part, though textile was neglected in the first years of governance by Taiwanese authority, the textile industry has been supported by the government ever since the establishment of Taiwan's industrial policy in the early 1950s. Preferential policies were made and functional institutions were set up by government to support the textile industry, such as negotiator among textile enterprises and textile design center. The government also prompted the emergence of small firms to agitate more productive manufacturing and improved competitiveness.

In 1971, the spinning and weaving industries were out of support from the government to leave more investment to the heavy capital industries (Gold, 1981). But the substantial basis for the rapid development of textile industry and the Taiwanese economy miracle has been already constructed until the 1980's as the proficiency of technologies and mature of market network in textile manufacturing.

One special feature of Taiwan's industry is the predominance of small to medium-sized manufacturing enterprises (SMEs) (Xu, 2008). The SMEs have the characteristics of considerable flexibility and agility, which means they can seize the opportunity of the global market and take part in the internationalization of global economy. They have been equipped with the capability of innovation of new technologies and advancement in manufacturing industry (Simon, 1993). However, as the limited size and budget of SMEs, it is difficult to adopt and manage complex technology, particularly in a different cultural context. Therefore, it is easier for the SMEs in textile industry to bring their mature technology and operate their business in a country without cultural barriers.

In Taiwan, the SMEs play a key role in internationalization of Taiwanese firms (Sim and Pandian, 2003). When referring to the textile industry, the relocation of enterprises from Taiwan is mainly performed by SMEs. The prevalence of SMEs in foreign direct investment (FDI) in China and Southeast Asia is a characteristic feature of Taiwan's FDI (Chen et al, 1995). Chen (1998) also finds that, about 90% of Taiwanese projects in Southeast Asia were undertaken by SMEs in 1986–1991.

4.3 The textile industry in mainland China and Zhejiang

With the superiority of coastal location and favorable economic environment of Yangtze Delta, Zhejiang is one of the major provinces which produce textile materials and products in China. In August, 2006, the Chinese government established the special fund to encourage textile enterprises to innovate the technology of textile industry, to import new equipments and to found enterprises overseas. The government of Zhejiang province also has instituted similar policies to support the local textile industry.

The production of cloth of textile industry in Zhejiang accounts for a large percent of the total outputs of China in recent years (Table 1). In 2005, the output of cloth was 9.62 billion meters in Zhejiang, compared with 48.44 billion meters in China, accounting for 19.86 percent of it. In 2007, the production of cloth has been doubled with it in 2005, accounting for 27.09 percent of the total national output. Zhejiang has become the largest textile exports province over Guangdong province in 2004 and textile industry had largely contributed to Zhejiang's economy (Li, 2008).

Table 1 Outputs of yarn and cloth in China and Zhejiang, 2005-2007

Year	China		Zhejiang	
	Yarn (10 000 tons)	Cloth (100 million m)	Yarn (10 000 tons)	Cloth (100 million m)
2005	1450.54	484.39	96.41	83.64
2006	1742.96	598.55	115.83	97.47
2007	2068.17	675.26	146.71	114.88

Source: China statistical Yearbook (China), Zhejiang Statistical Yearbook (Zhejiang)

One of the features of textile industry in China is the Local Industrial Clusters (LICs), which located in the cities and towns of the coastal region, particularly the Yangtze River Delta and the Pearl River Delta (Liu and Gu, 2007). The industry cluster is a phenomenon that large quantities of enterprises geographically concentrated in certain district analogous to biological community based on economic association (Zhou, 2008). With large numbers of upstream and downward enterprises in the same industry, the industry cluster can form its competitive advantage. This geographical concentration of cluster can take the advantage of resource accumulation and advantage formation (Porter, 2001). About 60% of the total sales of enterprises above designated size were produced in LICs (Li and Fung, 2006). The basic characteristics of the textile LICs are highly labor-intensive, low-tech, and export-oriented industrial clusters. The effect of Zhejiang textile industry cluster has been highlighted.

Moreover, the textile industry there is featured with quantity-oriented, rather than quality-oriented, which implies that the potential sustainable problem for the industry. For example, with regard to the exports of textiles and cloths from China to the United States, the main strategy to make a profit for China has been increasing the export volumes. But many enterprises of textile industry in China have realized this source of profit is short-term. For instance, only 10 percent of the profit of a knitted shirt is attributed to Chinese enterprises, while the rest belongs to the foreign distributors, retailers, and designers (Yu and Xiao, 2005). So the Chinese textile enterprises have been trying to build their own brands, in order to increase the quality, as well as the margin of their products.

Zhejiang textile industry is characterized not only with the organization structure of industry cluster, but also with large quantity of SMEs in clusters (Zhou, 2008).

Special characteristic clusters are chemical fiber manufacturing in Shaoxing and Xiaoshan, apparel industry in Ningbo and Hangzhou, shirt and stocking in Zhuji and Yiwu, tie in Shenzhou, hosiery trade in Xiangshan, and vestee in Yuhang and Haining, which have earned high reputation in China and even in the world, and have become the carriers of local economic development.

Shaoxing is the biggest fabric manufacturing base in China with the output of about 35 hundred million of all kinds of fabric (Zhou, 2008). Based on low cost, Shaoxing textile has formed its advantage in scale, equipment, distinguishing quality and market mechanism. But its unbalanced industry structure causes the disadvantage of high energy consumption, low-added value and high labor intension. The potential risks for Shaoxing textile exist in rising labor cost and lacking skilled workers, land energy and raw material. Another essential problem with it is that low profit due to low added-value of manufacturing link brings that weak motivation for R&D and innovation. And most of the corporations lack key technology and choose to adopt international advanced technology as the cost is lower than investment in R&D independently. Zhou (2008) argues that, to upgrade the textile clusters, it should initiate from production to design and brand management.

