Supply Chain Management in Emerging Economies: China

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Pieter-Jan De Bock
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List with abbreviations

3PLs = Third Party Logistics Providers
BRR = Bohai Rim Region
COEs = Collective-Owned Enterprises
FDI = Foreign Direct Investment
GDP = Gross Domestic Product
GRP = Gross Regional Product
LSPs = Logistics Service Providers
MNCs = Multinational Corporations
OPCs = Open Coastal Cities
POEs = Privately-Owned Enterprises
PRC = People’s Republic of China
PRD = Pearl River Delta
SEZs = Special Economic Zones
SOEs = State-Owned Enterprises
YRD = Yangtze River Delta
WDP = Western Development Program
WTO = World Trade Organization
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Abstract

This paper discusses the distribution system of China. We follow the paper of Goh and Ling (2003), who have also discussed this topic. We provide an update with more recent data. Furthermore, following Fang and Chen (2000) we divide China into three regions: the western, central and coastal region. In contrast to Fang and Chen (2000) and Goh and Ling (2003) we provide numerical data on the distribution system of these three regions. Data are derived from the China Statistical Yearbook 2007. Next, we discuss possible future trends regarding the strategic role of plants in these regions, using Ferdows’ model. Finally a case study provides us some insights to problems, opportunities and solutions in practice.

Keywords: China, Supply Chain, Western Development Program, Ferdows’ model
Introduction

Since the economic reforms in 1978 China has become a country full of opportunities. Many multinationals, investors and businessmen have responded and set up production facilities in China to take advantage of these opportunities, such as low production costs, tax incentives and a huge consumer market. As a result large parts of the country have been fully modernized and are thriving economic centers of worldwide importance. But not all the regions of the country have received the same attention. This resulted in a huge polarization between the coastal areas in the east and the rest of the country. In 2000, the State Council established the Western Development Program (WDP) in order to exploit the full potential of Western China and reduce the gap with the more developed coastal regions. It is both politically and economically vital for the future of the country. The implementation of the plan was launched in the tenth Five-Year Plan (2001-2006).

China remains a nation with great promise, as a whole part of the country is yet to be conquered.

In this paper we will discuss the logistical challenges an international firm may encounter trying to establish a sustainable supply chain in China. We make a distinction between the current status of logistical issues in China, with business concentrated along the coast, and the shift inland.

First, we will look at some challenges and obstacles that have to be overcome in order to do business in China successfully.

Second, we will provide some insights in the current status. We will look into the economic evolution of the country. The logistical issues companies face when doing business in the coastal regions are also addressed.

Third, we will take a look at the current evolution of shifting attention towards interior China. We start by discussing the WDP which gave rise to this new trend. In order to look at the changes the WDP is inducing, we will divide the country into three regions: the eastern (or coastal), the central and the western region. We will provide some data on the three different regions of the country. Next we will give an overview of the economic conditions of the three regions as well as some logistical and infrastructural figures. We will make a comparison between the different regions and look for similarities and differences.

Fourth, we will use Ferdows' model to describe the change in the plant's strategic role we expect based on our findings on the three main regions in China.

We conclude with a case study of a company that is both active in Belgium and in China. We look at the challenges and opportunities it faces and discuss some of the methods to resolve these issues.
Methodology

This paper attempts to describe the opportunities and challenges that both coastal and Western China provide. After discussing some general challenges related to supply chain management, an overview is given of the current status of the logistics sector. Numerical data are derived from the China Statistical Yearbook 2007 published by the National Bureau of Statistics of China. This is based on the paper of Goh and Ling (2003), but more recent data are applied. We will compare the recent data with his findings and look for similarities and differences. In addition, a comparison between the regions in China will be made. The composition of these regions is based on Fang and Chen (2000). The comparison of the regions is also based on numerical data derived from the China Statistical Yearbook 2007.

We will also use the model of Ferdows to try and distinguish different roles of plants in the three regions, taking into account the differences established in the paper and data derived from the China Statistical Yearbook 2007.

Next we will use a case study to investigate which issues are experienced in practice and which solutions are being used to solve them. This will be primarily based on conducted interviews with the general manager of the company that is being discussed.
1. Challenges

Despite the many opportunities China offers, examples of failures are legion: many international firms find it hard to implement a very successful strategy from their home country in China. There are some challenges and differences managers have to take into account when setting up activities in China. We try to highlight some of them (this is not an exhaustive list however). First we discuss the choice of location, next we look at e-logistics, the choice between capital- and labor-intensive production, ownership, Chinese culture and local governments and legislation.

1.1 Location

Multinational corporations (MNCs) have chosen the coastal area as their base of operations in order to take advantage of the established industrial base, good infrastructure and other region-specific and economical factors Li et al. (2000). However, they also suggest that the choice of an inland province might also provide the company with a number of advantages. They point out that one of the main reasons of setting up a business in an emerging economy such as China is the huge undeveloped market. Acquiring a share of this market might ensure the future of the company. The coastal areas offer a market with high purchasing power, a good physical infrastructure and geographic proximity. Furthermore it is easier to find reliable and competent local partners in the coastal areas than in mainland China. However, these inland provinces also offer a number of benefits. First, there is a great market potential to be conquered and setting up a base close to this market will give the company an advantage over companies that are not located as proximate. Second, while the coastal areas face rising production and living costs, the inland provinces are much less affected by this trend. Third, local governments in inland provinces are creating all sorts of incentives to attract foreign companies to their region. This is both beneficiary for the region and the company. Finally, the Central Government is also stimulating foreign firms to settle in inland provinces (Li et al., 2000).

A company also has to take geographical characteristics into account: China is a vast country with many different climates, important rivers and mountain chains. For example: some areas in China are frequently troubled by earthquakes. This is of course an important factor when choosing a location.

1.2 E-logistics

According to Daly and Cui (2003) the growth of the country is in many ways a main contributor to the logistics problems: the infrastructure can’t follow the growth rate of the economy. In addition, the
emergence of e-commerce has provided yet another major challenge for the Chinese economy, as they have a lot of catching up to do. The internet has proven to be a very valuable tool in supply chain management. Furthermore, China faces rapid changes of its economy, legislation and technology. In order to structure and guide these changes into the desired direction, the Chinese have no choice but to follow the trend towards e-logistics. Daly and Cui (2003) follow the definition of logistics formulated by Daskin (1985). Logistics is divided in three main areas: physical, managerial and informational systems. Daly and Cui (2003) identified a number of technological issues for each of these main areas. They found that a lot of improvement has been made in a number of topics, so that these issues are no longer major concerns for foreign partners in China. These are: the quality, dependability and responsiveness of local partners, the availability of information systems personnel and the basic knowledge of logistics and supply chain management.

Other issues remain far from satisfactory but can be handled when investing the right resources and managerial time. While Third Party Logistics Providers (3PLs) still are unavailable in many cases and the transportation infrastructure needs additional improvements, the conditions already have improved so that it is possible for large firms to set up their own national transportation and logistics services. In addition, there are a lot more possibilities to handle data quality problems and information structure problems nowadays, in spite of the telecommunications infrastructure problems.

The domain that remains the biggest problem is the broad topic of managerial systems. Although, local partners already possess the basic knowledge, they are not yet able to handle more sophisticated supply chain management and logistics techniques. Also, a lot of global "best practices” have yet to be implemented in many local firms. As for the future, Daly and Cui (2003) expect that the current trends will continue, with massive investments in physical and telecommunications infrastructure as well as the availability of more qualitative data and the application of world-class logistics practices. The importance of the internet will continue to grow as many supply chains are growing towards virtual logistics where the physical logistics are handled separately from the informational elements.

1.3 Labor-intensive vs. capital- and technology-intensive

This is a very important issue because of government policies. As a result of the regulations to manage foreign investments, companies have to belong to a certain category in order to be allowed to the Chinese market. To obtain a certain business license, companies have to register which of the two strategies, labor-intensive or capital-intensive, they are going to adopt.

Both have their own benefits. Li et al. (2000) argue that the main reason for MNCs to enter the Chinese market is the possibility of gaining a market share in the world’s largest emerging economy. Investing in
China in order to benefit from low wages is subordinate to the large market. Furthermore, they argue that wage rates are rising due to the economic reforms, so this advantage is shrinking. They found that while choosing a labor-intensive strategy has helped many companies to establish a large market share, many of them are finding it difficult to remain profitable. Companies that focus on technology however are on the rise. The current Chinese market seems willing to buy more expensive products if they are technologically advanced and have a high quality. Furthermore, they argue that adopting a capital-and technology-intensive strategy is consistent with the current evolution of the country. They state that China is rapidly evolving into a knowledge-based and globalized market economy.

This is once again an indication that the economic environment is changing. As Li et al. (2000) point out, certain advantages of the coastal areas such as low wages are now diminishing. As a result the strategic importance of the manufacturing plants might change over time. This will be discussed in section 4.

1.4 Ownership
When investing in an existing company or setting up a new company, the investor has to decide on the type of entry mode. A foreign investor who wants to invest in China has to take a lot of issues into account before deciding how, where and with who he wants to do business.

Wei et al. (2004) investigated, based on the transaction cost theory, the impact of a number of factors on the choice of entry mode of foreign investment. They distinguished a number of different entry modes: Wholly Owned Enterprises, Equity Joint Ventures, Contractual Joint Ventures and Joint Stock Companies. They found a number of determinants that influence the choice of entry mode and that foreign investors have to take into account when choosing the best strategy to enter China. These factors are: the experience of the host country in attracting FDI, the characteristics of the specific location such as infrastructure and government incentives, the amount of resources committed and the cultural distance.

Li et al. (2000) investigated the benefits and drawbacks of choosing a joint venture or a wholly-owned subsidiary. Joint ventures help companies to pool critical resources, reduce the investment risk and gain access to the business networks of the partner. This type of entry mode is a popular choice when there is a lot of uncertainty. However, by choosing a joint venture, companies risk facing many difficulties in maintaining their ownership advantages. Results indicate that foreign companies used to prefer joint ventures over wholly-owned subsidiaries. However, this trend is changing rapidly and wholly-owned and majority-owned firms are becoming more and more common. Li et al. (2000) suggest a number of reasons for this trend. First, with the experience gained in previous years of investing in China, confidence among foreign investors has grown. Second, joint ventures have proven to be insufficient in
protecting the companies’ technology. Third, the local partner in the joint venture often does not live up to the expectations of the foreign firms, and thus becomes an obstacle rather than an asset. Finally, setting up a joint venture imposes substantial transactional costs while choosing a wholly-owned subsidiary takes much less time and money to set up.

Another possibility is to invest in privatized State-Owned Enterprises (SOEs). Given the fact that many multinationals are eager to invest in the Chinese economy, the government decided to privatize many of these SOEs. In this way foreign investors were able to invest in existing companies. Despite numerous examples of success, other companies have already lost millions. Pyke et al. (2000) made a comparative study between SOEs, private and foreign funded companies in order to answer the question whether it is opportune to invest in these SOEs. Many prejudices exist about problems with these firms such as overstaffing, low productivity and no profitability. Despite the reformations, many of these SOEs still struggle to become competitive organizations. HR constraints are particularly challenging for SOEs. This will be discussed in section 1.7.

Table 1 shows the registration status of foreign funded enterprises by region. It demonstrates that the vast majority of foreign funded enterprises are still located in the coastal region. Consistent with this, the total investment and registered capital both show a similar pattern. While huge efforts are being made to enhance the economy in the other regions, a lot of work still has to be done and that the coastal region remains the economical spearhead of the country. The table also indicates that only 4.64% of the companies located in the western region are foreign funded companies. The rest of them are local private companies, especially SOEs and privatized SOEs. Given the fact that many SOEs still face the problems of the planned economy of previous decades, investors have to be careful when they decide to invest money in this region.
Table 1: Registration Status of Foreign Funded Enterprises per Region

<table>
<thead>
<tr>
<th>Region</th>
<th>% of Enterprises 2005</th>
<th>% of Enterprises 2006</th>
<th>% of Total Investment 2005</th>
<th>% of Total Investment 2006</th>
<th>% of Registered Capital 2005</th>
<th>% of Registered Capital 2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coastal Region (% of National Total)</td>
<td>86,56</td>
<td>86,85</td>
<td>85,79</td>
<td>85,12</td>
<td>85,81</td>
<td>84,93</td>
</tr>
<tr>
<td>Central Region (% of National Total)</td>
<td>8,65</td>
<td>8,51</td>
<td>10,13</td>
<td>10,80</td>
<td>9,88</td>
<td>10,85</td>
</tr>
<tr>
<td>Western Region (% of National Total)</td>
<td>4,79</td>
<td>4,64</td>
<td>4,07</td>
<td>4,08</td>
<td>4,29</td>
<td>4,24</td>
</tr>
<tr>
<td>National Total</td>
<td>100,00</td>
<td>100,00</td>
<td>100,00</td>
<td>100,00</td>
<td>100,00</td>
<td>100,00</td>
</tr>
</tbody>
</table>

Source: calculated using data from the China Statistical Yearbook 2007

1.5 Chinese culture

The literature provides us with ample examples of successful western companies that had serious difficulties in transmitting their strategies, processes and operations to China. This is partly due to a cultural gap between the West and China.

