

Marketing Strategy

The Chinese pharmaceutical market: Dynamics and a proposed investment strategy

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Abstract The pharmaceutical industry in China has undergone dramatic development over the past two decades. From a poor agricultural country, China has now become a country with an increasingly strong economy and, more significantly, the eighth largest pharmaceutical market in the world with more than US\$8bn total sales in 2004. This paper describes the distribution pattern of the pharmaceutical industry in China, explores the reasons of the emergence of this pattern, and provides investment suggestions to foreign investors who are considering moving into the pharmaceutical market in China. Analysis of the Chinese pharmaceutical industry reveals: (1) most pharmaceutical firms are located in the southeastern zone, which includes two well-developed areas and three sub-developed areas; (2) the development of the pharmaceutical industry in China is predominantly driven by economy factors; (3) there is a slightly changing market distribution pattern from the micro angle, while the general pattern remains steady from the macro angle and (4) the pharmaceutical industry in China is extensively fragmented. The major constituent factors of these features are: (1) misconceptions of the profitability and growth of the pharmaceutical industry, (2) unnecessary political competition between regions and (3) excessive exploitation of regional administrative power. Finally, it is suggested that the foreign investors should concentrate on the southeastern zone that includes two well-developed areas and three sub-developed areas.

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INTRODUCTION

China's pharmaceutical market is looking increasingly attractive to many foreign pharmaceutical firms as an affluent business opportunity. China's huge and gradually aging population and strong biopharmaceutical sector have almost guaranteed a prosperous pharmaceutical market profile. Investing in China's pharmaceutical industry is, however, not without risk. By studying the distribution of the pharmaceutical industry in China and the reasons drivers of its success, this paper suggests the best investment strategies to foreign investors.

DATA

In order to obtain an overview of the development trend of the pharmaceutical

industry in China, four aspects of quantitative information were studied. The total output value of pharmaceuticals from each Chinese province from 1998 to 2003 is shown in Table 1 (listed in decreasing average value). Zhejiang, Guangdong, Shanghai, Jiangshu and Hebei provinces have always been among the top five most productive provinces in China. Each of these provinces has grown steadily by an average of 20 per cent per annum from 1998 to 2003 (with the exception of Jiangshu in 1998 and 1999) and reflects an increasingly healthy developing trend in the Chinese pharmaceutical industry.

Based on the information in Table 1, each province in China was classified into five grades determined by its total output

Table 1: Total output value (\$US million) of pharmaceutical industry of each province in China from 1998 to 2003

Province Name	1998	1999	2000	2001	2002	2003	Average
Zhejiang	1908	2262	3214	3840	4349	5724	3550
Guangdong	1939	1985	2596	3221	3620	4332	2949
Shanghai	1647	1830	2408	2938	3490	4317	2772
Jiangshu	1971	1735	1941	2155	3252	3907	2494
Hebei	1334	1778	2063	2726	3217	3747	2478
Shandong	1254	1323	1672	2219	2587	3350	2068
Hubei	1072	1136	1411	1493	1912	2052	1513
Heilongjiang	602	828	1191	1419	1656	2485	1364
Henan	943	963	1141	1281	1478	1649	1243
Jilin	678	770	970	1238	1515	1768	1157
Sichuan	836	904	1094	1159	1351	1542	1148
Liaoning	671	877	968	1099	1271	1518	1067
Tianjin	460	655	819	973	1155	1528	932
Beijing	508	589	703	842	1069	1279	832
Shanxi	499	634	670	863	934	1195	799
Jiangxi	402	490	553	565	734	1054	633
Chongqing	456	469	544	629	729	823	608
Guangxi	360	411	486	590	636	760	541
Anhui	417	424	442	536	696	700	536
Hunan	251	299	397	464	551	727	448
Fujian	255	327	380	435	514	749	443
Guizhou	232	275	399	435	537	656	422
Shanxi	222	260	345	364	506	625	387
Yunnan	225	266	338	429	476	502	373
Hainan	184	189	244	282	345	390	272
Gansu	89	156	153	201	246	294	190
Neimenggu	85	96	119	152	204	276	155
Xinjiang	53	60	55	53	52	49	54
Ningxia	30	36	53	50	71	79	53
Qinghai	16	16	30	45	56	58	37
Xizang	6	10	15	15	17	20	14

Exchange rate: US dollar/RMB=1/8.0896.