5. Taiwan's post-1985 experience

5.1 Post-1985 appreciation of Taiwan dollar

In 1981, there was a managed floating exchange rate regime in Taiwan and the spot exchange rate of new Taiwan dollar against U.S. dollar was about 38 N.T.D/USD. In 1987, Taiwan exchange rate regime switched to a new free floating one, due to the heavy pressure of depreciation of U.S dollar against major currencies. According to Xu (2008)'s analysis, the object was to contain the runaway money supply, which has been tightened by large inflows of speculative funds. As a result, with the spot exchange rate at 26 N.T.D/USD, the Taiwan dollar against U.S. dollar has appreciated by 27.5 percent in 1986-1991. As the data of spot exchange rate in 1987-1990 are

unavailable, the dynamic rapid appreciation can not be illustrated in the graph. But one can still find the fierce soar of Taiwan dollar in this period from the following Table 2.

Table 2 Spot exchange rate of New Taiwan dollar against U.S. dollar, 1981, 1986, 1991-2007, Unit: New Taiwan Dollar/USD

Year	Buy U.S. dollar[1]
1981	37.79
1986	35.45
1991	25.70
1995	27.22
1996	27.44
1998	32.16
1999	31.34
2000	32.96
2001	34.94
2002	34.71
2003	33.92
2004	31.68
2005	32.78
2006	32.55
2007	32.39

Note [1]: This spot exchange rate is the exchange rate of dealing between bank and customer.

Source: Republic of China Statistic Yearbook (Taiwan)

5.2 Rising labor cost in Taiwan

While the currency was appreciating in Taiwan, the labor cost in textile industry has risen significantly during 1985-1992. The average earnings of employees per year in textiles mills and wearing apparel & clothing accessories manufacturing were 12914 N.T.D and 10126 N.T.D respectively in 1985, while they have increased to 25839 N.T.D and 18472 N.T.D respectively in 1992. The growth rate of earnings has increased by 100 percent and by 82 percent for these two sectors respectively during this period (Table 3 (A), Table 3 (B)). While these are the increase of nominal wages

of employees in textile industry, the average real wages in the two sectors excluding the impact of inflation have also shown the same climbing tendency. The average real wage of textile mills sector was 19324.14 N.T.D in 1985 per year and it amounted to 32046.05 N.T.D in 1992 per year. With regard to the wearing apparel & clothing accessories sector, the average real wage was 15152.26 N.T.D in 1985 and 22909.35 N.T.D in 1992 respectively. In 1985-1992, the average real wages in sector of textile mills and wearing apparel & clothing accessories have increased by 66 percent and 51 percent respectively. The rise of average real wages which are more convincing confirms the real rise of labor cost in Taiwan's textile industry.

Table 3 (A) Average wage of textile mills sector, 1980-1995, Consumer Price Indices: Base year 2005=100, and real wage in prices of 2005, Unit: New Taiwan dollar

Year	Consumer Price Indices	Average earnings of employees on payrolls- annual	Average real wage
1980	55.16	7735	14024.11
1981	64.16	9367	14600.39
1982	66.05	10394	15736.17
1983	66.95	11235	16780.34
1984	66.93	12848	19194.98
1985	66.83	12914	19324.14
1986	67.29	14166	21051.12
1987	67.64	16028	23696.04
1988	68.51	17435	25448.84
1989	71.53	19395	27113.23
1990	74.49	21202	28464.47
1991	77.18	23800	30835.34
1992	80.63	25839	32046.05
1993	83.00	27244	32822.78
1994	86.41	27775	32144.2
1995	89.58	29351	32765.74

Source: Republic of China Statistic Yearbook (Taiwan)

Table 3 (B) Average wage of wearing apparel & clothing accessories manufacturing sector, 1980-1995, Consumer Price Indices: Base year 2005=100, and real wage in prices of 2005, Unit: New Taiwan dollar

Year	Consumer Price Indices	Average earnings of employees on payrolls- annual	Average real wage
1980	55.16	5601	10155.02
1981	64.16	7271	11333.34
1982	66.05	8629	13064.02
1983	66.95	8940	13352.58
1984	66.93	9975	14902.7
1985	66.83	10126	15152.26
1986	67.29	11545	17156.23
1987	67.64	12428	18373.74
1988	68.51	13107	19131.51
1989	71.53	14602	20412.86
1990	74.49	15946	21408.1
1991	77.18	17405	22549.96
1992	80.63	18472	22909.35
1993	83.00	19859	23925.55
1994	86.41	21308	24659.9
1995	89.58	22264	24854.22

Source: Republic of China Statistic Yearbook (Taiwan)

5.3 The impacts on textile industry (production, exports and employment) in the post-1985 Taiwan

In 1993, as labor cost has been elevated and the currency has appreciated, the Taiwan government encouraged the Taiwanese firms to “go south” to invest in Southeast Asian countries rather than in mainland China, because of the political reasons. But many Taiwanese firms had invested in mainland China via a third country since the appreciation in the mid-1980s. In fact, in the early 1980’s, Taiwanese textile firms as Asian multinational enterprises (MNEs) has been emerging in the capital exporting activities, with the foreign direct investments (FDI) from Taiwan (Sim and Pandian, 2003).

As the statistics of output of textile materials and products in 1985-1992 are unavailable, we can only find the essentiality of textile industry for the Taiwan's economy in the 1980's in related literatures. In fact, as the single most important industry in terms of total output, employment, and foreign currency earnings, the textile industry has driven the economic miracle of Taiwan until the mid-1980s (Levi-Faur, 1998).

The textile industry, a main manufacturing industry in Taiwan and employed over 0.46 million workers in 1985, was impacted by the appreciation. The Labor Productivity Indices of Taiwan's textile mills sector rose in 1985-1992, whereas that of wearing apparel & clothing accessories manufacturing sector fluctuated in these years. Xu (2008) has indicated that the Balassa (1964)–Samuelson (1964) hypothesis (BSH) can explain the relationship between Taiwan's manufacturing labor productivity, income growth and appreciation of Taiwan dollar. But we cannot find the equivalent causal relationship between the textile industry and currency appreciation, as the wearing apparel & clothing accessories manufacturing sector did not always contribute to the labor productivity growth.