Lee and Humphreys (2007) state that the Chinese culture is closely connected with Confucianism. This is based on interpersonal relationships and conducts. This has important implications for both the Chinese culture and the companies doing business in China. To describe the underlying mechanisms, the term ‘guanxi’ is used. This term comprises the relationships between business partners, which are based on reciprocal exchanges of favors on a regularly and voluntarily basis (Alston, 1989).

Wang (2007) compares the western concept of relationship marketing with guanxi and finds a number of similarities. Both are based on mutual understanding, cooperative behavior and long-term orientation. The western culture however grounds these characteristics on rules and laws while guanxi uses social norms and morality. In addition, guanxi is based on personal relationships where relationship marketing is much more impersonal and focused on the business aspect (Wang, 2007).

Wang (2007) concludes with a number of implications concerning these cultural differences. Chinese prefer to do business with partners that are members of their guanxi-network. This might create barriers a multinational company has to overcome. So it might be beneficial for a multinational company to form a partnership with a local enterprise in order to gain advantages of the network of the partner.

Guanxi-networks also help to overcome the flaws in the Chinese legislation and reduces possible opportunistic behavior. If a partner does not fulfill his obligations and does not follow the rules of reciprocity he will lose face and risks being ostracized from the entire network. This would result in the
loss of future opportunities to do business. This is a strong incentive for partners to meet their end of the bargain.

Developing a guanxi-network can be very important for a company as it provides a number of advantages (Davies et al., 1995). First, a guanxi-network can prove to be an important source of information on a number of important issues such as market trends, opportunities and threats. Second, a network may enhance the availability of resources and access to local governments. Finally it provides a number of other advantages which can help a firm to build a better image and reputation.

Given the size of supply chains, one firm will not be able to integrate the entire supply chain. Therefore, the company will require both suppliers and customers with which it will have to establish relationships (Lee and Humphreys, 2007). Guanxi can help to smoothen these alliances and partnerships. Lee and Humphreys (2007) investigated the impact of guanxi on western supply management practices and found that it has a significant influence on strategic purchasing, outsourcing and supplier development. Guanxi can simplify the establishment of business relationships between firms, enabling foreign funded companies to gain a firm foothold while working closely together with both local and other foreign partners.

### 1.6 Legislation and local governments

Bai et al. (2004) state that the introduction of fiscal decentralization after the economic reforms has lead to a strong incentive for local governments to protect their own tax base. This requires the protection of local firms and industries. Furthermore, since the local SOEs form the base of their political power, local governments also are inclined to protect these enterprises. They suggest that the main reasons for this protection are the tax revenues provided by the local firms and the employment those firms offer. They found that local protection is a key factor in regional specialization.

Consistent with these findings, Li et al. (2003) state that the Chinese regional markets are highly fragmented. This hampers specialization which is based on both comparative advantages and economies of scale. As a result, a lot of duplication occurs. In addition to interregional protection, they also propose a second reason for this duplication, namely the poor quality of the transportation network.

Li et al. (2003) suggest that both fiscal decentralization, which is domestic, and trade protection, which is international, contribute to the rise of interregional protection. Fiscal decentralization shifts a number of functions and responsibilities from the Central Government to the local governments. They found three major functions that are now under the control of these local governments: taxes and fiscal responsibility, finance and investment, and management of enterprises. By protecting local enterprises,
more revenues are generated. These revenues are exclusively for the own region. This provides a strong incentive for local protection, which results in the construction of barriers and tariffs that increase the cost of distributing products to other provinces.

Li et al. (2003) proposes yet another reason for interregional protectionism. Since the economic reforms were incremental, certain parts of the economy were already under influence of the free market while others still remained under the control and planning of the Central Government. The free segments then tried to exploit the rents in the segments under government control. Local governments from their part tried to capture these rents and thus resorted to barriers and tariffs. However, as the Chinese economy is becoming more and more open, this incentive is disappearing. Nevertheless, it has also contributed to the current situation of local protectionism.

1.7 Human capital

The Chinese labor market is a very competitive one. As a consequence, recruiting and retaining skilled employees proves to be a difficult objective (Wang et al., 2007).

Many high-performance HR practices have been introduced by western multinationals, and domestic enterprises have copied and adopted those as part of their reformation (Zhu et al., 2005; Zhu and Warner, 2004). Those practices are considered to provide a means for a company to establish a competitive advantage (Wang et al., 2007). With the accession to the WTO, Chinese companies faced worldwide competition and realized they too needed these ‘best practices’ HR policies (Zhu and Warner, 2004). These practices consist of recruiting competent employees, providing training programs, developing a motivating compensation, establishing decentralized decision making and regulating promotion of employees within the company.

Wang et al. (2007) make a distinction between State-Owned Enterprises (SOEs), Collective-Owned Enterprises (COEs), Privately-Owned Enterprises (POEs) and foreign-invested companies. They find that SOEs and COEs seriously lag behind in terms of functional HR practices. Given the fact they have always been controlled by central and/or local governments, it is difficult to these companies to break with their past. In particular, they experience much resistance in trying to break the ‘three irons’ which are: life-time employment, centralized wages, and state controlled appointment and promotion of managerial staff (Ding and Warner, 2001). POEs and foreign-invested enterprises however, don’t face these problems and thus possess more opportunities to implement new HR practices (Ding and Warner, 2001). However, research has demonstrated foreign-funded companies only outperform domestic companies in two areas: autonomy in recruiting and training. POEs have already caught up with them and are even performing slightly better.
One of the biggest differences between foreign funded companies and domestic companies is the focus on both economic and humanistic goals. While domestic companies tend to solely focus on economic goals in order to survive the competition, foreign-invested enterprises also devote their attention to humanistic goals in order to retain competent employees (Wang et al. 2007). Further, they state that Chinese companies tend to spend too much attention to improving efficiency in order to maximize short term profits, while ignoring humanistic goals. They conclude that while many Chinese enterprises have already adopted some of the western high-performance HR practices, they have done so under the influence of the traditional administration and cultural values. As a consequence, many firms haven’t yet achieved the same level of performance as foreign-invested companies. Fleischer and Yang (2003) state that the reformations in the labor market seriously lag behind on the economic reforms. This is one of the major limitations of the economic transition.

Although great progress has been realized in labor productivity, the country now faces another problem. There are huge differences between the rural and urban sectors and regions, which require revisions of wage, welfare and social insurance. Fleischer and Yang (2003) state that filling the gaps in the labor legislation and regulations will prove to be a daunting task for Chinese governments at all levels. However, these improvements will be absolutely necessary to maintain the political stability as well as to support further economic growth.

This is consistent with Xu and Li (2007). They found the swift economic growth to be attended with rising income inequality. The income inequality grew with 2.5 percent per year during the 1990s. This is one of the fastest growth rates in the world. This is mainly due to the wage inequality between high-skilled and low-skilled personnel, which rose with an average of 11 percent per year between 1997 and 2000. Given the fact that the number of skilled workers is rising, the relative demand has to be rising at an even faster pace.

Xu and Li (2007) propose two reasons for this rise in demand for skilled labor. First, China is experiencing a skill-based technical progress. This increases the demand for skilled labor relative to unskilled labor. Second, globalization induces the specialization in skill-intensive production. These reasons account for both developed and undeveloped countries such as China. The authors also suggest that the different wage policies of the government and foreign firms also contribute to the wage inequality. Based on a previous study from Zhao (2001) they conclude that skilled labor significantly earns more in foreign funded enterprises compared to SOEs. For unskilled labor, the SOEs tend to offer better wages than their foreign funded counterparts. Xu and Li (2007) provide evidence for the rise in skill intensity – which is the ratio of skilled to unskilled employment. Furthermore, they prove that SOEs and minority foreign-owned enterprises have a much lower skill intensity compared to domestic non-state and majority foreign-owned companies. The differences in wages will be discussed later on in section 4.1.
2. Logistics in China, today

The pace of development of transportation systems in China has not been able to keep up with the fast economic development of the country. According to Tirschwell (2007), the total revenues realized in the logistics sector account for 22% to 24% of the Gross Domestic Product (GDP) of China. In North America and Europe this is only 8% to 10% of the GDP. As a consequence the percentage of the total cost of products induced by logistics is much higher in China than in western economies. This is due to a number of problems: the current infrastructure is outdated and unable to meet the ever growing demand, the same is true for handling equipment. In addition Goh and Ling (2003) state that there is a huge shortage of qualified logistics personnel. Other barriers are the lack of responsiveness, inadequate communications infrastructure, the lack of logistics consulting services and the dependability of local suppliers (Carter et al., 1997). This immediately indicates that in order to sustain fast growth, China has to keep improving its infrastructure and logistics.

Yam and Tang (1996) pose that the regional self-sufficiency economic policy in the past is one of the main causes of the problems in China’s domestic distribution system today. Most products were manufactured at a local scale and thus only sold locally. This largely diminished the need to transport or distribute products between different regions and provinces. As a result, the necessary channels were not (fully) developed.

This is consistent with Jiang and Prater (2002). They state that China’s distribution and logistics system was controlled by the Central Government who developed a State Plan which was to be followed meticulously. This State Plan involved a predetermined resource allocation instead of looking at the demand of the market. The distribution system operated using vertical lines and different levels of distributors. This however lengthened the system which made distribution much more costly, since each level added their own margin on top of the price.

With the economic reforms, the Chinese Central Government decided to move slowly towards a free market system. A big change was the opening of distribution rights, which were previously not granted to foreign firms (Jiang and Prater, 2002).

With the establishment of the Special Economic Zones (SEZs) in the coastal areas, the production for export was concentrated along the coast. Therefore, the lack of distribution channels in the inland provinces was inconvenient, but did not have a large impact. Nowadays, factories are moving further and further inland. Exporters from the inland of China are thus confronted with the undeveloped inland distribution channels and risk increasing transportation costs along with extended delivery times (Yam and Tang, 1996). On top of that, both international and local firms are experiencing cost increases for
shipping, handling and warehousing due to regional protectionism. This could gravely jeopardize the ability of companies to shift their businesses inland.

According to Tanzer (2001), supply-chain related costs - 30% to 40% of wholesale prices - in China are very high, compared to 5% to 20% the U.S. Jiang and Prater (2002) conclude that while China is steadily transforming its centrally planned structure into a structure based on the free market, its distribution systems are currently in between those two types.

First, we look at the economic evolution of the country since the economic reforms launched in 1978. Next we examine the current status of logistics and infrastructure and its effect on doing business here.

### 2.1 Economic evolution from 1978 until today

The economic reforms of 1978 were a turning point for the entire country. The Central Government decided to gradually step down from the centrally planned economy in favor of a more international and free economy. This had implications for the different regions of the country. Wei (1998) states that the industrial growth rates from 1952 until 1978 of the western and the central region were almost similar to those of the eastern region. It was only after the economic reforms in 1978 that the growth rates separated.

With the economic reforms from 1978, the Chinese Central Government decided to stimulate certain regions. In order to transform the centrally planned economy into a more open one, the government gradually created SEZs and Open Coastal Cities (OPCs) (Firoz and Murray, 2003). Between 1980 and 1984, four SEZs were created: Shenzhen, Zhuhai and Shantou in the Guangdong Province and Xiamen in the Fujian Province. In addition, they proclaimed the entire island province of Hainan as a Special Economic Zone. All three provinces are located in the eastern region of the country and were chosen very strategically. The location choices were influenced by the foreign policy of the country: Shenzhen offered cheap land and cheap labor to its neighbor Hong Kong, Xiamen and Shantou were close to Taiwan, Zhuhai provided a bridge to Macao and finally, Hainan was chosen due to its proximity to Vietnam (Firoz and Murray, 2003). In the following years, a number of coastal cities were also opened to Foreign Direct Investment (FDI). The local authorities of these areas were granted the permission to impose fiscal regulations that were beneficial to attract FDI. Because of these regulations, almost half of the total foreign investments are distributed to the SEZs and OPCs. This allowed these zones to grow at a much faster pace than the rest of the country. The purpose of the zones was to attract new technologies, management and marketing knowhow and to develop skilled labor and to stimulate foreign exchange (Firoz and Murray, 2003). In order to do so, the country imposed a number of trade
barriers on imports. This posed a number of restrictions to foreign firms, which left them only the option to develop joint ventures in these SEZs and OPCs (Firoz and Murray, 2003).

