China's Economic Reform:

Learning-By-Doing and Quest for Better Technology

by

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Abstract

This study of China's achievements in economic development is focused on the period after 1978, when the government of China started a series of economic reforms. It explains some important components of Chinese economic policies that have contributed to China's fast economic growth.

China's high economic performance was not a coincidence. The key success factor is the quest by the Chinese people to acquire know-how and new technologies. Since 1949's Independence Day, China has gone through over 55 years of the experiment. Among the past 55 years, China experienced and struggled through the Great Leap and the Culture Revolution. Although Chinese people suffered during the period of chaos, they also acquired a valuable experience. In 1978, government of China started a series of reforms, which include agricultural reform, enterprise reform, banking system reform and open-door policy. These reforms focus on different sectors, but they all had a common trait, which was knowledge acquisition and adoption of advanced technology. This study shows that China's current achievement on economic development is not only led by exports, but also it is led by Chinese people's learning-by-doing approach and the quest for better technology.

Today, China is still facing some economic issues, for example, large cities' high unemployment rate, uneven income distribution, unsatisfactory performance of government owned enterprises, imperfect financial systems and so on. I believe that these problems will be solved by Chinese people through the learning-by-doing approach. A country's economy has to go through a practicing stage in order for it to become highly developed.

Chapter 1

Introduction

China, the country with the largest population in the world, is enjoying currently an outstanding economic performance. During the sixties and seventies, China struggled through mistakes and economic setbacks under a communist regime. After implementing a major structural reform in 1978, particularly the removal of price controls and restrictions on profit-making private ownership enterprises, China's economy started to prosper.

Table 1.1 shows the economic performance of China since the reform began to take effect. When China had just begun its economic reform, its real GDP was Yuan 763.2 billion while its GDP per capita[1], which represents people's standard of living, was Yuan 773.2. In 1990, ten years after the Chinese government started to change its economic and foreign trade policies, real GDP increased to Yuan 1854.8 billion. This is a 243% increase over the entire decade at an annual compound rate of 9.3%. Real GPD per capita increased to Yuan 1622.3. This is a 201% increase over the entire decade at an annual rate of increase of 7.2%. We notice that the growth rate of GDP exceeds the growth rate of GDP per capita. The dramatic increase in population during the same period accounts for the difference. The baby boomers from the 1950s started to have their own children. Despite the enactment of the law that restricted each couple to have only one child, the population base of the 1950s' baby boom was so tremendous that one-child-policy could not immediately slowdown the growth rate of the Chinese population. In 2000, China's real GDP was 4,860 billion Yuan (262% higher than its level in 1990 with an annual rate of increase of 10.1%). The GDP per capita

[1] The GDP per capita mentioned here is based on constant dollars and the currency exchange used for calculation is the nominal exchange rate. This measurement may under-estimate the real purchasing power of Chinese people during each of the abovementioned periods. For example, 500 US dollar certainly has more purchasing power in China than in the United States because China's price level is much lower. The GPD per capita based on purchasing power parity have the greater numbers on these measurements.

was Yuan 3834 in 2000 (236.4% higher than its level in 1990 with an annual rate of increase of 8.9%).

Table 1.1 China's Real GDP per capita, Real GDP and Annual Growth Rate of Real GDP

	Real GDP per capita	Real GDP	Real GDP, annual growth rate
	National currency Units	National currency Billions	Percent
1980	773.2	763.2	7.9
1981	802.3	802.9	5.2
1982	861.7	876.0	9.1
1983	943.1	971.4	10.9
1984	1072.4	1119.1	15.2
1985	1200.0	1270.2	13.5
1986	1285.4	1381.9	8.8
1987	1411.0	1542.2	11.6
1988	1546.1	1716.5	11.3
1989	1585.5	1786.9	4.1
1990	1622.3	1854.8	3.8
1991	1748.7	2025.4	9.2
1992	1974.1	2313.0	14.2
1993	2215.1	2625.3	13.5
1994	2466.5	2956.1	12.6
1995	2696.9	3266.5	10.5
1996	2925.2	3580.1	9.6
1997	3150.7	3895.1	8.8
1998	3366.2	4199.7	7.8
1999	3577.2	4499.6	7.1
2000	3834.2	4859.5	8.0
2001	4093.2	5224.0	7.5
2002	4392.2	5641.9	8.0
2003	4746.8	6155.3	9.1
2004	5119.6	6678.5	8.5
2005	5501.6	7212.8	8.0