Table 4 The Labor Productivity Indices of textile industry in Taiwan, Base year: 2006=100

Year	Textiles mills sector	Wearing apparel & clothing accessories manufacturing sector
1985	41.06	170.45
1986	44.51	177.22
1987	46.18	193.4
1988	44.88	158.2
1989	51.99	168.59
1990	61.35	166.27
1991	67.05	184.92
1992	70.39	179.62

Source: Republic of China Statistic Yearbook (Taiwan)

As an important and competitive export-oriented industry, the profit of its export sectors was directly impaired by the large appreciation of Taiwan dollar. In Taiwan, the amount of textiles exports was 9.31 billion U.S. dollars in 1988. It climbed up to 12.00 billion U.S. dollars in 1991, increased by 28.87 percent in 1988-1991. In 1994, the exports of textiles amounted to 14.00 billion U.S. dollars, increased by 16.6 percent in 1991-1994. And it rose up slowly to 15.62 billion U.S. dollars in 1995 and 15.67 billion U.S. dollars in 1996. The average increase rate of this exports value was, 9.62 percent in 1988-1991, 5.56 percent in 1991-1994, 11.59 percent in 1994-1995 and merely 0.29 percent in 1995-1996. These figures show a descending growth of textile exports in 1988-1994 since the occurrence of the appreciation of Taiwan dollar. Whereas it recovered in 1995, the result of rebounding was weak in 1996. The shock to shoes and boots industry was most serious, which resulted in an average decline of 0.39 percent of exports during 1988-1991 and 18.23 percent severely in 1991-1994 (Table 5).

Table 5 Exports of commodity in Taiwan's textile industry, Unit: million U.S. dollar

Year	Textiles(including yarn & cloth)	Yarn and cloth	Shoes and boots	Average growth rate of textiles	Average growth rate of yarn and cloth	Average growth rate of shoes and boots
1988	9310	4 094	3 856			
1991	11997	6 752	3 811	9.62%	21.65%	-0.39%
1994	13999	9 389	1 726	5.56%	13.02%	-18.23%
1995	15622	10 910	1 404	11.59%	16.20%	-18.66%
1996	15668	11 016	1 210	0.29%	0.97%	-13.86%

Source: Republic of China Statistic Yearbook (Taiwan)

The employment of textile industry was 0.44 million in Taiwan in 1986, accounted for 17 percent of the total manufacturing employment. As the appreciation of Taiwan dollar, the employments in textiles mills sector and wearing apparel & clothing accessories manufacturing sector has decreased since the peak of 1985 till 1995, while the average rate of decrease in 1985-1992 is around 26 percent and 44 percent for textiles mill sector and wearing apparel & clothing accessories manufacturing sector respectively (Table 6).

Table 6 Employment of textile industry, 1980-1995, Unit: person

Year	Employment of textiles mills sector	Employment of wearing apparel & clothing accessories manufacturing sector
1980	237983	161973
1981	233396	176256
1982	226641	184089
1983	222552	191337
1984	230241	204849
1985	236475	220262
1986	228594	217176
1987	225449	203502
1988	221908	193731
1989	205898	171907
1990	183201	143363
1991	175852	135156
1992	176082	123288
1993	171574	115421
1994	174859	112469
1995	167912	103340

Source: Republic of China Statistic Yearbook (Taiwan)

There is not too much literature about the impact of appreciation of Taiwan dollar on textile industry in Taiwan in 1986-1992. Fortunately, one article available by Xu (2008) has indicated that the 58 percent appreciation has resulted in short-run consequences of descending merchandise exports, declining manufacturing

production and rising unemployment in Taiwan. He also has indicated the collapses of traditional export production due to the loss of competitiveness in global market, undoubtedly, including the collapse of the export production in textile industry.

Moreover, Xu (2008) argues that, in long term, the appreciation of Taiwan dollar has accelerated Taiwan's productivity growth, the upgrading to more skill-intensive and capital-intensive manufacturing and the expansion of the service sector in Taiwan. He has referred to the overseas operation of labor intensive manufacturing, such as the relocation of the textile manufacturing. Xu (2008) finds that in Taiwan, the low-tech and labor intensive textile and garments sector had fallen from the largest sector to the third between 1985-2004, though the value of output of the sector grew in absolute terms over this period. In 2004, the share of textiles and garments in total manufacturing output was 10.1 percent compared to 17.3 percent in 1985, which had shrunk to 60 percent.

5.4 Experience of Taiwan's relocated textile enterprises

Sim and Pandian (2003) have selected several Taiwanese textile firms which shifted operation overseas toward mainland China and Southeast Asian countries and have found the international characteristics and strategies of these firms. The number of Taiwanese textile firms which agreed to participate in their research is only three, as the reluctance of firms to be researched is a common problem of research in Asian countries. With regard to the size of these textile firms, two of them have sales of no more than 80 million U.S. dollars and the other one is an integrated textile firm with sales of 900 million U.S. dollars. Two of these three textile firms are qualified to be reviewed in this analysis, as they shifted operation out of Taiwan to mainland China, Thailand, the Philippines in 1985-1992 when the labor cost was rising and the currency was appreciating. However, the third firm, which is one of the small size firms, started the overseas relocation as late as from 1998, which is out of the study period and unqualified for this research. Among the two qualified textile firms, the firm A started to shift operations in 1987. The other firm B has begun its operation overseas in the mid-1960s, while it didn't step up until the late-1980s.

Since the size of the case textile firms are not very large, the choice of geographical spread of their internationalization has been constrained to proximate countries

without much distinct economic environment and cultural barriers. The pattern of this phenomenon is in accordance with the internationalization process of the Uppsala model (Johanson and Vahlne, 1977). The internationalization process of most of small Taiwanese MNEs is bi-national process rather than multinational process (Chen, 1998). The low-cost labor is the main motivation of the operation shifts to Southeast Asia and mainland China, while market expansion and strategic asset seeking were also considered.