These zones were created as pilot projects, in order to learn the necessary skills to partake in international trade. Given the restrictions, the Central Government created a controlled environment in which it could monitor all evolutions while preventing foreign investment to spread throughout the country. In this way, the Central Government was able to retain its centrally planned economy (Firoz and Murray, 2003). On the other hand, foreign companies also received a number of advantages such as tax incentives, cheap labor, a huge market of 1.3 billion consumers and an abundance of raw materials. Gradually, the Chinese market began to open up for foreign investments. Because of the wider access for FDI in the entire country, China has become the top receiver of FDI by the mid-1990s. When China entered the World Trade Organization (WTO) in 2001, the Chinese domestic markets opened even further. As a result the FDI inflow boomed. Zhao and Fang (2007) assume that the huge market potential of China has lured these additional foreign investors.

Zhao and Fang (2007) state that these FDI inflows have had an enormous impact on China’s geo-economy. Given the advantageous circumstances of the eastern coastal belt, such as a good location, better infrastructure, economic capacity and a long history of international trade, it received the bulk of the FDI inflows. This was in huge contrast to the central and western regions which respectively acquired ten times and thirty times less than the coastal region. Within the coastal region, a number of areas became the major production centers of the country: the Pearl River Delta (PRD) region in South China (adjacent to Hong Kong), the Yangtze River Delta (YRD) region in Southeast China and the Bohai Rim Region (BRR) in North China. Figure 1 gives an overview of those three regions.

The Chinese economy follows the geographical distribution of FDI and thus the location of the SEZs and OPCs. In 2004, the YRD, PRD and BRR accounted for 54% of the national GDP, 78% of foreign trade and 85% of the total FDI inflow of the country. These regions are clearly the economical spearheads of the country, providing a connection to the international market.

Qu and Green (1997) have proposed a reason for the choice of many foreign firms to invest in coastal regions. They pose that these regions are better connected to international markets. The lack of such a connection often restricted development of other, more inland areas. This enhanced the polarization of the national economy.
It was only in the 1990s that the Central Government began to consider this inequality as a threat to the prosperity, stability and unity of the country. At that time, the development of mainland China was imposed as a new objective (Wei, 1998). During the Ninth National Party Congress in March 1999, Jiang announced the western development strategy, a plan to tackle the regional inequality by investing in the western provinces. This plan, the WDP was elaborated in 2000 and inserted in the tenth Five-Year Plan (2001-2006). The WDP will be discussed in section 3.1. Next to the plans of developing the west, the Central Government also aims to stimulate further development of the logistics in the rest of the country. In order to achieve this, a number of measures are being used: further investments in the infrastructure, attracting and utilizing technologies useful for managing the entire supply chain, increasing education, partnering with foreign companies in order to learn from their experience and expertise and conducting research (Goh and Ling, 2003).

### 2.2 Current status of logistics and infrastructure

#### 2.2.1 Transportation

Table 2 provides an overview of the length of transportation routes in the entire country. The data are provided from the start of the economic reforms until 2006. We can clearly establish that China has made a lot of progression, especially the road network and aviation routes have been expanded.
massively. The rail network and inland waterways haven’t experienced the same expansion so far, but plans are on the way to dramatically improve the rail network in order to connect different areas of the country as well as to connect China with other countries.

Table 2: Length of Transportation Routes (10,000 km)

<table>
<thead>
<tr>
<th>Year</th>
<th>Length of Railways in Operation</th>
<th>Length of Highways</th>
<th>Length of Expressway</th>
<th>Length of Navigable Inland Waterways</th>
<th>Length of Civil Aviation Routes</th>
<th>International Routes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1978</td>
<td>5,17</td>
<td>89,02</td>
<td></td>
<td>13,60</td>
<td>14,89</td>
<td>5,53</td>
</tr>
<tr>
<td>1980</td>
<td>5,33</td>
<td>88,33</td>
<td></td>
<td>10,85</td>
<td>19,53</td>
<td>8,12</td>
</tr>
<tr>
<td>1985</td>
<td>5,50</td>
<td>94,24</td>
<td></td>
<td>10,91</td>
<td>27,72</td>
<td>10,60</td>
</tr>
<tr>
<td>1990</td>
<td>5,78</td>
<td>102,83</td>
<td>0,05</td>
<td>10,92</td>
<td>50,68</td>
<td>16,64</td>
</tr>
<tr>
<td>1995</td>
<td>5,97</td>
<td>115,70</td>
<td>0,21</td>
<td>11,06</td>
<td>112,90</td>
<td>34,82</td>
</tr>
<tr>
<td>2000</td>
<td>6,87</td>
<td>140,27</td>
<td>1,63</td>
<td>11,93</td>
<td>150,29</td>
<td>50,84</td>
</tr>
<tr>
<td>2001</td>
<td>7,01</td>
<td>169,80</td>
<td>1,94</td>
<td>12,15</td>
<td>155,36</td>
<td>51,69</td>
</tr>
<tr>
<td>2002</td>
<td>7,19</td>
<td>176,52</td>
<td>2,51</td>
<td>12,16</td>
<td>163,77</td>
<td>57,45</td>
</tr>
<tr>
<td>2003</td>
<td>7,30</td>
<td>180,98</td>
<td>2,97</td>
<td>12,40</td>
<td>174,95</td>
<td>71,53</td>
</tr>
<tr>
<td>2004</td>
<td>7,44</td>
<td>187,07</td>
<td>3,43</td>
<td>12,33</td>
<td>204,94</td>
<td>89,42</td>
</tr>
<tr>
<td>2005</td>
<td>7,54</td>
<td>334,52</td>
<td>4,10</td>
<td>12,33</td>
<td>199,85</td>
<td>85,59</td>
</tr>
<tr>
<td>2006</td>
<td>7,71</td>
<td>345,70</td>
<td>4,53</td>
<td>12,34</td>
<td>211,35</td>
<td>96,62</td>
</tr>
</tbody>
</table>

Source: China Statistical Yearbook 2007

Table 3 contains the quality criteria of these different transport routes. We can conclude that China paid a lot of attention to the expansion of the transport routes, but not always to the quality of these routes. The total percentage of double-tracking and automated blocking railways has been rising steadily over the years. This is a clear improvement of the quality of the railway network. The quality of the road network and the amount of standard waterways has declined the last few years. This poor quality contributes to the higher logistics costs experienced in China, compared to western economies.
Table 3: Quality of Transport Routes (2006)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Length of National Railways in Operation (km)</td>
<td>54.616</td>
<td>58.656</td>
<td>62.200</td>
<td>63.412</td>
</tr>
<tr>
<td>Double-Tracking Length (km)</td>
<td>16.909</td>
<td>21.408</td>
<td>24.497</td>
<td>25.244</td>
</tr>
<tr>
<td>Proportion (%)</td>
<td>31.0</td>
<td>36.5</td>
<td>39.4</td>
<td>39.8</td>
</tr>
<tr>
<td>Automatic Blocking Length (km)</td>
<td>12.910</td>
<td>18.318</td>
<td>24.149</td>
<td>25.630</td>
</tr>
<tr>
<td>Proportion (%)</td>
<td>23.6</td>
<td>31.2</td>
<td>38.8</td>
<td>40.4</td>
</tr>
<tr>
<td>Length of Highways (km)</td>
<td>1,157.009</td>
<td>1,402.698</td>
<td>3,345.187</td>
<td>3,456.999</td>
</tr>
<tr>
<td>Expressway and Class I to IV Highways (km)</td>
<td>910.754</td>
<td>1,216.013</td>
<td>1,591.791</td>
<td>2,282.872</td>
</tr>
<tr>
<td>Proportion (%)</td>
<td>78.7</td>
<td>86.7</td>
<td>82.5</td>
<td>66.0</td>
</tr>
<tr>
<td>Length of Navigable Inland Waterways (km)</td>
<td>110.562</td>
<td>119.325</td>
<td>123.263</td>
<td>123.388</td>
</tr>
<tr>
<td>Standard Waterways (km)</td>
<td>56.587</td>
<td>61.367</td>
<td>61.013</td>
<td>61.035</td>
</tr>
<tr>
<td>Proportion (%)</td>
<td>51.2</td>
<td>51.4</td>
<td>49.5</td>
<td>49.5</td>
</tr>
</tbody>
</table>

Source: China Statistical Yearbook 2007

Figure 2 displays the volume of freight transported by the different transport modes. Clearly, the road network is the most popular mode to move freight traffic. Over 70% of the freight is transported by road. Railways and waterways are less popular but are still widely used. Transport by air only accounts for a fraction of the total volume, since it is a very expensive mode of transportation.

Figure 2: Freight Traffic (2006)

![Freight Traffic 2006 (%)](image)

Source: calculated using data from the China Statistical Yearbook 2007
Figure 3 shows the freight ton-kilometers per transport mode. In contrast to Figure 2 the largest amount of freight ton-kilometers is not realized by road but by water. This is of course due to the large distances travelled when using waterways, specifically because of ocean transport. The same is true for railway transportation, which also realizes a lot more freight-ton kilometers than road transportation. We can conclude that waterways and railways are used for bulky products with low transportation costs per kilometer. The disadvantage of these transport modes is the rather long delivery time. In addition, transport by road is often required afterwards to deliver the goods to the exact customer location. We will discuss the 4 different types of transportation: highway, rail, water and air transport in the next sections.

**Figure 3: Freight Ton-Kilometers (2006)**

![Freight Ton-Kilometers 2006 (%)](image)

Source: calculated using data from the China Statistical Yearbook 2007

### 2.2.1.1 Highway transport

The freight volume transported by road has been rising on a yearly basis ever since the mid-1970s (Goh and Ling, 2003). This is also demonstrated in Table 4. Since the launch of the economic reforms in 1978, the total length of highways has almost quadrupled. The total volume of freight and the freight ton-kilometers have experienced an even greater growth. This led to highway transportation becoming the dominant transport mode for freight, overtaking railway transport. This increase can be explained by the rapid extension of the highway network. However, most transports using highways cover a rather short haul, with an average distance of 59 km, compared to rail freight which has an average distance of about 780 km (Goh and Ling, 2003).
When we look at Figures 3 and 4 we can establish this. While the total freight traffic transported by highways is higher than both railways and waterways, the freight ton-kilometers are relatively low compared to these transport modes. This is consistent with Goh and Ling (2003) who suggest that railways and waterways are used to transport goods over a longer distance.

The extension of the highway network, while being rapid, has not been able to keep up with the increase in freight volume however. While the network has expanded by 288%, the volume of freight and the freight-ton kilometers have grown by respectively 1621% and 3458%. This might lead to saturation of the network. Another problem is the loss and damage of goods caused by the transport. This is due to the vehicles used, which are most of the time open-backed trucks (Goh and Ling, 2003).

In the future, the government will continue to expand the highway network. An example is the National Trunk Highway System, of which the construction started in 1999 and which has to be ready by 2020. This project accounts for 35,500 km of roads, which contain 12 inter-provincial highways connecting 95 cities (Goh and Ling, 2003).
Table 4: Highway Transportation

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Length of Transportation Routes (10,000km)</strong></td>
<td>89.02</td>
<td>88.33</td>
<td>94.24</td>
<td>102.83</td>
<td>115.70</td>
<td>140.27</td>
<td>334.52</td>
<td>345.70</td>
</tr>
<tr>
<td>%</td>
<td>100.00</td>
<td>99.22</td>
<td>105.86</td>
<td>115.51</td>
<td>129.97</td>
<td>157.57</td>
<td>375.78</td>
<td>388.34</td>
</tr>
<tr>
<td><strong>Freight traffic (10,000 tons)</strong></td>
<td>85,182</td>
<td>382,048</td>
<td>538,062</td>
<td>724,040</td>
<td>940,387</td>
<td>1,038,813</td>
<td>1,341,778</td>
<td>1,466,347</td>
</tr>
<tr>
<td>%</td>
<td>100.00</td>
<td>448.51</td>
<td>631.66</td>
<td>849.99</td>
<td>1,103.97</td>
<td>1,219.52</td>
<td>1,575.19</td>
<td>1,721.43</td>
</tr>
<tr>
<td><strong>Freight ton-kilometers (100 million ton-km)</strong></td>
<td>274,1</td>
<td>764,0</td>
<td>1903,2</td>
<td>3358,1</td>
<td>4694,9</td>
<td>6129,4</td>
<td>8693,2</td>
<td>9754,2</td>
</tr>
<tr>
<td>%</td>
<td>100.00</td>
<td>278.69</td>
<td>694.24</td>
<td>1,224.96</td>
<td>1,712.59</td>
<td>2,235.86</td>
<td>3,171.08</td>
<td>3,558.13</td>
</tr>
</tbody>
</table>

Source: calculated using data from the China Statistical Yearbook 2007
2.2.1.2 Rail transport

As indicated by Table 5, the length of the railway network has increased over the years, however it did so at a much slower pace than the highway network. While the length of the railway network grew with 49.1% from 1978 to 2006, the highway network realized a massive growth of 288.3% (Table 4). Still, the use of rail has remained the second most popular mode of transport since the 1980s (Goh and Ling, 2003).