Source: International Monetary Fund, (2004)

In addition to these two main economic indicators, other statistics also show that China is growing more developed and richer. For example, according to the statistics provided by UNESCAP (Economics and Social Commission for Asia and the Pacific), the

life expectancy of Chinese people rose from 64 years in 1980 to 71.4 years in 2000 due to improvements in medical care in terms of know-how, equipment, and drug availability. China's human capital improved substantially since 1980. The rate of primary school enrolment increased from 93.9% in 1980 to 97.8% in 1990 and to 99.1% in 2000. During the same period, the male's literacy rate has increased from 80.8% to 95.1% while the female literacy rate has increased from 54.7% to 86.5%.

Private consumption[2] is another good indicator of a country's standard of living. According to the data published by UNESCAP (United Nations Economic and Social Commission for Asia and the Pacific), China's private consumption[3] has increased from 391.9 million Yuan in 1980, to 911 million Yuan in 1990 and to 2330.6 million Yuan in 2000. Finally, exports and imports statistics show that China is more open than ever before. Twenty years after the Chinese government started to implement the open-door policy, another important component of the 1978 reform, exports increased by 442.2% [4]and imports increased by 361.5% over the entire period

Most recently, in 2003, China's economy has recovered from the negative effects of SARS[5]. The economy's growth rate peaked at 9.1% in the third quarter of 2003. Economists predict that such performance will last for a long period. Real GDP reached Yuan 7911.4 billion by the third quarter of 2003. The agriculture sector accounted for 12% of Real GDP or Yuan 948.7 billion, a 2.8% increase from the previous year. The manufacturing sector accounted for 55% of Real GDP or Yuan 4369.3 billion, an 11.8% increase from the previous

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[2] The numbers show that the improvements are very significant. Since it measures the total expenditures of all resident non-government units, the real effect is undermined by the increase in total population.
[3] Private consumptions are in real dollars. I divided the numbers in current dollars by GDP deflator.
[4] I divided the numbers of imports and exports in constant prices by GDP deflator. Then I used the imports and exports in real dollar to calculate the increase in real terms.
[5] SARS-Severe Acute Respiratory Syndrome

year. And the service sector accounted for 32.8% of Real GDP or Yuan 2593.4 billion, a 5.4% increase from the last year. The above statistics show clearly that the growth rate of the manufacturing sector was at least double that of each of the other two sectors. The manufacturing sector includes tele-communication, electrical machinery, and chemical industry. The increase in the output of those industries accounted for 50.7% of the total increase in the output of the manufacturing sector. Foreign trade has become important as well. Thanks to a fixed exchange rate with respect to the US dollar and the depreciation of the US dollar with respect to other major currencies, China's imports and exports grew strongly. Exports increased 32.3%, while imports increased 40.5% in 2003, Zhang, Wang, Feng, and Liu, (2005).