In the case study of Taiwanese firms, the strategy of joint ventures to enter the local countries was preferred by the textile firms, like the preference of other MNEs from developing countries (Monkiewicz, 1986; Ting 1985). The textile firm A has four joint ventures in mainland China and two joint ventures in the Philippines and possesses 25 percent to 80 percent of equity of them. The other one B also has joint ventures in foreign countries, while has two wholly owned company in mainland China.

The textile firm A is a garment manufacturer, which has started operation in the Philippines in 1987 to maintain low cost production. It has built up two successful factories in the Philippines and has intended to operate a third factory there. The textile firm A has operated three production joint ventures in China because of the low cost there since 1991. The other firm B is an integrated textile company. It has operated in seven Asian countries in 1986-1998, including the Philippines (1986), Hong Kong (1986), Thailand (1987), Malaysia (1995), Canada (1995), Indonesia (1998) and mainland China (1998). The firm focuses on the low cost production and cheap and steady sources of raw materials. It integrated backwards with several joint ventures in Taiwan with foreign companies to produce textile and related materials, including pure terephthalic acid, nylon fiber, polyesters and industrial gases.

With regard to the aspect of strategic advantages and traits for internationalization, Taiwanese sample firms were based on low cost competencies and outward looking export orientation, brought together by an extensive web of ethnic networks and the government encouragement and institutional framework.

In the respect of networks and alliances for the multinational relocated textile firms, ethnic and social embeddings of networks and relationships is a distinguishing feature of all Chinese and Asian MNEs. The internationalization of the sample textile firms is strongly aided by their ethnic networks in the Asian region. Both firms in textile industry are Chinese owned and managed, and reported using their ethnic and other networks in their foreign operations. For instance, one firm rely on its connection with selected government owned firms to establish three joint venture factories in mainland China. The successes of textile firm A in the Philippines and mainland China was helped by the ethnic connection to a large extent. The establishment of the first factory in the Philippines has been largely favored with the assistant of personal connection of the owner of the firm. The smoothly operation of the first factory has encouraged the second factory and the coming third one. With regard to the operation in mainland China, the textile firm A selected the government owned firms and based on the connection with them to start three joint venture factories. One joint venture factory, which was being operated by the local partner, was set up based on the emphasis on building trust and cooperative behavior. Moreover, the firm A has contracted agreements of products, brand and technical licensing arrangements with its overseas partners for production and marketing purpose. With respect of the other firm, the textile firm B has enjoyed its extensive ethnic network in operational countries in Asia. In order to maintain the sources of supply, the firm B also builds up four joint ventures with Western MNEs in the upstream integrative ventures of textile industry.

Ethnic and cultural ties also bring about the surge of Taiwanese investments and operations in mainland China (Lu and Zhu, 1995). Fang and Hsiao (1999) point out that the degree of internationalization in the Taiwanese textile industries empirically has related to the characteristic of manufacturing network structure. Chen and Liu (1998) illustrate that in Southeast Asia, overseas Chinese, who share common dialects with Taiwanese investors, provide favorable links to organize local networks for their businesses. The manufacturing strategies of networks in textile industry have enhanced the competitive determinants of flexibility, delivery and cost for the SMEs in Taiwan (Chen, 1999). The networks of Asian firms, including the Taiwanese case firms, are largely based on ethnic foundations and similar cultural values and attitudes in the pursuit of businesses, all of which are embedded in the social and cultural

framework or context of these Chinese businesses. The development of trust and cooperative behavior were based on their similar cultural attitudes and heritage. These ethnic ties provide “access to local markets, distribution systems, connections around local bureaucracy and business systems, as well as potential business partners and associates and even financing” (Sim and Pandian, 2003, pp. 263).

6. Current circumstance of textile industry in mainland China

6.1 Appreciation of Chinese Yuan since 2005

Similar situation with currency appreciation in Taiwan in mid-1980s has been encountered for Chinese textile industry since 2005. Before July 21, 2005, the official exchange rate of Chinese Yuan (RMB) has been defined as a managed floating system at around 8.28 RMB/USD since 1996. As China switched from dollar-peg exchange rate regime to a new one in which the Chinese Yuan is pegged to a basket of currencies on July 21, 2005, the Chinese Yuan have appreciated by 2.1% immediately on that day. By July 21, 2008, the exchange rate between the Chinese Yuan and the U.S. dollar has been changed from a fixed rate at 8.11RMB/USD to 6.83 RMB/USD, which indicates the Chinese Yuan has cumulatively appreciated by over 21%.

Table 7 shows the period average exchange rates of Chinese Yuan from 1996 to 2007, which can also clearly show the path of Chinese Yuan appreciation. The exchange rate has been relatively stable during 1996-2004 until the regime reformed from being pegged to U.S. dollar to a basket of currencies in 2005. The average exchange rate was 8.28 RMB/USD in 2004, while it declined to 8.19 RMB/USD the next year, and then dropped rapidly to 7.97 RMB/USD and 7.60 RMB/USD in 2006 and 2007 respectively. Since the exchange rate regime was reformed on July 21, 2005, the exchange rate was 6.83 RMB/USD three years later on July 21, 2008.

Table 7 Reference Exchange Rate of Chinese Yuan (Period Average), 1996-2007,

Unit: RMB Yuan

Year	100 US Dollars	100 Japanese Yen	100 Hong Kong Dollars	100 Euros[1]
1996	831.42	7.6352	107.51	
1997	828.98	6.8600	107.09	

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1998	827.91	6.3488	106.88	
1999	827.83	7.2932	106.66	
2000	827.84	7.6864	106.18	
2001	827.70	6.8075	106.08	
2002	827.70	6.6237	106.07	800.58
2003	827.70	7.1466	106.24	936.13
2004	827.68	7.6552	106.23	1029.00
2005	819.17	7.4484	105.30	1019.53
2006	797.18	6.8570	102.62	1001.90
2007	760.40	6.4632	97.46	1041.75

Note [1]: Euro entered into in circulation in 2002.