As with the highway network, we find that the extension of the railway network has not been able to keep up with the growth in volume and kilometers. Due to this surge in demand, the capacity of the railway network is highly insufficient. According to Goh and Ling (2003) over 50% of the transported freight was forced to look for alternatives. Consequently, transporting by rail can be very uncertain with large fluctuations in arrival and departure times. In the Northeast of the country, where the heavy industrial bases are located, this lack of capacity is the gravest. Given the fact that railways are primarily used for heavy and bulky goods such as coal and steel, it is nearly impossible for commercial products to acquire rail space (Goh and Ling, 2003).

Table 5: Railway Transportation

<table>
<thead>
<tr>
<th></th>
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<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Length of Transportation Routes (10,000km)</td>
<td>5.17</td>
<td>5.33</td>
<td>5.50</td>
<td>5.78</td>
<td>5.97</td>
<td>6.87</td>
<td>7.54</td>
<td>7.71</td>
</tr>
<tr>
<td>%</td>
<td>100.00</td>
<td>103.09</td>
<td>106.38</td>
<td>111.80</td>
<td>115.47</td>
<td>132.88</td>
<td>145.91</td>
<td>149.10</td>
</tr>
<tr>
<td>Freight traffic (10,000 tons)</td>
<td>110.119</td>
<td>111.279</td>
<td>130.709</td>
<td>150.681</td>
<td>165.982</td>
<td>178.581</td>
<td>269.296</td>
<td>288.224</td>
</tr>
<tr>
<td>%</td>
<td>100.00</td>
<td>101.05</td>
<td>118.70</td>
<td>136.83</td>
<td>150.73</td>
<td>162.17</td>
<td>244.55</td>
<td>261.74</td>
</tr>
<tr>
<td>Freight ton-kilometers (100 million ton-km)</td>
<td>5,345.2</td>
<td>5,716.9</td>
<td>8,125.7</td>
<td>10,622.4</td>
<td>13,049.5</td>
<td>13,770.5</td>
<td>20,726.0</td>
<td>21,954.4</td>
</tr>
<tr>
<td>%</td>
<td>100.00</td>
<td>106.95</td>
<td>152.02</td>
<td>198.73</td>
<td>244.14</td>
<td>257.62</td>
<td>387.75</td>
<td>410.73</td>
</tr>
</tbody>
</table>

Source: calculated using data from the China Statistical Yearbook 2007

In the future, the Chinese railway network will be expanded even further. In addition, the objective is to connect China to the rest of the world. Given the widespread use of containers, container-handling facilities are also a priority. These facilities will be improved and a container box tracking system will be introduced and implemented (Goh and Ling, 2003).
2.2.1.3 Water transport

A distinction has to be made between inland navigation and sea navigation. Table 6 shows the length of transport routes and the volume and kilometers transported by inland waterways. Goh and Ling (2003) state that the most important rivers are the Yangtze, Pearl and Yellow River. Not surprisingly, the river-mouth of these rivers are also located in the three major economical areas: the YRD, PRD and BRR. Of the three rivers, the Yangtze is by far the most used. Kwan and Knutsen (2006a) state that 80 percent of the cargo transported inland is done using this waterway.

In contrast to the rail and highway network, we find that the length of transportation routes has diminished. The volume and number of kilometers however has risen substantially. This indicates that the existing waterways are being used more frequently, which might lead to problems of saturation. Despite the rising popularity of transporting goods inland by water, a number of challenges is associated with this method: the legislation is not fully developed, nor are the market mechanisms. Furthermore both vessels and port infrastructure are outdated and below international standards (Goh and Ling, 2003).

Table 6: Waterway Transportation (ocean excluded)

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Length of Transportation Routes (10,000km)</td>
<td>13.60</td>
<td>10.85</td>
<td>10.91</td>
<td>10.92</td>
<td>11.06</td>
<td>11.93</td>
<td>12.33</td>
<td>12.34</td>
</tr>
<tr>
<td>%</td>
<td>100,00</td>
<td>79,78</td>
<td>80,22</td>
<td>80,29</td>
<td>81,32</td>
<td>87,72</td>
<td>90,66</td>
<td>90,73</td>
</tr>
<tr>
<td>Freight traffic (10,000 tons)</td>
<td>39.633</td>
<td>38.384</td>
<td>56.695</td>
<td>70.686</td>
<td>97.943</td>
<td>99.442</td>
<td>171.099</td>
<td>194.290</td>
</tr>
<tr>
<td>%</td>
<td>100,00</td>
<td>96,85</td>
<td>143,05</td>
<td>178,35</td>
<td>247,12</td>
<td>250,91</td>
<td>431,71</td>
<td>490,22</td>
</tr>
<tr>
<td>Freight ton-kilometers (100 million ton-km)</td>
<td>1292,2</td>
<td>1520,8</td>
<td>2400,3</td>
<td>3451,0</td>
<td>5614,2</td>
<td>6661,2</td>
<td>11120,3</td>
<td>12908,4</td>
</tr>
<tr>
<td>%</td>
<td>100,00</td>
<td>117,69</td>
<td>185,76</td>
<td>267,08</td>
<td>434,48</td>
<td>515,51</td>
<td>860,60</td>
<td>998,98</td>
</tr>
</tbody>
</table>

Source: calculated using data from the China Statistical Yearbook 2007

Table 7 displays the top 10 of major ports situated along inland rivers for the number of berths. Shanghai lies in the delta of the Yangtze River and is also classified as a seaport. All the other ports are without exception located on the banks of the Yangtze River. This is consistent with Kwan and Knutsen (2006a) who state that 80 percent of the inland transport is done so over the Yangtze River.

Table 8 displays the volume and kilometers transported by sea. While the volume is substantially lower compared to inland waterways, the distance traveled is much higher. This is of course because of the
large distances travelled when traversing oceans. Since sea transport is a transport mode that connects China with the rest of the world, we can also establish from the growth of this transport mode that the country really has opened up after the economic reforms. China has become a major international player instead of being a country that was primarily self-reliant.

Table 7: Major Ports of Inland Rivers (2006)

<table>
<thead>
<tr>
<th>Name</th>
<th>Length of Quay Line (m)</th>
<th>Number of Berths (unit)</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Total</td>
<td>389.353</td>
<td>7.044</td>
</tr>
<tr>
<td>Shanghai</td>
<td>76.843</td>
<td>2.154</td>
</tr>
<tr>
<td>Wuhan</td>
<td>22.730</td>
<td>334</td>
</tr>
<tr>
<td>Nanjing</td>
<td>21.611</td>
<td>283</td>
</tr>
<tr>
<td>Zhenjiang</td>
<td>15.726</td>
<td>244</td>
</tr>
<tr>
<td>Changzhou</td>
<td>7.110</td>
<td>157</td>
</tr>
<tr>
<td>Chongqing</td>
<td>4.654</td>
<td>85</td>
</tr>
<tr>
<td>Tongling</td>
<td>4.001</td>
<td>83</td>
</tr>
<tr>
<td>Nantong</td>
<td>10.155</td>
<td>73</td>
</tr>
<tr>
<td>Wanzhou</td>
<td>9.655</td>
<td>73</td>
</tr>
<tr>
<td>Chizhou</td>
<td>1.995</td>
<td>67</td>
</tr>
</tbody>
</table>

Source: calculated using data from the China Statistical Yearbook 2007

Table 8: Sea Transportation

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Freight traffic (10,000 tons)</td>
<td>3.659</td>
<td>4.292</td>
<td>6.627</td>
<td>9.408</td>
<td>15.251</td>
<td>22.949</td>
<td>48.549</td>
<td>54.413</td>
</tr>
<tr>
<td>%</td>
<td>100,00</td>
<td>117,30</td>
<td>181,12</td>
<td>257,12</td>
<td>416,81</td>
<td>627,19</td>
<td>1.326,84</td>
<td>1.487,10</td>
</tr>
<tr>
<td>Freight ton-kilometers (100 million ton-km)</td>
<td>2.487</td>
<td>3.532</td>
<td>5.329</td>
<td>8.141</td>
<td>11.938</td>
<td>17.073</td>
<td>38.552</td>
<td>42.577</td>
</tr>
<tr>
<td>%</td>
<td>100,00</td>
<td>142,02</td>
<td>214,27</td>
<td>327,34</td>
<td>480,02</td>
<td>686,49</td>
<td>1.550,14</td>
<td>1.711,99</td>
</tr>
</tbody>
</table>

Source: calculated using data from the China Statistical Yearbook 2007

Based on the volume of handled freight, Table 9 shows the top 10 of coastal ports. Overall, the volume of freight handled in coastal ports is growing at a fast pace. This is once again an indication of the
opening up of the Chinese economy after the reforms. Shanghai remains the busiest port, but others such as Ningbo, Guangzhou, Tianjin, Qingdao, Qinhuangdao and Dalian are also becoming major international ports connecting the country with the global market. Each of these locations provides such a connection and is thus a potentially important site for foreign companies who are willing to export goods.

Table 9: Volume of Freight Handled in Major Coastal Ports (10,000 tons)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>National Total</td>
<td>80.166</td>
<td>125.603</td>
<td>292.777</td>
<td>342.191</td>
</tr>
<tr>
<td>Shanghai</td>
<td>16.567</td>
<td>20.440</td>
<td>44.317</td>
<td>47.040</td>
</tr>
<tr>
<td>Ningbo</td>
<td>6.853</td>
<td>11.547</td>
<td>26.881</td>
<td>30.969</td>
</tr>
<tr>
<td>Guangzhou</td>
<td>7.299</td>
<td>11.128</td>
<td>25.036</td>
<td>30.282</td>
</tr>
<tr>
<td>Tianjin</td>
<td>5.787</td>
<td>9.566</td>
<td>24.069</td>
<td>25.760</td>
</tr>
<tr>
<td>Qingdao</td>
<td>5.103</td>
<td>8.636</td>
<td>18.678</td>
<td>22.415</td>
</tr>
<tr>
<td>Qinhuangdao</td>
<td>8.382</td>
<td>9.743</td>
<td>16.900</td>
<td>20.489</td>
</tr>
<tr>
<td>Dalian</td>
<td>6.417</td>
<td>9.084</td>
<td>17.085</td>
<td>20.046</td>
</tr>
<tr>
<td>Rizhao</td>
<td>1.452</td>
<td>2.674</td>
<td>8.421</td>
<td>11.007</td>
</tr>
<tr>
<td>Yingkou</td>
<td>1.156</td>
<td>2.268</td>
<td>7.537</td>
<td>9.477</td>
</tr>
<tr>
<td>Lianyungang</td>
<td>1.716</td>
<td>2.708</td>
<td>6.016</td>
<td>7.232</td>
</tr>
</tbody>
</table>

Source: China Statistical Yearbook 2007

2.2.1.4 Air transport

From Figure 2 (in section 2.2.1) we can conclude that the percentage of the total freight volume transported by air is but a fraction of the volume transported by other transport modes. This is because transporting by air is much more expensive than other transport modes. The advantage is the much shorter lead time. As a result, air transport is primarily used for products and packages with a high value-to-weight ratio that are time-sensitive. The volume transported by air has been rising substantially over the years, as indicated by Table 10. When we compare the growth rates of air transport with those of the other transport modes, we can even conclude that air transport has experienced the fastest growth.