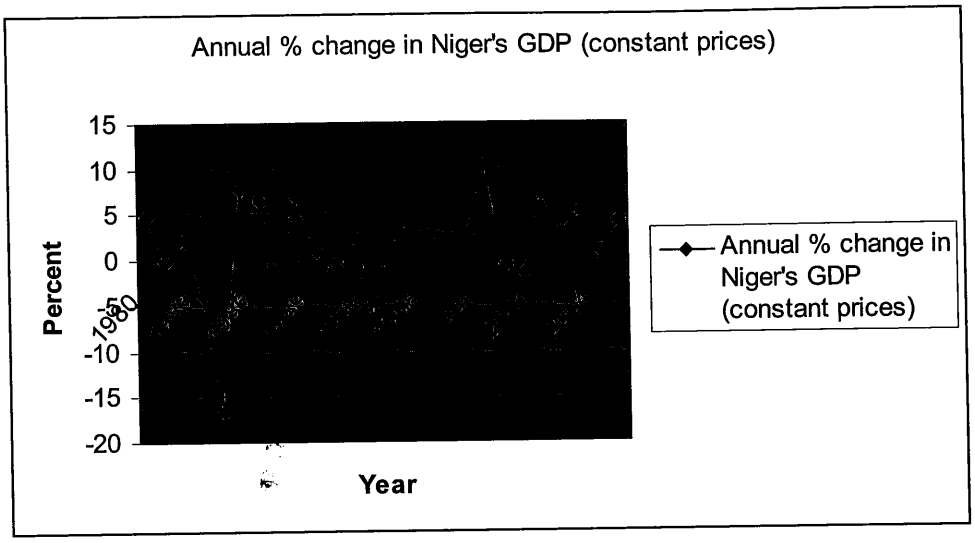
During the last twenty years, the performance of the Chinese economy has attracted much attention. The rapid and steady growth of its real GDP raises a lot of questions. Many economists are interested in finding out the reasons behind this sustained and rapid growth in China's economy. Just like the earlier cases of Japan, Singapore, and Taiwan, it is worthwhile to discuss the policy factors responsible for this rapid growth. A large number of countries in Africa have struggled to develop their economies without much success. The goal of their government policies has been to achieve a substantial increase of their people's standard of living. Certain developed countries did help by offering loans. However, the standard of living of those countries failed to improve. Niger is a good example. During the period 1980-2005, people's standard of living as measured by real GDP per capita decreased. Its growth rate was unstable and often negative, as Table 1.2 shows.

Table 1.2 Real GDP per capita and Real GDP of Niger

Country	Niger	Niger
Subject Description	Real GDP per capita	Real GDP
Units	National currency	National currency
Scale	Units	Billions
1980	192883.506	1077.447
1981	186194.963	1075.533
1982	183863.99	1098.92
1983	170819.978	1056.462
1984	137397.235	878.767
1985	143249.267	946.591
1986	147556.404	1006.72
1987	143107.912	1007.608
1988	148244.992	1076.843
1989	145082.936	1087.149
1990	138781.998	1072.924
1991	137707.604	1099.638
1992	124497.169	1027.981
1993	122066.489	1042.88
1994	122668.255	1084.644
1995	121629.163	1112.907
1996	121549.27	1150.959
1997	120665.503	1182.655
1998	128745.424	1305.914
1999	124164.143	1298.487
2000	118750.68	1280.372
2001	123344.668	1371.131
2002	123227.474	1412.293
2003	125911.169	1487.785
2004	123228.989	1501.231
2005	124495.262	1563.674

Source: International Monetary Fund, (2004)

Figure 1.1 Annual % change in Niger's GDP (constant prices)



Source: International Monetary Fund, (2004)

Surely, each developing country is unique in terms of national resources and culture. A government policy that works in one country doesn't necessarily work in another. However, it is still interesting to understand the difference in outcomes of similar government policies in different countries. Through detailed investigation of the performance of the Chinese economy, we hope to learn what factors are crucial and which major economic policies could be effective for one specific country and what other secondary economic policies the country must implement to support the effectiveness of its primary economic policies. At the end, we may find out that in order for one country to develop, all its economic policies have to function in symbiosis. In my thesis, I will undertake an investigation of China's economic policies because I think a study of the economy of China is instructive and can yield valuable information about the appropriate use of economic policies for economic development.

The knowledge that Chinese people gained from past experiences and from the success of other countries was crucial for the success of China's economic development. The knowledge acquired by the central government of China is especially important since it is the central government that sets economic policies and undertakes appropriate economic reforms. My contention is that the learning-by doing of the Chinese people helped China choose the correct economic policies. In the early 1950s, the communist government of China imported an economic system learned from the former Soviet Union. Through a thirty year experiment, Chinese people realized that a socialist economy of the soviet type had its defects and limitations, and reform was needed. When the communist Chinese government decided to reform its economic structure, it discovered that without the creation of an adequate financial sector, the reforms would not be successful. It realized that it also needed to reform the banking system. China's open door policy implemented in the early 1980s is also a consequence of a better understanding of the mechanism of economic development. The Chinese communist authoritarian government learned from past experience (communist strategy) that trying to be self-sufficient is not a good long term strategy. They watched Japan and Hong Kong participate in world trade and benefit from it. Thus, the government of China gradually opened up free trade zones and allowed foreign imports into China. From that time, the Chinese government switched from an economic development policy based on import substitution to a policy based on export oriented.