Source: China Statistical Yearbook

6.2 Rising labor cost

6.2.1 Increase of labor cost in mainland China

The labor market in mainland China also has confronted similar development as Taiwan. Textile industry relies on large quantities of labor and the labor cost of textile industry has risen significantly in mainland China. The average nominal wage of blue-collar workers in the textile industry was 10.60 thousand Yuan per year in 2005, while it increased to 12.04 thousand Yuan in 2006 and 13.87 thousand Yuan in 2007, with a cumulative growth rate of 31 percent in 2005-2007. The average nominal wage of workers of textile wearing apparel, footwear and caps sector was 12.44 thousand Yuan in 2005, 14.35 thousand Yuan in 2006 and 16.71 thousand Yuan in 2007, which has increased by a cumulative rate of 34 percent in this period. Besides, both of the growth rates of these two sectors have indicated climbing tendency, with an average growth rate of about 15 percent per year. The average real wage of textile sector was 10409.63 Yuan in 2005 and it amounted to 13230.92 Yuan in 2007. With regard to textile wearing apparel, footwear and caps sector, the average real wage was 12217.09 Yuan in 2005 and 15945.61 Yuan in 2007 respectively. The real wages in both sectors have increased by 27 percent and 31 percent respectively in 2005-2007, which are more reliable and valuable to account for the rise of labor cost in Chinese textile industry. Both the increase of nominal wages and real wages indicate the significant rise of labor cost (Table 8).

Table 8 (A) Average wage of workers of textile sector, 2005-2007, Consumer Price Indices: preceding year = 100, and real wage in prices of preceding year, Unit: Yuan

Year	CPI	Nominal Wage	Real wage
2005	101.8	10597	10409.63
2006	101.5	12035	11857.14
2007	104.8	13866	13230.92

Source: China Statistical Yearbook

Table 8 (B) Average wage of workers of textile wearing apparel, footwear and caps sector, 2005-2007, Consumer Price Indices: preceding year = 100, and real wage in prices of preceding year, Unit: Yuan

Year	CPI	Nominal Wage	Real wage
2005	101.8	12437	12217.09
2006	101.5	14349	14136.95
2007	104.8	16711	15945.61

Source: China Statistical Yearbook

6.2.2 Increase of labor cost in Zhejiang

The economy of Zhejiang is more developed than most of other provinces, so the labor cost in Zhejiang is not equivalent to the countrywide one, theoretically, is higher than the countrywide labor cost. However, the average wage of textile sectors in China is still valid for the analysis of labor cost in Zhejiang, as Zhejiang is one of the major provinces producing textiles and the countrywide average wages were calculated based on those of Zhejiang. As the statistics of wage of textile industry in Zhejiang are unavailable, one could only find the yearly average wage of staff and workers (both of the white-collars and blue-collars) in urban units of manufacturing industry in Zhejiang. But the latter statistics are also valuable for the analysis of labor cost in Zhejiang's textile industry.

The labor cost of staff and workers in urban units of manufacturing industry has significantly mounted up after 2004. The average yearly nominal wage of workers in manufacturing industry was 20570 RMB in 2007, compared to 14460 RMB in 2004 and 13849 RMB in 2003. The average increase rate of nominal wage was 13 percent

in 2004-2006 and 14 percent in 2006-2007, compared to 4 percent in 2003-2004. The extent of increase of real wage in the manufacturing industry was 45 percent in 2003-2007, which indicates the substantial problem of soaring labor cost in Zhejiang. As textile industry is characterized with labor intensive and low technology, the rise of labor cost is undoubtedly one of the most critical factors to cut the profit of textile industry (Table 9).

Table 9 Average wage of staff and workers in urban units of manufacturing industry in Zhejiang, 2003-2007, Consumer Price Indices: preceding year =100, Unit: Yuan

Year	Consumer Price		
	Indices	Nominal Wage	Real Wage
2003	101.9	13849	135.91
2004	103.9	14460	139.17
2006	101.1	18097	179.00
2007	104.2	20570	197.41

Source: Zhejiang Statistical Yearbook

6.3 The impacts on textile industry (productions, exports and employment) in mainland China, particularly in Zhejiang

6.3.1 The impacts on mainland China in general

Much literature has been written about the importance of textile industry in China for the Chinese economy as well as for the whole world. Recent related literature by Zhang et al. (2004) states that textile and apparel industries have become pillar industries in China. Liu and Gu (2007) argue that China is the world's largest producer and exporter of textile and apparel. They point out that in 2005, China cotton and man-made fiber production accounted for 32 percent and 28 percent of world production respectively; the installed weaving and spinning capacities occupied one-third of world total capacities; the value of exports of textile and apparel were \$41.05 billion and \$74.16 billion, which respectively accounted for 20 percent and 27 percent of world textile and apparel trade; China have become the mainly supplier for US, Canada, Japan and EU (25), accounted for 26.4 percent, 46.8 percent, 80.9 percent and 17.9 percent of clothing import share and occupied their textile import share of 26.9 percent, 55.9 percent, 52.3 percent and 7.5 percent respectively.

Pan and He (2008) also have indicated the total sales of textile and apparel industries have grown to RMB2640 billion in 2004, by 22.8 percent from 2003 according to the China National Textile and Council (CNTAC, 2004). They also state that these industries have contributed to “promote economy development, increase employment and expand export trade enormously” (Pan and He, 2008, pp. 873). With the characteristics of relying on low cost and skilled labor and export-oriented of these industries, the textile and apparel industries contributed 11 percent of the total exports to China and 21 percent of the total exports to the world’s textiles and garments in 2005.

The Chinese textile industry is of great importance for the world textile production as the productions of major textile materials and products have been rapidly rising in China. The growth rate of labor productivity of textile industry, which was 21 percent in 2003-2006, has largely advanced the outputs of textile industry.

Table 10 The annual growth rate of labor productivity of textile industry

Year	2002	2003	2004	2005	2006	2003-2006
Textile	0.19	0.23	0.24	0.25	0.13	0.21

Source: China Labor Statistical Yearbook, Kim and Kuijs (2007).