Source: The Chinese High-tech Industry Statistics Yearbook 2004.¹

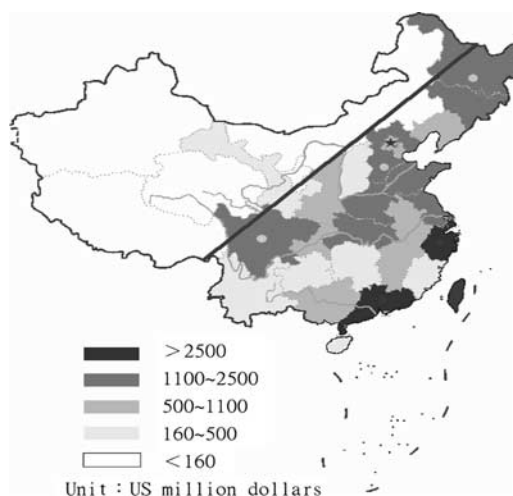


Figure 1: Geographic distribution of Chinese pharmaceutical¹

value per annum (\$US million): >2500, 1100–2500, 500–1100, 160–500 and <160 and these were plotted on a map of the region (Figure 1).

The location quotient (LQ) was used to compare a geographical area's share of the pharmaceutical industry activity with the area's share of some basic or aggregate phenomena in an attempt to identify if this industry is specialised to each local economy using the following equation:²

$$LQ = \frac{\text{Regional employment in industry A in one area in year T} / \text{National employment in industry A in one area in year T}}{\text{Total regional employment in industry A in one area in year T} / \text{Total national employment in industry A in one area in year T}}$$

If LQ is less than 1.0, it suggests that local employment is less than what might be expected for the pharmaceutical industry and therefore, the industry does not meet the local demand of sufficient productivity or efficiency. If LQ is equal to 1.0, it suggests that the local employment is just sufficient to meet the local demand. If LQ is greater than 1.0, it suggests that the local employment exceeds the local demand and that the 'extra' employment is needed to export their productivity to nonlocal areas.

For example, the LQ value of pharmaceutical industry of Beijing in 2001 is 3.27. This indicates that the employment ratio of Beijing in this industry sector is 3.27 times higher than that of the average level of the whole country. This, in turn, reflects the superb professional development in Beijing.

Furthermore, the standard deviation of LQ (SDLQ) between regions shows the difference in industrial professional level for a particular industry. A higher SDLQ represents a more concentrated, higher professional industrial region. As the pharmaceutical industry is considered one of the high-tech industries, a comparison of this industry with other high-tech industries such as automotive, aircraft and spacecraft, electronic and telecommunication equipment in terms of SDLQ was performed and the results are shown in Table 2. SDLQ of the pharmaceutical industry is the lowest (1.2168), whereas that of the electronic and telecommunications equipment industry is the highest (2.0873).

The dynamic changes of market concentration of the pharmaceutical industry were also explored by studying the regional concentration ratio index which is the percentage of all sales

Table 2: Standard deviation of location quotient (SDLQ) of high-tech industries in China in 2001³⁻⁵

Industry	Pharmaceutical industry	Automotive industry	Aircraft and spacecraft industry	Electronic and telecommunications equipment industry
SDLQ	1.2168	2.0677	2.1337	2.0873

Table 3: Market share of top four (CR4) and top (CR8) regions in the Chinese pharmaceutical industry 1995 to 2001¹

Year	1995	1996	1997	1998	1999	2000	2001
CR4 (%)	36.97	38.27	37.47	38.08	35.62	37.5	38.9
CR8 (%)	61.86	59.66	61.67	61.56	59	60.18	61.17

contributed by a certain number of the leading areas or firms. It is calculated by the proportion of total output in one industry produced by a number of largest firms in the industry to the national gross output value. As shown in Table 3 over the period 1995–2001, the relative concentration of the pharmaceutical industry by the top four areas (represented by CR4) was around 35–40 per cent, indicating a loose oligopoly in this industry. Similarly, CR8 represents the share by the top eight areas and was around 60–65 per cent. It is also noted that the two CR values have not changed significantly over a period of seven years.