The reform of the economic structure, the transformation of the banking system and foreign investment contribution are some of the major factors responsible for the high economic growth rate that the Chinese economy has achieved and maintained since 1980. This performance was possible thanks to the knowledge that the Chinese people acquired

from previous experience under the pure communist regime. The improvement in human capital through formal education and learning by doing are of critical importance for the current performance of the Chinese economy.

Clearly, China's economy has performed well over the last 25 years. The increase in the stock of human capital of the Chinese people gained through acquisition of formal knowledge and past experience is one of the most important factors of the rapid economic development. China could not have achieved such a remarkable economic growth right after the new communist government came into power in the early 1950s. One country can not immediately take off on a successful development path without acquiring the appropriate knowledge. It is true that we have countries like Japan, Canada, and United States of America that have achieved great economic successes and from whose experience other countries can learn about successful economic policies. But, the mere copying of successful policies in other countries does not guarantee that a developing country would immediately ride on a sustainable development path. This is because each country inherits an economic background and infrastructure. A policy that worked in the U.S.A may not work in Taiwan. Copying a policy is not easy and it can be very dangerous if the policy is implemented incorrectly or the environment is inappropriate. Without evaluation and trial, a country cannot determine whether a specific package of economic policies is appropriate for its economic development.

From the beginning of 1950s to the end of 1970s, China's economy was struggling. But the struggle was not a total waste. During this thirty years experience, the Chinese people have acquired a considerable amount of know-how and achieved limited success albeit at a slow pace. The government introduced an implemented numerous reforms and many

transformations were made. A certain foundation for economic development and international trade was erected. The establishment of these conditions helped China to prepare for its fateful reorientation and towards a sustainable path of economic development.

Now, China's economy relies heavily on the manufacturing sector. Its strong manufacturing sector is now able to produce high quality products for export. As a result, China has been able to gradually shift some of its resources to world trade. On the other hand, a continuing expansion of the manufacturing sector needs the assistance of an ever better technology. At the beginning of China's economic development, technology was acquired mostly from foreign countries. The dilemma is that China needs to import advanced technologies to improve the quality of the products of its manufacturing sector but without exportable manufacturing products, China is not able to earn the foreign exchange to pay for those technologies. Undoubtedly, China's high economic performance would not take place without the contribution of its manufacturing sector and world trade. My hypothesis is that China's significant growth of income per capita is led by the quest for better technology, knowledge acquisition, and not simply by exports. The goal of this thesis is to examine the validity of this hypothesis by detailed analysis of the major policies that contributed to the great success.

Chapter 2

China's Two Economic Setbacks and Agricultural Reform

2.1 The Great Leap Strategy (1958-1961)

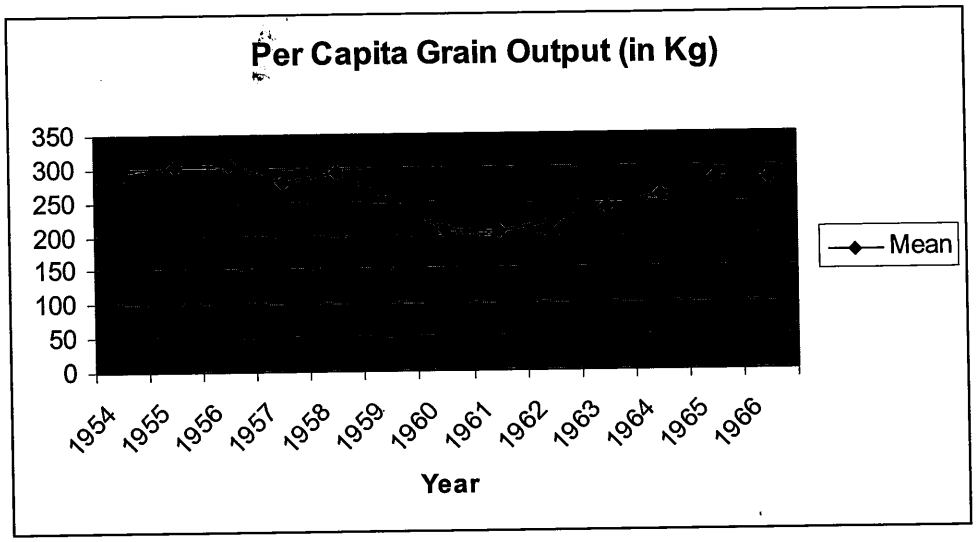
Mao Zhe Dong, Chairman of the Chinese communist party, came to power in 1949. He believed that socialism with planned production and consumption was the best economic system. He was so self-confident that he demanded that the country must achieve an unreasonable high rate of economic growth. In 1958, Chairman Mao requested the country to speed up economic growth to catch up with the United Kingdom during the first three year plan, and eventually to catch up with the United States in the following ten years.