According to the Balassa (1964)–Samuelson (1964) hypothesis, the wage of textile industry will rise with rising labor productivity of textile industry, which may result in a real appreciation of Chinese Yuan. So far, from the above sections, we know that the relationship between rising labor productivity and rising wage of Chinese textile industry as well as the appreciation of Chinese Yuan also fit with BSH.

In 2001, the output of chemical fiber, yarn and cloth in China were 8.41 million tons, 7.61 million tons and 29.00 billion meters respectively. In 2004, China produced 17 million tons chemical fiber, 13 million tons yarns and 48 billion meters cloth, which has become the largest textile producer. In 2007, the production of chemical fiber, yarn and cloth in China has risen to 24.14 million tons, 20.68 million tons and 67.5 billion meters (Table 11).

Table 11 Outputs of major textile materials and products in China, 1996-2007

Year	Chemical Fiber (10 000 tons)	Growth rate of chemical fiber	Yarn (10 000tons)	Growth rate of yarn	Cloth (100 million m)	Growth rate of cloth
1996	375.45		512.21		209.10	
1997	471.62	0.26	559.83	0.09	248.79	0.19
1998	510.00	0.08	542.00	-0.03	241.00	-0.03
1999	600.00	0.18	567.00	0.05	250.00	0.04
2000	694.00	0.16	657.00	0.16	277.00	0.11
2001	841.38	0.21	760.68	0.16	290.00	0.05
2002	991.20	0.18	850.00	0.12	322.39	0.11
2003	1181.15	0.19	983.58	0.16	353.52	0.10
2004	1699.80	0.44	1291.34	0.31	482.10	0.36
2005	1664.79	-0.02	1450.54	0.12	484.39	0.00
2006	2073.18	0.25	1742.96	0.20	598.55	0.24
2007	2413.78	0.16	2068.17	0.19	675.26	0.13

Source: China Statistical Yearbook

The exports of textile materials and products also have shown the considerable magnitude of Chinese textile. The amount of it was 887.67 million U.S. dollars in 2004, 1.08 billion U.S. dollars in 2005 and 1.38 billion U.S. dollars in 2006. In 2007, this value has been almost doubled with it in 2004, amounted at 1.66 billion U.S. dollars. (Table 12)

Table 12 Exports of textile materials and products in China, 2004-2007, Unit: million USD

Year	Exports of textile materials and products	Growth rate of exports
2004	887.67	
2005	1076.61	0.21
2006	1380.94	0.28
2007	1658.02	0.20

Source: China Statistical Yearbook

The Chinese Yuan appreciation has affected exports and exports-oriented sectors. The short-run impact of it on the production and employment of exports-oriented industries has been shown more seriously recently. As the appreciation of RMB occurred from 2005, the literature of the impact of this appreciation is not much. Fortunately, Pan and He (2008) have illustrated the negative impact of appreciation of RMB for these industries by the argument of weakening the competitive advantage of low labor cost and then leads to decrease profits of corporations. They point out that the value of export of textile and garment industry is 171.5 billion U.S. dollars in 2007, increased by 16.6 per cent yearly, fewer than 20 per cent for the first time since 2003. The value of export to European Union and United States was 15.52 billion U.S. dollars on June 2008, decreased by 0.68 billion U.S. dollars comparing with the same period of last year.

Almost all the productions of textile materials and products still have been increasing, though the Chinese Yuan began to appreciate since 2005. However, the growth rates of these outputs have slowed down and far more less than the growth rates in 2004 since then. In particular, the production of chemical fiber suddenly decreased with 2 percent from 17.00 million tons to 16.65 million tons in 2005, compared with the production in 2004 (Table 11).

The value of exports of textile materials and products in China has maintained its rising tendency though Chinese Yuan has appreciated since 2005. It has grown from 887.67 million U.S. dollars to 1.66 billion U.S. dollars in 2005-2007. Its growth rate dropped from 28 percent in 2005-2006 to 20 percent in 2006-2007 (Table 12). The decline of growth rate is worthy to be seriously noticed. As the unavailable data of textiles exports in China before 2004, the comparison of exports growth rates between ante-2005 and post-2005 is not feasible. Therefore one can not obtain the impact of appreciation on exports of textile directly. However, the change of employment of textile industry can alternatively explain the impact of appreciation, which will be demonstrated below.

Due to the increase of labor cost and currency appreciation, many textile firms have found themselves in the difficult position of facing the lower profit margins. In order to complement the loss of profit, one feasible and common way is to dismiss

employees to cut the cost down. The negative impact of rising labor cost and currency appreciation on China has been shown in terms of increased unemployment. In China, the employment of manufacture of textile and manufacture of textile wearing apparel, footwear and caps have not declined promptly with the appreciation of Chinese Yuan in 2005, which is similar with the situation of exports of textiles. However, in 2007, the employment dropped with 150 thousands workers in sector of manufacture of textile, compared with it in 2006. While the employment of manufacture of textile wearing apparel, footwear and caps increased by 102 thousands workers, it still resulted in 48 thousands unemployment (Table 13).

Table 13 Employment of textile industry in China, 2005-2007, Unit: million persons

Year	Manufacture of Textile	Manufacture of Textile Wearing Apparel, Footwear, and Caps	total
2005	2.716	1.719	4.435
2006	2.799	1.943	4.742
2007	2.649	2.045	4.694

Source: China Statistical Yearbook

6.3.2 The impacts on Zhejiang in particular

When the Chinese Yuan appreciated, almost all the outputs of major products of textile industry in Zhejiang declined in 2005, except for the output of yarn. The decline phenomena presented a dramatic fall for almost all the products, except for the slight decrease of the production of cloth, which has occupied a considerable proportion in the national production. While the output of yarn has been raising in Zhejiang in 2005-2007, the productions of knitting wool, woolen goods, silk and silk knit goods were much inferior to the productions in 2004 respectively. One representative example is the output of silk, which produced about 53.14 thousands tons in 2005, 50.81 thousand tons in 2006 and 66.02 thousand tons in 2007, compared to as much as about 124.78 thousand tons in 2004. Another product which has shown significant drop of production is the Woolen goods. Its output was 25.92 million meters in 2003 and was more than double in 2004, which was 58.13 million meters in 2004. But the production of it dropped down to 45.87 million meters.