ANALYSIS

Firstly, from Figure 1, we can see that most pharmaceutical firms are located in the southeastern zone that includes two well-developed areas and three under-developed areas. The two most popular areas of well-developed pharmaceutical industry, called the growth poles, are the Eastern China zone of which Zhejiang province is located in the centre and the South China zone represented by the Guangdong province. The total output value of these two provinces accounted for 21 per cent of the total output value of pharmaceutical industry of China in 2003.

The three sub-developed areas of pharmaceutical industry, called the potential points, are also identified as the Middle China Zone, the Northeastern Zone and the Southwestern Zone, centralised in Hebei Province, Heilongjiang province and Sichuan province, respectively.

The development of the pharmaceutical industry in China was found to be predominantly driven by economic factors. The nature of an industrial region can roughly fall into one of the following three types: natural resource-driven region, economy-driven region and science and technology-driven region.⁶ The pharmaceutical industry in China grows well only in areas with a strong macroeconomic background rather than in regions with rich natural resources or advanced science and technology. Moreover, it is shown that the stronger the macro-economy, the faster the pharmaceutical industry grows. Therefore, the decision-making policy on pharmaceutical development in a region should be largely based on its macroeconomic situation.⁷

Broadly speaking, it appears that the dynamic features of the pharmaceutical industry in China remain steady (ie the best and worst performing provinces have remained unchanged), but when one looks

more closely things are changing. Some changes have been seen in some provinces after the reform of Chinese 'State Drug Administration' in 1998. According to the reform plan, China will conduct a regime of vertical management in drug supervision and management departments, intensify supervision and control over medicines, and gradually set up a drug management system featuring legal management, unified law enforcement, standard codes of conduct, honest practice and high efficiency. To meet the objective requirements of drug administration and the needs of the development of medical services, a drug supervision and management body was formed in 1998.

While the gross output value of provincial pharmaceutical industries remained relatively constant, the rank of Jiangshu dropped from 1st (pre-reform) to 5th (post-reform), whereas Zhejiang went from 3rd (pre-reform) to 1st (post-reform).

The pharmaceutical industry in China was found to be extensively fragmented. Excessive repetitive establishment of provincial pharmaceutical industries was found to be serious in comparison to other industries in China. The lowest SDLQ value of the pharmaceutical industry as shown in Table 2 indicates that the concentration level of the pharmaceutical industry is much lower than other comparable industries. This value also demonstrates a low-level, repetitive development situation of the pharmaceutical industry in different regions of China. Some traditional Chinese sayings such as 'becoming a drug manufacturer is the way to become a country governor' or 'opening a drug workshop is an alternative to beating and robbing' reflects the long-existing and widespread beliefs about opening pharmaceutical companies by the locals in China.⁸ This is reinforced by the fact that the total number of pharmaceutical

companies has increased significantly to 7000 from 1988 to 1998.⁹

DISCUSSION

Excessive fragmentation of pharmaceutical industry in China is currently a major problem. Industrial region theory has given rise to two alternatives theories: the region concentration analysis and the region fragmentation analysis. The best pattern for industry distribution greatly depends on the status of the economy development of the industry. While an industrial economy is at a developing stage, concentrated distribution is a more reasonable strategy to culture, nourish and strengthen the entire industrial economy development with an increase in the industrial economy efficiency. On the contrary, in a well-developed stage of an industrial economy, a fragmented distribution is rational because this can improve the fairness of social and economic development.¹⁰

Currently in China, the pharmaceutical industry is undoubtedly still developing. The most desirable strategy is, therefore, to concentrate on the regional pharmaceutical industries that unfortunately is not happening. There are three main reasons: high profitability and growth of the pharmaceutical industry, unnecessary political competition among regions and excessive exploitation of regional administrative power.