Chairman Mao learned from the experience of western developed countries that a high rate of economic growth depended heavily on the development of the secondary and tertiary sectors. Thus, he emphasized the development of the steel industry. The main objective of Chairman Mao's plan was to make China a powerful industrialized state. To achieve this, he tried to shift people from rural to urban areas to industrial agglomerations to increase the growth rate of steel production. His migration plan involved thirty to fifty percent of the rural population. Chairman Mao's the Great Leap plan called for an annual 66% increase in industrial production, Shu, (2000). In reality, the communists wasted huge amounts of raw materials and labor. The mills produced steel products of poor quality in order to meet the target. These "steel trashes" were stocked in big warehouses forever and the country had to pay for the maintenance and storage costs of these products. For example, according to Shu, official documents boasted that the country has produced 1.07 million tons of steel. Before the government published the statistics, the communist party officials had coerced rural residents to break their steel pans and urban residents to dismantle their pipes

and recover the steel. The officials counted the collected scrap as "steel production". They also encouraged all citizens, including peasants, to work in the steel industry to produce steel. A big proportion of peasants stowed their plows away and went to produce steel. Surely, they didn't know how to produce steel and the productivity plummeted.

In the agricultural sector, the loss in food production was very serious. Total output of the agricultural sector could not satisfy the demand of food for minimum subsistence.

Figure 2.1 Per Capita Grain Output



Source: Kung and Lin, (2003), pp. 59

As Figure 2.1 shows, during the Great Leap period (1958-1961), grain production suffered heavily. Starting from 1958, per capita grain output decreased from 293.2 Kg per person to 203.47 Kg per person in 1961. The total decrease over the three year period was 31%. The decrease in output per capita was especially severe in the first year, 1958, when the Great Leap Strategy was implemented. During the same year, the decrease in grain

production per capita was 16.9%. According to Kung and Lin, (2003)[6], "unintentionally many commune authorities were so preoccupied with iron and steel manufacturing in the autumn of 1958 that they neglected to harvest the crops, which were simply left to rot in the fields. This diversion of resources is estimated to account for 28.6% of the overall grain output collapse..."

To feed the urban population, the government had to impose a high tax in kind on the remaining peasants. The total food tax yielded 215 billion tons of rice. Consequently, peasants' consumption of food per capita decreased 21 kilograms during the same year, resulting in a serious deficit of food among them. Many of them suffered from starvation and some died of hunger. According to Shu, (2000), approximately, one million people died in 1958 in Sichuan, the largest province of China. The report published by Chinese Science Department in 1989 showed that 15 million people died in 1958 due to the shortage of food. According to more accurate statistics published by the Chinese government in recent years, the number of people who died from starvation in 1958 is approximately 35 million. The Great Leap was a disaster. The wrong perception and implementation of Chairman Mao's policy was the direct cause.

There were no significant improvements in the industrial sector. The shift of focus from agriculture to the steel industry led to the destruction of a significant proportion of the productive capacity of the agricultural sector. However, this disaster taught the Chinese people that it was impossible for China to develop at an unfeasible growth rate simply by emphasizing the growth of the industrial sector without building first an appropriate basic infrastructure. True, investment in the industrial sector produces eventually a higher rate of return than investment in the agriculture sector. However, the shift of resources from

[6] Quoted by Kung and Lin, in page 54.

agriculture to industry in China could not produce the hoped for improvements during the first decade after the communists took power in 1949 for two reasons. First, China did not engage in any international trade during that period. Even if China was successful in developing its steel industry, the problem of food shortages would still occur because China could not immediately trade steel for food. Second, China was not ready for the shift in emphasis from agriculture to industry. Melting iron ore is totally a different task as planting rice. Yet, the government encouraged peasants and other unskilled workers, who did not know how to produce steel, to engage in steel production. Without the required know-how and an appropriate infrastructure, China was doomed to fail in its planned restructuring of the economy. The Great Leap taught Chinese people a painful lesson, but the Chinese people learned it well.