Though productions of most products have increased since 2005, they were still far less than those in 2004. With regard to the output of woolen goods again, it was 49.28 million meters in 2007, which was still less than it of 58.13 million meters in 2004. There is a similar situation of knitting wool, with an output of 17.10 thousand tons in 2007, compared to it of 39.97 thousand tons in 2004. The product of silk knit goods also share the same decline, which has the output of 5.57 billion meters in 2007, while it was 8.24 billion meters in 2004 (Table 14).

Table 14 Output of major products of textile industry in Zhejiang, 2000, 2003-2007

Year	Yarn(10000 tons)	Cloth(100 million m)	Knitting Wool(ton)	Woolen	Silk knit
				Goods(10000 m)	Silk (ton Goods(100 million m)
2000	34.19	16.19	20565	1558.27	32418 24.84
2003	57.34	42.77	24603	2592.39	36205 45.1
2004	91.75	87.47	39968	5812.8	124779 82.39
2005	96.41	83.64	1715	4587	53139 45.49
2006	115.83	97.47	16169	5293	50810 52.67
2007	146.46	114.88	17089	4928	66018 55.72

Source: Zhejiang Statistical Yearbook

Textile industry of Zhejiang is an export-oriented industry and most of the textile materials and products produced in Zhejiang are exported out. The sector of garments and related products and sector of spinning, textile and related products comprise the export sector of textile industry. These two sectors have contributed differently to the total value of exports of textile industry in Zhejiang.

The value of exports of sector of spinning, textile and related products was 63.86 billion U.S. dollar in 2003, much lower than it of sector of garments and related products. But it has increased to catch up with the other sector since then and reached at 88.89 billion U.S. dollar in 2004 and 111.11 billion U.S. dollar in 2005. In 2006, the value was 138.13 billion U.S. dollar, which surpassed the exports of the sector of garments and related products in 2005. In 2007, the gap between these two sectors has become less than ever before, with the exports of spinning, textile and related products amounted at 170.06 billion U.S. dollar, compared to the other with 185.93

billion U.S. dollar (Table 1). The exports in this sector almost have trebled in 2003-2007, but the growth rate of it has decreased since 2004. The drop of growth rate was serious between 2004 and 2005 as it shown in Table 15.

Table 15 Exports of major textile materials and products of Zhejiang, 2003-2007,
Unit: 10 thousand USD

Year	Garments and related products	Growth rate of garments etc.	Spinning, textile and related products	Growth rate of spinning etc.
2003	913984		638603	
2004	1076380	0.18	888923	0.39
2005	1331815	0.24	1111110	0.25
2006	1592516	0.20	1381340	0.24
2007	1859328	0.17	1700570	0.23

Source: Zhejiang Statistical Yearbook

The increase of exports of major textile materials and products of Zhejiang also has presented the decline tendency around 2004 and 2005, though the value of exports has always added up from 2003 to 2007. The value of exports of garments and related products was 91.40 billion U.S. dollars in 2003. In 2007, the sector of garments and related products in Zhejiang has exported over 185.93 billion U.S. dollars, which is a double of the exports in 2003. The growth rate of exports in 2004-2005 was 24 percent, larger than the increase rate of any other year, and it has slowed down to 17 percent in 2006-2007. With regard to the sector of spinning, textile and related products, the value of its exports was 6.4 billion U.S. dollars in 2003 and climbed up to 17 billion U.S. dollars in 2007. The increase rate of exports declined from 39 percent in 2003-2004 to 23 percent in 2006-2007 (Table 15). Since the base value of textile exports is rather considerable, a slight decline of growth rate of it is comparatively large and critical for the individual enterprise in textile industry.

Textile industry in Zhejiang has provided for the Zhejiang's economy not only by values of production and exports, but also by employment. In 2002-2007, the number of staffs and workers in the sector of textile industry⁽¹⁾ has been driven up with more than three times. The employees were about 0.11 millions in 2002. It was 0.23 million

in 2005, which occupied 7.84 percent of the total employment. In 2007, it amounted at 0.32 millions. The ratio of employment of textile industry⁽¹⁾ in total employment of industry and construction enterprises fluctuated from 6.43 percent and 8.12 percent in 2002-2007. In 2007, the employment of industry and construction enterprises has climbed up to nearly 3.90 millions of staffs and workers in total. In the same year, the overall employment of textile industry (including sector of garments and other fiber products) has contributed to about 15.60 percent to the total employment in industry and construction enterprises of Zhejiang.

With regard to the sector of garments and other fiber products, the employment was only 78 000 persons in 2002, accounting for 4.89 percent of the total employment in industry and construction enterprises. And the number amounted at 0.16 million in 2004 and was 6.92 percent of the total employment. In 2007, the employment has grown to 0.31 million persons and amounted at 7.89 percent of the total employment (Table 16).

Table 16 Contribution of employment of textile industry to the industry and construction enterprises in Zhejiang (unit: 10000 persons)

Year	Total employments	Employment of textile industry ⁽¹⁾	Ratio of textile industry ⁽¹⁾	Employment of garments and Other Fiber Products	Ratio of garments etc.
2002	159.44	10.77	0.07	7.80	0.05
2003	174.86	12.37	0.07	9.62	0.06
2004	232.64	14.95	0.06	16.11	0.07
2005	297.81	23.34	0.08	19.99	0.07
2006	348.6	27.06	0.08	25.84	0.07
2007	389.8	31.91	0.08	30.76	0.08

Note (1): Except garments and other fiber products

Source: Zhejiang Statistical Yearbook

In fact, the total growth rate of employment in industry and construction enterprises has significantly decreased since 2004. The yearly growth rate of employment of garments and other fiber products sector fall from 67 percent to 24 percent between 2004 and 2005, while those of textile industry⁽¹⁾ dropped down sharply from 56

percent to 16 percent between 2005 and 2006. The recovery of growth of textile industry(1) employment was also unsatisfactory as the situation of the textile production in 2004. The growth rate of employment of textile industry(1) was 18 percent, which was much lower than the growth rate of 56 percent in 2005. The increase rate of employment of garments and other fiber products sector has slightly climbed up from 24 percent in 2005 to 29 percent in 2006. But it dropped down again to 19 percent in 2007(Table 17). These declines indicate that the employment have been negatively impacted around 2004 and 2005.