First, the pharmaceutical industry is always known as a high-return and rapidly growing industry. After the Chinese market was reformed, China gradually makes space for a healthy, steady and rapidly developing pharmaceutical industry, where profit rate and growth rate are much higher than in other industries. In the view of high profit returns, regional governments often allow excessive development of regional medicine industries without careful analysis of

regional competitiveness, actual advantages and development strategies to incentivise the regional development of the entire economy.

Secondly, in China, drug administration departments are established at both central and regional governmental level. Every region has a regional drug administration department with some authority and power. Without good communication and cooperation between administration department, unnecessary competition between regions might occur. The number of drug companies under each administrative department is often wrongly recorded resulting in an inaccurate evaluation index of the regional economic development and governmental performance.¹¹

Thirdly, complex regulatory processes induce excessive exploitation of regional administrative power. Before the revision of Chinese Pharmaceutical Law in 2001, the province drug administration was assigned with authority to streamline the process of registering a generic drug. Consequently, this regional authority power was exploited resulting in excessive duplication of the same drugs. For example, a Fluoroquinolone type medicine was registered and manufactured by more than 1,000 enterprises.¹² Fortunately, the Chinese government immediately realised the serious problem and withdrew the regional authority power to prevent overlapping of authorities. Duplication of drug is, however, not the only example. After the allocation of authority of approval right of opening drug companies was taken down to provincial level several years ago, a sharp increase in the number of drug companies was noted. It was reported that 70 new drug production enterprises were approved to open during the first half of 2003, while only 45 similar enterprises were approved to open during the three years from 1998 to 2001.¹³

CONCLUSION

China formally permitted the participation of foreign investors in 1979. Nowadays, the Chinese pharmaceutical industry has become one of the first groups of industries that established enterprises using foreign investment by the majority of large multinational pharmaceutical groups from North America, Western Europe and other parts of Asia¹⁴ With foreign cooperation and the successful introduction of foreign investment, China's pharmaceutical industry has expanded at a very fast rate, with annual market growth posting an average double-digit growth for the past two decades. Analysts anticipate that China will be the world's largest pharmaceutical market by year 2020. In 2005, it was recorded that 20 of the 25 biggest transnational pharmaceutical corporations have set up manufacturing enterprises in the form of either sole investments or joint ventures, and more than 1800 joint ventures have been established. The economic development and huge market potentials of China's pharmaceutical market are highly recognised by many international corporation groups such as Bristol & Myers Squibb, Pfizer and Novartis which have been expanding their business in China steadily.¹⁵ For instance, AstraZeneca, one of the global leading pharmaceutical corporations, has set up a production base in Wuxi, Jiangsu Province which is its biggest investment in Asia, costing US\$100m. Prior to the merger, SmithKline invested US\$92m in registered capital in their Tianjin factory leading the OTC market and the factory built in Suzhou by Glaxo worth an investment cost of US\$136m. Now, GlaxoSmithKline, injecting more than US\$10m in research and development projects in China, work intimately with many Chinese scientific and research groups on many pharmaceutical research and development projects.

Where are the best investment regions in China? This may be the first important question for the potential foreign investors to the pharmaceutical market in China. Based on the discussion above, we know that the southeastern zone with two well-developed areas and three sub-developed areas has always enjoyed prosperous development of the pharmaceutical industry and the majority of pharmaceutical sales have originated from these regions. In fact, over 85 per cent of foreign invested joint ventures set their location near these regions including Hainan, Guangdong, Fujian, Zhejiang, Shanghai, Jiangsu, Anhui, Shandong, Hebei, Tianjin, Beijing, Liaoning and Heilongjiang. These regions were chosen as the priority areas for the Chinese government to initially practice the policy of opening to the outside world for foreign investment and were given policy preferences. Under special adjustment and organisation by the central government, the investment environment has been relatively advantageous over China's other areas. These regions also serve as a special channel for China to use foreign investment, to import advanced technology and management skills, and to enter international markets. In conclusion, the foreign investors to the pharmaceutical market in China should give the top investment priority to the southeastern zone with two well-developed areas and three sub-developed areas.

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