Obstacles for effective transportation by air are numerous (Goh and Ling, 2003). The number of airports is too low and results in a minimal coverage and weak air transportation services. In addition, the
infrastructure of many airports is outdated and below international standards, the same is true for aircrafts (Goh and Ling, 2003).

The last few years, China has invested large amounts of money to enhance and expand the airport network. Efforts are on the way to build a hub and spoke network (Goh and Ling, 2003). The objective is to establish national hubs in Beijing, Guangzhou and Shanghai. Furthermore, several airports are being built or are already completed in Western China. Special attention is being assigned to the cargo sector. Several airports are setting up independent cargo facilities to enlarge the capacity of their freight-handling services (Goh and Ling, 2003).

Table 10: Air Transportation

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Length of Transportation Routes (10,000km)</td>
<td>14.89</td>
<td>19.53</td>
<td>27.72</td>
<td>50.68</td>
<td>112.90</td>
<td>150.29</td>
<td>199.85</td>
<td>211.35</td>
</tr>
<tr>
<td>%</td>
<td>100.00</td>
<td>131.16</td>
<td>186.17</td>
<td>340.36</td>
<td>758.23</td>
<td>1,009.32</td>
<td>1,342.18</td>
<td>1,419.41</td>
</tr>
<tr>
<td>Freight traffic (10,000 tons)</td>
<td>6.4</td>
<td>8.9</td>
<td>19.5</td>
<td>37.0</td>
<td>101.1</td>
<td>196.7</td>
<td>306.7</td>
<td>349.4</td>
</tr>
<tr>
<td>%</td>
<td>100.00</td>
<td>139.06</td>
<td>304.69</td>
<td>578.13</td>
<td>1,579.69</td>
<td>3,073.44</td>
<td>4,792.19</td>
<td>5,459.87</td>
</tr>
<tr>
<td>Freight ton-kilometers (100 million ton-km)</td>
<td>0.97</td>
<td>1.41</td>
<td>4.15</td>
<td>8.20</td>
<td>22.30</td>
<td>50.27</td>
<td>78.90</td>
<td>94.28</td>
</tr>
<tr>
<td>%</td>
<td>100.00</td>
<td>145.36</td>
<td>427.84</td>
<td>845.36</td>
<td>2,298.97</td>
<td>5,182.47</td>
<td>8,134.02</td>
<td>9,719.10</td>
</tr>
</tbody>
</table>

Source: calculated using data from the China Statistical Yearbook 2007

2.2.2 The Chinese distribution system

Jiang and Prater (2002) make a distinction between Chinese and foreign companies when assessing the Chinese distribution system. They detect three main obstacles that have to be overcome by Chinese companies in order to set up an efficient distribution system of their own. First, they point out that the unbalanced economic development (with the huge gap between the coast and the rest of the country) as well as the vastness of the country itself make it virtually impossible for a company to set up a national distribution system. As a consequence, most Chinese distributors tend to be rather small and are specialized in a certain type of goods. Second, guanxi is needed to do business. This concept states that personal relationships and thrust are needed in order to do business. Guanxi might be difficult to obtain even for native Chinese companies from other provinces. Third, regional protectionism is considered as being one of the most powerful barriers that fragments the distribution market. With the decentralization of power, the centre of the logistics is situated at the provincial level. There are many
sorts of barriers when crossing provincial borders. These barriers limit the possibilities of distributing products in other provinces and thus limit the average freight distance.

Foreign firms face many other problems. According to Jiang and Prater (2002) a survey established that supply chain-related problems are in the top three of problems concerning developing business in China. They suggest a number of factors that contribute to this problem. First and most important are the many restrictions that are imposed on foreign companies, such as rules for importing goods. Second, it is very difficult to find reliable and qualified local suppliers. Third, the Chinese telecommunications and information technology infrastructure is not yet at the same level as in the western world. Fourth, the transportation infrastructure in many areas of the country is making it difficult to keep costs down and to assure reliable and on time deliveries. This also leads to high levels of damage/loss in transit. However, these obstacles don’t restrain foreign companies from entering the Chinese market to take advantage of the many opportunities it provides.

Jiang and Prater (2002) conclude that many foreign firms try to persuade their original suppliers to enter China with them. An alternative is to outsource the logistics functions to international logistics companies who have already entered the market and have set up a distribution network. While having to establish a new relation with this logistics company, the company still has access to the same services that they receive from their original suppliers. The third strategy implies working with local carriers. Here foreign companies set up relationships with local logistics providers, which are developing quickly and offering a wider range of services. The biggest advantage of these local suppliers is their familiarity with the local society and government and the resulting guanxi-networks.

Jiang and Prater (2002) also suggest that a distinction has to be made between different regions and whether a company is export-oriented or market-oriented. For instance, an export-oriented company in the coastal area will find infrastructure, personnel, logistics services etc. to be widely available and will thus face a very efficient and simple supply chain. In contrast, a company that is market-oriented in the interior regions will face much more problems with the availability of all the necessary elements to develop a supply chain, but will have other advantages such as proximity to the market and low production costs.

2.2.3 Foreign logistics firms

More and more foreign 3PLs are setting up networks in China given the huge market for logistics. Jiang and Prater (2002) observe three determinants that provide great opportunities to logistics service
providers: the booming economy, e-commerce and the Chinese accession to the WTO. Furthermore, Hong et al. (2004) established an increasing trend of outsourcing of logistics services among Chinese manufacturers.

Before the accession to the WTO, foreign Logistics Service Providers (LSPs) had a hard time acquiring the multiple licenses from different government institutions required to provide a full range of logistics services (Goh and Ling, 2003). Hong (2007) states that after the economic reforms and China’s accession to the WTO, many restrictions and regulations have been cancelled. This allows foreign LSPs to be more flexible and to have better control over the number and range of logistics services they wish to offer to their customers (Goh and Ling, 2003). Between 1992 and 2004, the industry realized a yearly average growth of 22.2% (Wang et al., 2006). The industry has been transformed into a very fragmented industry with a lot of smaller providers. This in contrast to the few large state-owned enterprises that dominated the market in former days.

Hong et al. (2004) establish that a lot of foreign investors have acknowledged the opportunities that the opening of the Chinese logistics market provided and have expanded their businesses to this market. Some of them are companies such as FEDEX, UPS and DHL which are world leaders in the industry. These firms provide both local and foreign firms with vital services in order to do business. However, the location of these 3PLs is geographically concentrated, leaving certain regions virtually unexploited.

While foreign logistics firms want to enter the market, Chinese cities are even more willing to attract them to their territory, and in doing so they try to become logistics hubs. Oum and Park (2004) propose that cities need those foreign 3PLs so they can offer an efficient and reliable logistics network. This is something that most local firms cannot provide (Carter et al., 1997).

A number of studies have suggested a number of determinants that affect the location choice of foreign investment (Head and Ries, 1996; Cheng and Kwan, 2000; Coughlin and Segev, 2000; He, 2003). These include transportation infrastructure, market size, labor, agglomeration economies and government policies. Transportation infrastructure is estimated to be the key element in the logistics industry. Apart from these factors, some firm-specific characteristics also have to be taken into account (Qu and Green, 1997).

Using both firm data and site-specific data Hong (2007) came to the following conclusions. First, the density of both the road network and the railway network in a province positively affect the choice for that particular province. Second, the access to a seaport is an important asset to attract foreign logistics firms. Third, foreign logistics firms prefer areas with a larger fraction of privatized firms. Fourth, labor quality in the city is also a decisive factor. Fifth, foreign logistics firms are very sensitive towards market
demand. Sixth, areas with a lot of existing FDI are more likely to be chosen. Finally, foreign logistics firms tend to prefer provincial capitals and cities which have free trade zones.

Figure 4 shows the distribution pattern of foreign logistics firms in China. It is clear that the coastal region is much more popular to these firms than the central and western regions. Within the coastal region, the three same subareas can once again be distinguished: the YRD region, PRD region and the BRR. This is consistent with the findings of Hong (2007), as these areas possess all of the determinants described in his research.

While the western region currently lags behind on the coast, the current investments from the WDP are expected to improve many of the factors described by Hong (2007). One can expect that the western region will thus become more attractive for foreign logistics firms.

Hong and Liu (2007) analyzed the logistics industry in China. They found a number of important issues. A lot of companies in the industry are recently established, with 42% of them being founded less than five years ago. In addition, they found that the older a company in the industry is, the more likely it is to be a state-owned company. Private companies are significantly younger, and the most recent ones are foreign funded logistics companies.

When Hong and Liu (2007) assessed the geographical coverage, they found that 42% of the companies serve their customers throughout the entire country. Some companies -26% of the logistics industry- go even further and also operate outside China. When looking at ownership, Hong and Liu (2007) distinguished that mostly foreign funded companies also provide their services abroad, while private and state-owned companies focus on the domestic market.

The vast majority (70%) supplies at least three service offerings, which are mainly transport of goods, warehousing and distribution. In contrast, only 29% offers logistics information system management. An even slighter percentage (20%) actually offers value-added services. Hong and Liu (2007) suggest that providing a logistics information system and a logistics system design could offer companies a means to differentiate and obtain a competitive advantage.

Next, Hong and Liu (2007) investigated market niches. They found logistics companies rather reluctant to provide services to state-owned enterprises. An explanation might be found in the fact that many of these state-owned companies still have their own logistics department. They also found most companies to be confident in the further growth of the industry. In spite of that, there are a number of problems and barriers that stand in the way of the further development of the logistics industry: the underdeveloped market system, institutional problems and regional protectionism, inadequate infrastructure, and a lack of capital.
With the accession to the WTO, the competition also has increased. Most firms are trying to cut operational costs, use more advanced information technologies, offer a larger number of service offerings and improve the quality of their services through more skilled employees (Hong and Liu, 2007).

Figure 4: Geographic Concentration of Foreign Logistics Firms

![Map of China showing geographic concentration of foreign logistics firms](image)

Source: Hong J. 2007

In conclusion, the logistics industry is changing rapidly. With the large opportunities the market offers, a lot of new competitors have entered the scene. These enhance the competition, which in turn will improve the services offered by the logistics industry. This will enable manufacturing companies to reduce their logistics costs and enhance the products they offer. Further, this allow them to improve their competitive position on the international market. As a result, the importance of the Chinese economy will increase even more.
2.2.4 Warehousing
According to Goh and Ling (2003), warehouse space is easy to find, sufficiently available and relatively inexpensive. Warehouses are mainly located close to ports and railway stations to provide warehouse services to goods in-transit. Areas receiving a lot of foreign investment also show higher concentrations of warehouses. These areas are mainly located near the coast and are thus primarily used to store finished goods which are ready to be exported. However, most warehouses can only be used for general storage purposes (Goh and Ling, 2003) and are rather low-end facilities. Most storing and picking activities are performed manually and sophisticated racking is rare and thus goods are mostly floor-stacked which is an inefficient way of using space. More advanced warehouses are being built in various parts of the country, in order to offer both local and foreign companies more efficient storage services.

2.3 Comparison with other logistics systems
Bookbinder and Tan (2002) conducted a study in which they compared the logistics systems of European and Asian countries. They came up with a number of categories of variables that affect the quality of a country’s logistics system. These are: infrastructure, performance, information systems, human resources, business environment and political environment. They divided the included countries into three different categories. Their results indicate that China currently is the last country in the second category. This indicates that, while it already is in the same tier as countries such as Belgium, the UK and France, further enhancements are necessary in order to stay in this category. Bookbinder and Tan (2002) also establish a number of improvement areas a country can work on. These are: investments in distribution infrastructure for both enhancement and maintenance, the use of business-friendly processes and dedicated human resource management. They state that these areas are controllable by either the country’s government or by the local logistics operator. The availability of a good logistics infrastructure is however not fully controllable. Nevertheless these topics might help a government or a company to implement modifications in order to improve its logistics systems.
3. Regional Differences in China

As mentioned earlier, China is experiencing a change in its economic environment. While the coastal regions provided excellent bases to set up manufacturing plants in the past, these areas are becoming overcrowded and wages are rising. In contrast, the rest of the country is largely undeveloped, has lower wages and provides a massive consumer market yet to be conquered. As a result, the attention of both the Central Government and the companies is gradually shifting toward the mainland. The Central Government has launched the WDP, a plan devised to develop the western areas and close the gap between interior and coastal China. We will discuss its various reasons, projects and objectives.

In order to be able to compare the different parts of the country and to investigate whether the WDP already has positive effects on the interior regions, we make a distinction between three regions: eastern (or coastal), central and western region. This distinction is made following Fang and Chen (2000). Next we compare some economic, logistical and infrastructural figures of those three regions.