Table 17 Number of staff and workers in industry and construction enterprises in Zhejiang, 2002-2007, Unit: 10 thousands persons

Year	Total employment	Total growth rate	Employment of textile industry(3)	Growth rate of textile industry *	Employment of garments and Other Fiber Products	Growth rate of garments etc.
2002	159.44		10.77		7.8	
2003	174.86	0.10	12.37	0.15	9.62	0.23
2004	232.64	0.33	14.95	0.21	16.11	0.67
2005	297.81	0.28	23.34	0.56	19.99	0.24
2006	348.6	0.17	27.06	0.16	25.84	0.29
2007	389.8	0.12	31.91	0.18	30.76	0.19

Note (3): Except garments and other fiber products

Source: Zhejiang Statistical Yearbook

Nevertheless, it is fortunately that the employment of textile sectors occupies a relative stable or increasing part in the total employments of industry and construction enterprises from 2002 to 2007, which was expectable since the outputs were increasing. The proportion of employment of textile sectors in Zhejiang's total employment has gone up from 12 percent to 16 percent. From Table 11, one can find that the increase of employment has mainly contributed by the sector of garments and other fiber products, which went up from 5 percent to 8 percent of the total employment of industry and construction enterprises in 2002-2007. (Table 18)

Table 18 Proportion of employment of textile sectors in total employment in Zhejiang, 2002-2007

	2002	2003	2004	2005	2006	2007
Textile Industry ⁽³⁾	0.07	0.07	0.06	0.08	0.08	0.08
Garments and Other Fiber Products	0.05	0.06	0.07	0.07	0.07	0.08

Note (3): Except garments and other fiber products

Source: Zhejiang Statistical Yearbook

7. What can textile industry in Zhejiang learn from Taiwan's post-1985 experience?

In the previous part, the fact that the appreciation of currency and rise of labor cost has resulted in the slower growth of production, exports and employment in textile industry in mainland China, has been analyzed comprehensively. As the situation is rather similar with what has occurred in post-1985 when Taiwan dollar appreciated and also when labor cost increased, it is feasible to compare the textile industry in present mainland China with that in post-1985 Taiwan. Since many Taiwanese textile enterprises shifted operations to Southeast Asia and mainland China in post-1985, certain textile firms in China may try to learn this experience today. Moreover, Zhejiang is a representative province which produces textile materials and products, which is right qualified to be compared with Taiwan in the field of textile industry.

Returning to the questions posed at the end of the introduction, the similarities and dissimilarities of textile industry in post-1985 Taiwan and post -2005 Zhejiang have been identified. This paper has found similar importance of textile industry for the two economies respectively. There are similar types of SMEs of Zhejiang's post-2005 textile industry with Taiwan's post-1985 textile industry. And both of the governments encouraged the textile industries to operate overseas business. But most textile enterprises in Zhejiang are quantity-oriented and located as Local Industrial Clusters, which is different from those of Taiwan.

This paper also find most of the impacts of currency appreciation and rising labor costs on output, exports and employment in Taiwan and Zhejiang in each specific period. Without statistics of output of textile industry in the post-1985 Taiwan, we

can not compare it to that of Zhejiang. After 2005, the outputs of most textile products were far less than those in 2004. The similar economic circumstance of rising labor cost and appreciation of currency has result the common decline tendency of exports growths of textile industries in the post-1985 Taiwan and Zhejiang after 2005. However, the employment of textile industry in Zhejiang has not decreased as that of Taiwan, though it has grown slower since 2004.

Many textile firms in Taiwan have chosen to operate overseas business since the mid-1980s. These textile firms, which are usually small to medium sized, have emerged as multinational enterprises (MNEs) in Asia. As most of the textile firms in Zhejiang are quantity-oriented and low-tech, it is difficult for these textile firms to learn from the experience of relocation of Taiwan's textile MNEs. However, they can learn the experience of how to become quality-oriented and high-tech from Taiwan. With regard to the rest firms, which had benefited from the resource accumulation and the advantage formation in industrial clusters, have grown large enough to operate abroad as multinational enterprises or bi-international firms. These small to medium sized enterprises (SMEs) in textile industry in Zhejiang can learn from the experience of Taiwan multinational textile enterprises. Government guide and support, the ethnic network and personal connection, are valuable for textile enterprises to operate in Asian countries under the similar cultural and spiritual context. Textile firms in Zhejiang can also imitate the strategy of joints venture from Taiwan textile MNEs.

Excluding the consideration of the impact of rising cost of raw materials and the global financial crisis from 2008, attempts to show the present situation of Chinese textile industry are limited. It risks losing recent valuable data to show the real, possibly more urgent, condition of Chinese textile industry.

8. Conclusion

In the similar economic context of rising labor cost and currency appreciation, textile enterprises in Zhejiang and Taiwan in the specific periods face the common problem of diminishing profit. The textile enterprises could relocate to lower labor cost regions as those in post-1985 Taiwan did. The experience of government guide and support, the ethnic network and personal connection of relocated Taiwanese textile enterprises is valuable for those qualified enterprises in internationalization, especially bi-nationalization. As most textile enterprises in Zhejiang are quantitative-oriented, only a few of them with substantial capability to start overseas operation are qualified to relocate as Asian MNEs. However, it is still possible for the productions of most textile enterprises to upgrade to be more high-tech.

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