3.1 Western Development Program

With the success of the opening up of the coastal region, the Central Government sensed a change in its regional development strategy was needed. It decided to focus on the western provinces. The Government also wanted to improve the living standards of large ethnic populations by including underdeveloped provinces in other regions. In particular it aimed to include Inner Mongolia and Guangxi (Lai, 2002). This however does not mean that the further development of the coast will be neglected. Lai (2002) proposes a number of issues that required the formation of such a strategy. First, the focus on the coast had caused a huge polarization of the country. The coast was given an advantage in state investment, exposure to the world economy, and access to FDI. This led to a great divergence in living standards which in term was the cause of growing discontent in the interior regions.

Second, because of the stagnating Chinese exports in 1998, the government wanted to stimulate domestic consumption. However, the economic performance remained disappointing. Lai (2002) suggests this was caused by a structural problem, namely an oversupply of manufactured goods. In contrast, the consumption of manufactured goods in the central and western regions was but a fraction of the consumption in the coastal region (Du et al., 2000). In addition, both infrastructure and transportation capacity in the west and east were diverging more and more. In order to open up this large and so far undeveloped market of the west, the government decided sustainable development was required (Lai, 2002). Developing the market in the central and western regions could help reduce
the oversupply of manufactured goods and thus stimulate the economic performance of the entire country.

Third, in order to simplify the transition towards an open economy more structural reforms would be needed. During the 1990s, the performance of SOEs plunged. This urged a change in strategy, which was introduced in 1996 to retain the large SOEs and to cast off the smaller ones. These reforms affected the interior regions more, because they had larger percentages of industrial output generated by the state sector. The WDP was supposed to stimulate the growth of the non-state economy with an emphasis on FDI and rural enterprises. Another objective was to ameliorate the performance of the remaining SOEs in the region in order to prepare them for the international competition they would face when China entered the WTO (Du et al., 2000). The Central Government feared that they would be outperformed by international firms.

Fourth, the WDP also intended to improve the environment and resource supplies (Du et al., 2000; Fang and Chen, 2000). Some main issues that are being targeted are soil erosion, desertification and prevention of water shortages in northern China. In addition to large water supplies, the west also contains a lot of minerals and energy that will be needed to meet the rising demand of the country. These natural resources are a big asset of the western regions and are vital to the further development of the entire country, not just the west.

Last, the government hopes to attain national security and unity by raising the living standards of ethnic minorities. Separatist movements are especially strong in Xinjiang and Tibet. Lai (2002) states that the Central Government has decided to try to develop the west through key areas. These are either located close to existing transportation routes and hubs, along the Eurasion “Land Bridge”, or along the Yangtze and other waterways in the south-west which possess a connection with the ocean. This is consistent with the finding of Kwan and Knutsen (2006b) that inland waterways are used more than any other transport network to access the inland regions. The idea is to develop these areas through several projects. In doing so, they hope that these areas will become regional growth engines that stimulate the surrounding areas.

The government recognizes that this plan will take several decades to be carried out. They imposed a number of goals in the intermediate term to steer the current projects. These goals include progress in infrastructure, ecology and growth of the local economies. Furthermore, they also want to call a halt to the growing disparities between the different regions (Lai 2002).

Lai (2002) states that the main emphasis of the current investments is improving the infrastructure. The road network is being upgraded by three major projects:

1. To connect the major cities, 8 new national highways will be build, with a total length of 12,600 kilometers.
2. The construction of regional, interprovincial, and local highways will be speeded up. In addition, a lot of upgrading of these highways is scheduled. This implicates that yet another 210,000 kilometers of road will be build.

3. On a lower level, townships and villages will be connected with each other by smaller roads. This will add 150,000 kilometers of road to the existing road network.

The railway network will also be revised. The objective is to implement major expansions. The government has pointed out that the connection between the east and the west will be improved. In addition, internal and external routes will be renewed. To enhance the air network, twenty airports have been selected to be improved, both in quality and capacity. Furthermore, the government plans to develop river lanes and communication networks (Lai, 2002).

To deal with the issue of energy provision, three east-to-west power generation and transmission systems will be constructed, as well as a gas pipeline starting in Xinjiang and traversing eight provinces.

The government will also stimulate certain sectors in order to exploit the comparative advantages the western region possesses. This includes both sectors which are based on the use of the resources and high-tech sectors. The west is already the leader in aerospace and nuclear industries. Also electronics, new materials, solar power and biotech have proven to be competitive and profitable sectors (Lai, 2002). Tourism can also be an important asset to the west. Because of the vastness and diversity of the region a lot of cultural, historical and natural attractions are located in the western region (Lai, 2002).

Wang and Ge (2004) investigated whether the three Chinese regions are converging to each other or whether they are diverging more and more. They found the western region to be closing the gap with the central region. The difference between the east and the west however is growing. This implies that the central region is lagging further and further behind on the east. They also provide a number of explanations as to why the west is catching up. However, they remark that not all western provinces follow this tendency. Wang and Ge (2004) consider the west as an area with a lot of economic opportunities and note that the large amounts of resources prove to be attractive to many entrepreneurs. Dorian (2006) states that central Asia and North-West China possess large quantities of vital resources that constitute the basis for future economic growth. For instance, in Xinjing oil, natural gas, coal, solar—and wind energy are plentiful available.
3.2 The three regions

Following Fang and Chen (2000) we divide China into three great regions: Eastern (or coastal), Central and Western China. The classification of the provinces into the three regions is shown in Table 11.

Table 11: The Three Regions of China

<table>
<thead>
<tr>
<th>Region</th>
<th>Provinces</th>
<th>% of China’s Population (2006)</th>
<th>% of China’s Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coastal (Eastern)</td>
<td>Liaoning, Hebei, Beijing</td>
<td>43,29</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Tianjin, Shandong, Jiangsu</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Shanghai, Zhejiang, Fujian</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Guangdong, Hainan, Guangxi</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Central</td>
<td>Jilin, Heilongjiang, Shanxi</td>
<td>34,22</td>
<td>29</td>
</tr>
<tr>
<td></td>
<td>Inner Mongolia, Anhui, Jiangxi</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Henan, Hubei, Hunan</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Western</td>
<td>Shaanxi, Gansu, Qinghai</td>
<td>22,49</td>
<td>56</td>
</tr>
<tr>
<td></td>
<td>Ningxia, Xinjiang, Sichuan</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Chongqing, Guizhou, Yunnan, Tibet</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 11 also shows that the coastal region is the most densely populated region, followed by the central region. Only 22.49% of the population is located in the western region, while accounting for 56% of the country’s space. Clearly, the western region is the least densely populated region, with many areas that are virtually uninhabited. However, with only the coastal region being fully developed and its market served by companies, a lot of potential can still be realized by targeting interior China. Half of the massive consumer market of China is yet to be conquered. Capturing a substantial market share might guarantee future successes for many multinationals.

Figure 5 provides a graphical overview of the three different regions.
3.3 Comparison of the three regions: economical figures

In economic performance, the three regions show great differences as well: Figure 6 indicates the Gross Regional Product (GRP) of the different regions.

In 2006, the coastal region totalized a GRP that accounted for 61.75% of the total GDP of China. The central region followed with 25.3%. The western region only contributed 12.9%. China has become a polarized country with some parts as modern as the western world, while other parts haven't made almost any progression since the economic reforms. This poses a number of issues such as differing living standards and growing discontent in large parts of the country. The gap between the regions has even grown slightly the last few years, with an ever growing importance of the coastal region. To preserve the stability of the country, the Central Government has decided to tackle this problem so it launched the WDP.
3.3.1 Export performance

Wu (2007) states that China has profited a lot by its accession to the WTO in 2001. The accession was but one step in the opening up of the economy. However, not all regional economies have reaped as much benefits as the others from trade.

As Figure 7 demonstrates the coastal region greatly outperforms the other regions in terms of export. The coastal region is much more export-oriented than mainland China. This can be partly explained by the objective of some of the free trade areas: they were established to attract FDI to stimulate international companies to locate their manufacturing facilities in China. In order to attract these investments, fiscal privileges were established. However, these privileges were given under the constraint that the production had to be dedicated to products that were solely exported and not sold on the Chinese market. Another factor is the proximity to the international markets which facilitate export and international trade. In recent years, the percentages of export from the different regions have somewhat stabilized.
Figure 7: Regional Exports

![Regional Exports](image)

Source: calculated using data from the China Statistical Yearbook 2007

Wu (2007) proposes a number of factors that can influence the export performance of a regional economy and so might give an explanation for the gap between the different regions. A distinction has to be made between environmental inputs and factor inputs. The factor inputs include labor and capital (both physical and human). The environmental inputs comprise of infrastructure development, foreign investment, economic reforms and government spending. The reason why the coastal area has performed much better in terms of export is due to the fact that this region has advantages in all of these inputs. However, Wu (2007) finds that the gap is closing since 1998. Remarkably, this is when the government started to develop its western strategy which later led to the launch of the WDP. The program is tackling some of the inputs as described by Wu (2007). Government spending, massive investments in infrastructure and stimulation of the non-state sector have already had a positive influence on the export performance of the west. However, since a lot of work still has to be done, the gap remains quite substantial at the moment as can be established by looking at the figures.

### 3.3.2 Government spending

Table 12 gives an overview of the government spending per region. The bulk is contributed to the coastal region, with over 51% of the national total. The central region is second in line with about 28%. The western region receives the smallest amount of government spending. When we look at some different expenditures such as capital construction, science, technology, education, etc. we observe the same pattern. There is however one exception, which is the support for underdeveloped areas. Here, it is the western region that receives the lion’s share of the money. This is explained by the WDP launched
by the government in order to develop this region. This clearly demonstrates that while the Central Government is trying to develop the west, they will not neglect the already well developed coastal areas.

Table 12: Government Spending Per Region (2006)

<table>
<thead>
<tr>
<th>Region</th>
<th>Total Expenditure (%)</th>
<th>Expenditure for Capital Construction (%)</th>
<th>Expenditure for Science and Technology Enterprises (%)</th>
<th>Expenditure for Operating Expenses of Underdeveloped Areas (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coastal/Eastern Region</td>
<td>51,73</td>
<td>53,59</td>
<td>69,60</td>
<td>70,53</td>
</tr>
<tr>
<td>Central Region</td>
<td>28,27</td>
<td>23,54</td>
<td>20,41</td>
<td>17,95</td>
</tr>
<tr>
<td>Western Region</td>
<td>20,00</td>
<td>22,87</td>
<td>9,99</td>
<td>11,52</td>
</tr>
<tr>
<td>Total</td>
<td>100,00</td>
<td>100,00</td>
<td>100,00</td>
<td>100,00</td>
</tr>
</tbody>
</table>

Source: calculated using data from the China Statistical Yearbook 2007

3.4 Comparison of the three regions: logistical and infrastructural figures

Figure 8 displays the spread of transport routes throughout the country. We can conclude that the differences between the regions are not as great as the differences between GRP, FDI etc. Still, the western region has the lowest percentages of the three regions. When we also take into account that the western region accounts for 56% of the country’s area, it is clear that the transport routes aren’t as extensive as compared to the other regions. The central region has the largest highway and railway network. The coastal region has the longest navigable inland waterways. The difference in transport routes is also an indicator why most foreign logistics firms are located in the coastal region (see Figure 4).

When we take a further look into the quality of the highways, we find that once again there is a great difference between the regions. Table 13 displays the quality of highways per region. The coastal region possesses only 16% of low quality highways. This is but a fraction of the 51% of low quality highways that are located in the western region. The central region lies between those two extremes with 34% low quality highways. These results indicate that the western region lags behind on good infrastructure and that, while improvements are being made, a lot of work still has to be done both in expanding the current road network and by improving the quality of the current road network. Providing better transport routes is a key element in stimulating the logistics industry in the region. This may reduce
logistics costs and delivery times, which will make the entire region more attractive for all sorts of sectors and enterprises.

**Figure 8: Transport Routes Per Region (2006)**

<table>
<thead>
<tr>
<th>Transport Routes Per Region 2006 (%)</th>
<th>Coastal/Eastern Region</th>
<th>Central Region</th>
<th>Western Region</th>
</tr>
</thead>
<tbody>
<tr>
<td>highways</td>
<td>31.35</td>
<td>38.51</td>
<td>30.14</td>
</tr>
<tr>
<td>navigable inland waterways</td>
<td>47.18</td>
<td>33.71</td>
<td>18.78</td>
</tr>
<tr>
<td>railways</td>
<td>31.34</td>
<td>42.79</td>
<td>25.87</td>
</tr>
</tbody>
</table>

Source: calculated using data from the China Statistical Yearbook 2007

**Table 13: Quality of Highways Per Region (2006)**

<table>
<thead>
<tr>
<th>Region</th>
<th>Total Length of Highways (km)</th>
<th>% of Expressway and Class I to IV Highways</th>
<th>% of Highways Below Class IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coastal/Eastern Region</td>
<td>1.083.809</td>
<td>83.48</td>
<td>16.52</td>
</tr>
<tr>
<td>Central Region</td>
<td>1.331.308</td>
<td>65.35</td>
<td>34.65</td>
</tr>
<tr>
<td>Western Region</td>
<td>1.041.884</td>
<td>48.77</td>
<td>51.23</td>
</tr>
</tbody>
</table>

Source: calculated using data from the China Statistical Yearbook 2007

Figure 9 displays the freight traffic per region. The coastal region alone accounts for half of the freight traffic throughout the country. This is consistent with our findings that most of the economic activity is performed in the coastal area. Improving the infrastructure might be a first step to boost economic activity and thus freight traffic in the west.
Especially the freight traffic along waterways is very concentrated in the east and very limited in the west. This is greatly influenced by the navigability of the inland waterways. The further upstream, the less navigable the rivers become and thus the lower useful for transportation. However, several projects are being executed to enhance the quality of those waterways inland. For example, the Three Gorges Dam is being constructed to improve the navigation on the Yangtze river (Kwan and Knutsen, 2006a). Along with the increase in container capacity by opening a new port complex in Shanghai, this project was launched to improve access and freight traffic along the Yangtze. In this way the river provides an excellent means to access the interior regions of China. This is enhanced due to the lack of sufficient railways and efficient trucks. Since the river currently is the most cost efficient way to reach these regions, it is one of the most used waterways in the world (Kwan and Knutsen, 2006a). Cities like Wuhan and Chongqing which are located along the river banks are becoming commercial hubs and are interesting places to set up a distribution system. The Three Gorges Dam will also allow larger container barges on the Upper Yangtze River, expanding the territory that can be reached in a cost-effective way. In this way, central and Southwest China will be linked to the coast at a relative low cost. Consequently, the Yangtze river accounts for about 80% of all the cargo being transported inland by water (Kwan and Knutsen, 2006a).

1 Some traffic is not classified by region and thus not included in the figures, as a result the figures do not add up to 100 percent.
The coastal region also takes the lion’s share in transport along highways. Interestingly, it is the central region that is the leader in transport along railways. Tirschwell (2007) considers the railroad as the solution to tackle the challenge of transporting efficiently through inland China, as well as reducing the logistics costs which are two times higher than in the western world. The Central Government is aware of this problem and has included a major extension of the rail network with over 10,000 miles of new track to be constructed by the year 2010 in its latest Five-Year Plan.

Figure 10: Freight Ton-Kilometers Per Region (2006)

<table>
<thead>
<tr>
<th></th>
<th>Coastal/Eastern Region</th>
<th>Central Region</th>
<th>Western Region</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waterways</td>
<td>81.92</td>
<td>2.12</td>
<td>1.06</td>
</tr>
<tr>
<td>Highways</td>
<td>47.66</td>
<td>33.12</td>
<td>19.22</td>
</tr>
<tr>
<td>Railways</td>
<td>38.00</td>
<td>41.86</td>
<td>19.04</td>
</tr>
</tbody>
</table>

Source: calculated using data from the China Statistical Yearbook 2007

Similar to this, Figure 10 displays the freight-ton kilometers per region. The superiority of the coastal region is even more visible here. While only 49.39% of all the freight traffic is totalized in the coastal area, over 65% of the total freight-ton kilometers is being realized in this area. This indicates that higher volumes are transported in the coastal region, which once again proves that this region has by far the most economic activity.

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Some traffic is not classified by region and thus not included in the figures, as a result the figures do not add up to 100 percent.
4. Evolving Strategic Roles of Production Plants

Since the economic reforms, China has been a country with a rapidly changing economical environment. The different regions have also experienced a different evolution since these reforms. These different characteristics imply that each region has its own strengths and weaknesses. These changing strengths and weaknesses of the various regions might induce companies to change the strategic role of their production plants. A useful framework to categorize the different possible strategic roles of a plant is provided by Ferdows (1997).

As illustrated in Figure 11, Ferdows distinguishes six different types of factories. To assess which type a plant is, two basic questions have to be answered: ‘What is the primary strategic reason for the factory’s location?’ and ‘What is the scope of its current activities?’ We will use this framework to describe the regions and the different types of plants we expect to be found in these regions.

Figure 11: The Roles of Foreign Factories

The production plants erected by multinational firms in the SEZs were clearly offshore plants. Production was export-oriented due to government restrictions. Multinational firms invested in these regions because of the low wages, tariffs and other government incentives. All these factors provided a very attractive manufacturing environment. With the opening up of the economy and the reduction of
the restrictions, server plants were also built in order to gain a foothold in the fast-growing and attractive consumer market China provided. Nowadays wages and land costs are rising along the coast, government restrictions are being eliminated, consumer demand is changing and tariffs are diminishing. The Central Government is also stimulating foreign companies to move their high-end production technologies to China. All these factors suggest that the role of manufacturing plants located in the coastal area might be changing. We will use data derived from the China Statistical Yearbook 2007 to find indications that these roles might effectively be changing in the different regions.

4.1 Wages

Table 14: Average Wage of Staff and Workers by Status of Registration (yuan)

<table>
<thead>
<tr>
<th>Year</th>
<th>Total</th>
<th>%</th>
<th>State-owned Units</th>
<th>Urban Collective-owned Units</th>
<th>Cooperative Units</th>
<th>Joint Ownership Units</th>
<th>Shareholding Corporations Ltd.</th>
<th>Foreign Funded Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td>5.500</td>
<td>100,00</td>
<td>5.625</td>
<td>3.931</td>
<td>-</td>
<td>6.056</td>
<td>7.277</td>
<td>8.058</td>
</tr>
</tbody>
</table>

Source: calculated using data from the China Statistical Yearbook 2007

Table 14 displays the average wage of staff and workers by status of registration. Immediately it becomes clear that wages have risen substantially the last decade. This implies a huge rise in production costs, which most likely makes the choice for an offshore plant less attractive. Furthermore we can establish that the wages paid by foreign funded enterprises are higher than any other type of company with the exception of the wages in 2006 paid by shareholding corporations.

Figure 12 shows us the three regions separately. It is obvious that there is once again a huge gap between the coast and the rest of the country. The coastal region lies well above the national average with its 117,65%. Mainland China, and in particular the central region, is experiencing much lower wages. Since the wages in the coastal area became much higher, one can expect that offshore plants will be less popular in comparison to the other regions where cheaper labor is available. Multinationals

3 Not all data of 1995 are provided by the China Statistical Yearbook 2007.
wanting to set up a production plant because of low wages (in order to have lower production costs) and companies having an offshore plant at the coast, might be tempted to move away from the coast and move inland.

**Figure 12: Average Wage of Staff and Workers per Region (2006)**

Table 15 displays the average wage of staff and workers by status of registration and region, with the average of each region equal to 100%. In all three regions, we find that urban collective-owned units score well below the average of the region. The same is true for cooperative and joint ownership units. Shareholding corporations ltd., foreign funded units and state-owned units are all situated above the average, with the exception of foreign funded units in the western area. Xu and Li (2007) state that foreign funded companies pay their high-skilled employees more than other types of companies while SOEs pay their low-skilled workers the most in comparison to others. So we can deduce, from these very low wages paid by foreign funded units in the western area, that they clearly use less skilled labor than their coastal counterparts. This can be an indication of the use of labor-intensive production which requires less skilled labor and in this way indicate the strategic role of the plant. We can conclude that the western region is mostly used for plants with a lower strategic importance, involving less development of technology and skills. So, plants in the western region appear to belong to the lowest row in Figure 11 (with low site competence).

Both in the coastal and the central region, foreign funded companies pay much higher wages compared to the west. Following Xu and Li (2007) this could indicate that here higher skilled workers are
employed. This suggests that plants in these areas have a higher site competence and are likely of a different type and possess a different strategy.

According to Xu and Li (2007), the high percentages of wages paid by SOEs might suggest that they mostly employ lower skilled workers. This in contrast to foreign funded companies, who clearly chose to employ higher skilled workers (except for the western area). This might suggest a difference in strategy and plant type between foreign companies and SOEs.

### Table 15: Average Wage of Staff and Workers by Status of Registration and Region (2006)

<table>
<thead>
<tr>
<th>Region</th>
<th>Average (%)</th>
<th>State-owned Units (%)</th>
<th>Urban Collective-owned Units (%)</th>
<th>Cooperative Units (%)</th>
<th>Joint Ownership Units (%)</th>
<th>Shareholding Corporations Ltd. (%)</th>
<th>Foreign Funded Units (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coastal/Eastern</td>
<td>100,00</td>
<td>114,88</td>
<td>62,98</td>
<td>72,97</td>
<td>93,29</td>
<td>124,03</td>
<td>104,02</td>
</tr>
<tr>
<td>Central</td>
<td>100,00</td>
<td>104,14</td>
<td>65,70</td>
<td>71,83</td>
<td>80,23</td>
<td>111,62</td>
<td>108,80</td>
</tr>
<tr>
<td>Western</td>
<td>100,00</td>
<td>105,47</td>
<td>63,99</td>
<td>79,70</td>
<td>68,10</td>
<td>102,04</td>
<td>83,40</td>
</tr>
</tbody>
</table>

Source: calculated using data from the China Statistical Yearbook 2007

### 4.2 Education

Table 16 displays the education in the three regions of all people of age 6 and older. First the percentages of the population in the three regions are given. Next, percentages of the degree of education are displayed. It immediately becomes clear that relatively speaking, the western region has the most people who haven’t had any schooling at all. Furthermore, we can also establish that the western region has the lowest amount of people that have received a higher education (secondary school and higher). This is in contrast to especially the coastal region where we find the most people with a high education. Especially the percentage of the category “college and higher level” is with 52% of the national total much more significant compared to other regions.

This proves that when a firm wants to establish a site with a high competence (upper row of Figure 11) they will find the necessary skilled labor much easier in the coastal areas. The current tendency towards more sophisticated demands forces manufacturers to improve the quality of their products and also upgrade their product portfolio. As a consequence, higher skilled employees are a necessity in order to be able to support this changing strategy. We can expect that the location of plants with a higher competence, such as source and contributor plants, will follow the availability of educated people and thus preferably be located in the coastal region. A firm that wants to take advantage of low wages might prefer the western region, where a lot of unskilled laborers are located.
Table 16: Population by Educational Attainment and Region (2006)

<table>
<thead>
<tr>
<th>Region</th>
<th>Population Aged 6 and Over</th>
<th>No Schooling</th>
<th>Primary School</th>
<th>Junior Secondary School</th>
<th>Senior Secondary School</th>
<th>College and Higher Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coastal/Eastern Region</td>
<td>43,31</td>
<td>35,39</td>
<td>39,81</td>
<td>44,97</td>
<td>48,21</td>
<td>52,51</td>
</tr>
<tr>
<td>Central Region</td>
<td>34,25</td>
<td>31,81</td>
<td>32,63</td>
<td>36,59</td>
<td>34,77</td>
<td>30,60</td>
</tr>
<tr>
<td>Western Region</td>
<td>22,44</td>
<td>32,80</td>
<td>27,57</td>
<td>18,44</td>
<td>17,02</td>
<td>16,89</td>
</tr>
<tr>
<td>National Total</td>
<td>100,00</td>
<td>100,00</td>
<td>100,00</td>
<td>100,00</td>
<td>100,00</td>
<td>100,00</td>
</tr>
</tbody>
</table>

Source: calculated using data from the China Statistical Yearbook 2007

4.3 Infrastructure

As demonstrated in section 3, China is a polarized country in terms of economic activity and infrastructure. The infrastructure of the coastal belt is at a much higher level than the rest of the country and in particular the western region. Given the less extensive transport network and the lower quality of it, one can expect that transportation in the western area is much more difficult and costly. This might be an argument for companies to set up plants that focus on serving the local market (i.e. server and contributor plants).

When we look at the current investments in fixed assets, which are displayed in Table 17, we see the same results: most of the investments are still being made in the coastal area. Despite the WDP, the western region isn’t catching up at the moment. In all of the displayed sectors, the western region is performing much worse than the rest of the country and especially compared to the coastal region. This indicates that the current status will not change in the near future. This is something that has to be taken into account when deciding on the location and the strategic role of a plant.
### Table 17: Total Investment in Fixed Assets in the Whole Country by Region and Sector (2006)

<table>
<thead>
<tr>
<th>Region</th>
<th>Total</th>
<th>Manufacturing</th>
<th>Construction</th>
<th>Transport, Storage and Post</th>
<th>Real Estate</th>
<th>Leasing and Business Services</th>
<th>Education</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Total</td>
<td>100,00</td>
<td>100,00</td>
<td>100,00</td>
<td>100,00</td>
<td>100,00</td>
<td>100,00</td>
<td>100,00</td>
</tr>
<tr>
<td>Coastal/Eastern Region</td>
<td>56,84</td>
<td>67,21</td>
<td>59,16</td>
<td>48,12</td>
<td>62,91</td>
<td>63,64</td>
<td>51,99</td>
</tr>
<tr>
<td>Central Region</td>
<td>26,45</td>
<td>24,26</td>
<td>23,08</td>
<td>25,22</td>
<td>22,71</td>
<td>24,26</td>
<td>29,60</td>
</tr>
<tr>
<td>Western Region</td>
<td>14,94</td>
<td>8,52</td>
<td>17,77</td>
<td>17,13</td>
<td>14,38</td>
<td>12,09</td>
<td>18,41</td>
</tr>
</tbody>
</table>

Source: calculated using data from the China Statistical Yearbook 2007

### 4.4 Roles of production plants

When we look at the different factors we can conclude that the left column of Figure 11, with access to low production costs conforms the most to the western region and in a less emphatic way also the central region. The middle column with access to skills and knowledge best fits the coastal region. The middle column, with proximity to the local market can apply to all regions: in mainland China, a huge yet unconquered market provides a strong incentive to become active in this market. Also, the poor transport network here might induce companies to move closer to the customer in order to cut long delivery times and high transportation costs. The coastal region however provides the quickest and closest connection to the international market.

When we look at the rows of Figure 11, we can conclude that it will probably be easier to set up a site with high competences in the coastal area, given the availability of skilled workers. However, the Central Government is providing incentives to certain high-end technologies and sectors to locate in interior China, such as the aerospace and nuclear industries. This might create a cluster of technologically advanced firms in this region as well. The distribution of income further suggests that especially in the coastal area more advanced, diverse and sophisticated products are being demanded by the customers which might consequently imply that high-end plants are required to fulfill this demand. This is much less the case in interior China, where wages and income are at a much lower level. So we can expect
that this market will have a stronger focus on basic products, which implies the settlement of more low-end plants.

In the end, a company that has to decide on the strategic role and the location of a new plant has to take all these and many more factors into account and has to make a trade-off to come up with the best solution. To make this task even more challenging, the plant has to fit in the network of plants of the company in order to fulfill the global company strategy.
5. Case Study: Van den Berghe J. BVBA

This case study is based on a number of interviews with Mr. Hendrik Van den Berghe, general manager of Van den Berghe J. BVBA.

The company is located both in Belgium and in China and is active in two different sectors: food and non-food, which focuses on nature stone.
For those two different sectors, the company sustains very different supply chains.

5.1 Food segment
The supply chain of the food segment is displayed in Figure 13. Most of the raw materials for the food segment of the company come from Belgium. The products and resources are transported between the two sites (in Belgium and in China) without the use of intermediary companies. Transport between the sites is done by sea, and then by road to deliver the products from the harbor to the recipient. In China, both the harbor of Qingdao and Hong Kong are used. The latter is used because of certain import restrictions that still remain, which make it prohibited to import those goods through the Qingdao harbor. They don’t use 3PLs in China, since they have their own logistics department there. The company adds a lot of value through processing and ennoblement to 200% of the value of the raw materials. Final customers are both located in China and in Europe. The Chinese customers are all located in the coastal area. The market in the interior regions is at this moment not that interesting since the wages of the local population are too low to provide a large and stable consumer base. Logistically there is less of a problem, since the Central Government has already expanded the transport network and improved its quality and even more improvements are being implemented.

5.2 Non-food segment
The supply chain of the non-food segment is displayed in Figure 14. All of the raw materials for the non-food segment come from the local markets in China. These are then processed by local producers. All of the production is done in China. In contrast to the food segment, intermediary partners are used in the non-food supply chain to process the raw materials. Transport in China is mostly done by road, and sporadically by train. They don’t use 3PLs in China, since they have their own logistics department there. To transport the goods from China to Europe, sea transport is chosen because of the lower costs and large volumes that can be transported. In contrast to the food segment, the company does not add a lot
of extra value; its major contributions are R&D and marketing. Final customers are primarily located in Belgium, and are private persons or construction companies.

**Figure 13: Supply Chain Food Segment**

![Supply Chain Food Segment Diagram](image)

**Figure 14: Supply Chain Non-food Segment**

![Supply Chain Non-food Segment Diagram](image)
5.3 Challenges

Location
Qingdao provides many advantages to the firm, both in terms of logistics and personnel. Logistically, Qingdao is a well-developed city. It has a large harbor (it is one of the major coastal ports: see Table 9) as well as an international airport and a high qualitative road network. In addition, the city accommodates all major companies that provide vital services. All the infrastructure is very modern since most of it was only built in the last decade. Qingdao used to be a city controlled by the Germans and has some European influences from its past. The people are thus more acquainted with the western style of business and this provides an important advantage for western companies that want to implement their own management styles in China. Qingdao also lies in the Bohai Rim Region, one of the three most important regions in terms of economic activity. The modern infrastructure is consistent with our findings that the coast offers companies a modern and fully-developed infrastructure.

The biggest disadvantages of Qingdao are the relatively expensive wages and other production costs. Accommodation is also very expensive compared to other parts of the country. This is also consistent with our findings and might induce companies to move away from the offshore plant type.

Next to Qingdao, a part of the products that are imported from Belgium are shipped through Hong Kong. This is the case for products that are still prohibited to be imported directly into mainland China. Hong Kong, with its large port and modern infrastructure, provides an alternative route to get the products into China. This is an example of an ambiguity of Beijing that states that the WTO rules are applied and carried out. In practice however, many obstacles still remain. This is the case for Van den Berghe J. BVBA, who tries to import food (meat). While the protocol is signed and export from Belgium is allowed, it still takes years for the Chinese to add individual Belgian companies that have the approval to export their products to China.

Local Partners
Local partners that supply resources and work-in-progress are not that difficult to find in the area of Qingdao. The main problem is the quality of goods they provide since they don’t have a well-developed standard. However, these companies welcome foreign companies to help them to develop and enhance a quality standard. This provides a great opportunity to work together with the different links in the supply chain. However, there is no guarantee that these local partners will let the foreign companies share in the benefits of this improved quality. As a consequence, partner screening and selection is a very important aspect when trying to establish long term relationships.
Human Capital
Qualified and technically schooled personnel are difficult to find for a production company. The best way to get access to skilled personnel for this type of work is to train them yourself. This also allows you to reach the required quality standards. So Van den Berghe J. BVBA is actively training its personnel in order to ensure the quality of the output. An important aspect of the training is to introduce the personnel to a western company culture and to combine it with the Chinese train of thought.
In contrast, personnel with higher education (university-level) is much more easy to find. They possess a broad range of knowledge at a very high level. Van den Berghe J. BVBA is also hiring a few university graduates. This is done by visiting job events that are organized by the Central Government. This provides a great opportunity for the company to get in touch with numerous graduates who are anxious to find a job.

Legislation and Administration
The legislation itself is quite transparent. The main problem is situated in the administrative departments that have to apply the laws. These applications of the laws are not at all transparent and can provide unnecessary delays. The biggest challenge however lies in the fact that a company is powerless against these local administrations. When they have demands, all you can do is comply. Most of them are financial. It is also pointless for a company to address these demands to the Central Government in Beijing. They deliberately don’t supervise or control the local administrations in order to avoid conflicts. While it is the Central Government that makes the laws, the local administrations have a high degree of freedom to interpret and implement them. Consequently, they use these laws to demand from the companies what they think they should receive.
In addition, it is sometimes hard for a foreign investor to fully realize the market potential. This is due to the fact that there is still a difference between local and foreign firms in terms of regulations and liberty of actions.

Other Challenges
The major challenge is to keep the company profitable, but this is of course not specifically the case for China. Wage costs are becoming more and more important, as is the local market because of higher incomes of the local people. Consequently, Van den Berghe J. BVBA is gradually evolving into a domestic producer/seller instead of an export oriented company. Already, all of the customers located in China are local Chinese companies. This is consistent with our expectations formulated in section 4, which state that more and more companies shift their attention towards the local market. In addition, the company that has a history of having rather labor-intensive production strategy is now evolving slowly
into a more capital-intensive strategy. This suggests a rise in site competence. Probably, the company Van den Berghe J. BVBA will evolve from an offshore plant towards a server or a contributor.

As stated before, coastal China lacks various vital resources, including water. Therefore, water is very expensive in that area. Van den Berghe J. BVBA is now planning to construct a water purifying plant in order to obtain a zero water consumption rate. The objective of the plant is to re-use the water in order to not have to be supplied with extra costly water by external sources. They also experience that the attitude of China regarding economic development is changing. They are beginning to look more and more at the consequences of this development. Consequently, Van den Berghe J. BVBA expects that water purification will also become a topic for the Central Government. By already setting up this installation, they hope to anticipate government regulations.

Protectionism also remains an issue, with the many local administrations that try to protect their own companies and their own sources of income, such as taxes. The example of the list of individual Belgian companies that are allowed to export to China, also demonstrates that foreign companies still don’t have the same treatment and possibilities compared to local companies.
6. Conclusion

The goal of this paper was to provide an overview of the challenges of doing business in China as well as describing the distribution system of China, both for the country in a whole and the three different regions distinguished by Fang and Chen (2000). This was done by using numerical data from the China Statistical Yearbook 2007. Next we discussed the current trend of shifting attention towards the mainland of China. We applied Ferdows’ model on the findings of the distribution system in the three regions. Finally we conducted a case study to look how these challenges and opportunities affect a company in practice.

We found a number of challenges and/or opportunities an entrepreneur or a company has to overcome when setting up a business in China. These are: the choice of location, the issue of e-logistics that is becoming more and more important, the choice between labor-intensive or capital and technology-intensive manufacturing, the type of entry mode and/or the ownership of the company, the differences in culture between China and western countries, the legislation and local governments and the search for personnel or human capital. This is not an exhaustive list however.

Next we looked at the current status of the logistics and infrastructure of the country. Since the economic reforms, China has been a country of rapid economic growth and infrastructural development. The transportation network as a consequence has experienced massive progression. Following the economic growth, the freight traffic also boomed since the reforms. With the opening up of the Chinese logistics market with the accession to the WTO in 2001, many foreign logistics firms have entered China. As a consequence, not only the infrastructure but also the offered logistics services have risen to a higher level. Most of these foreign logistics firms however only offer services in the coastal belt of the country.

This led us to the polarization of the country. Because of the policy of the Central Government, the coastal belt of China was much more attractive to foreign firms than the rest of the country. As a consequence, the received FDI, economic growth and economic activity in this area has grown at a much faster pace than in the rest of the country. This also led to a huge gap in infrastructural conditions in the different regions, such as the transport network. We divided the country into three different regions and found that for both economic activity, income and infrastructure the coastal belt greatly outperforms the rest of the country and in particular the western region. To close the gap and develop the western region, the Central Government has launched the WDP: an ambitious plan that involves massive investments to stimulate economic activity.

Given these differences in economic activity, income and infrastructure we applied Ferdows’ model to estimate which plant types would correspond best to each region. Given the higher income and the
more demanding customers one can expect the coastal region to have plants with a higher site competence in comparison with interior China. When we look at low production costs, the western and central region might be interesting for firms that want to set up an offshore plant. However, proximity to the market might also be a reason for firms to set up their business in those areas, given the less expansive transport network it might be beneficial to be located close to the customer. Proximity to vital resources might also be an issue. A company has to take into account all these factors when deciding on the location and the plant type in its overall international strategy. This implies making trade-offs and strategic choices.

The case study confirms some of the findings of the paper, such as: the difficulty of finding skilled personnel, the huge gap in income between the coast and the rest of the country which contributes to different consumer markets, the problem of regional protectionism, the expansion of the transport network, the shift of an export-oriented company towards a domestic producer/seller, the lack of a decent quality standard of many local firms and the importance of the location choice.
References