2.2 The Cultural Revolution and Agricultural Reform

After the Great Leap, China's economy recovered gradually from the disruptions caused by the leap. The grain output per capita increased. In 1966, the grain output per capita reached 281.92 Kg. But, the Great Leap was not the end of the story. During the period 1966-1977, the Cultural Revolution further disrupted China's economy and reduced people's living standards. Chairman Mao launched the Cultural Revolution against rival sections of party leaders in order to enhance his centralized power in the communist party. He encouraged and organized students to quit school and join the "Red Guard". During that eleven year period, all schools were closed. The advocates of the Cultural Revolution instigated students to quit learning by spreading the ideology that knowledge was evil and it would be better not to learn anything. Additionally, Chairman Mao sent over 16 million urban students to rural

areas and made them do manual work. This action exacted a heavy toll in terms of lost educational opportunities for young people.

On the economic side, China sunk into another chaos[7], right after the start of the Cultural Revolution. Not only did the "gang of four" (revolution advocates) encourage students to quit learning, but they also encouraged workers to quit production. They argued that the most important thing was the revolution and if workers participated more into the revolution, the productivity would be enhanced naturally.

Consequently, China's productive activity slowed down greatly and all economic progress achieved from 1963 to 1966 was erased. The Cultural Revolution ended in 1976 when Chairman Mao died and the new communist government arrested the "gang of four". The setback caused by the Cultural Revolution was even more harmful than that caused by the Great Leap. It lasted for 10 years and the loss in human capital was substantial. Yet, China soon recovered and thanks to the lesson it learned from this second catastrophe, China was ready to begin a new chapter.

After Deng Xiao Ping came into power in 1977, he officially ended the Cultural Revolution and implemented an agricultural reform that saved people from starvation. China, a developing country, relied largely on its agricultural industry during the early stages of economic development. Deng Xiao Ping realized that in order for people to improve their standard of living, they must first improve productivity in agriculture. It is possible that China would have stepped into another economic chaos if Deng Xiao Ping had not emphasized the revival of China's agricultural sector. Mao's failure in the Great Leap helped leaders of the Chinese communist party to understand that the government must emphasize

[7] The disruption was harmful to the industrial sector and the education sector. This disruption did not deter the growth of agriculture since students were sent to rural areas to work in farms. I will show later in this chapter that the growth rate of agricultural productivity during the Cultural Revolution increased.

the development of the agricultural sector before moving on to the development of the industrial sector. The Cultural Revolution taught Chinese people that productivity would not grow naturally. After taking power, Deng Xiao Ping pointed out that technology is especially important for productivity improvement and that the "interest of the civil life" could actually be an individual's incentive to improve productivity and the provision of incentives was not a bad thing. In the Eleventh Central Committee of the Communist Party of China, held at the end of 1978, Chinese leaders proposed a complete change in agricultural policies of China, Lin, (1988). The reform included specialization of different regions in different agricultural products according to each one's comparative advantage for the purpose of increasing agriculture productivity. This strategy is similar to that adopted by Japan in 1868. Unfair international treaties imposed on Japan in 1858 restricted Japan's ability to develop by protecting its domestic industry. This forced Japan to improve productivity in the agricultural sector, where it had a comparative advantage.

China's agricultural reforms consisted of two other related components. First of all, the government allowed rural households free choice of crops. However, they were not allowed to sell land. They had the right to cultivate the lands but they had no property rights over the land, Guo, (2002). The cultivation rights were given to rural households by signing appropriate contracts with the government. Usually, the rights extend over a period of three to five years. Recently, the period has been extended to fifteen years. Rural households had to sell certain pre-specified quotas of their output to the government at a set price and pay taxes on their agricultural output. They were allowed to farm in their own manner, take their own risk and earn the left-over income after paying for their inputs and for taxes. This

created incentives for peasants to increase productivity. The incentive stimulated individual farmer's eagerness to invest for the purpose of improving productivity in agriculture.

Lau, Lin, and Luo, (1992)[8], provide the following data on household investment in productive assets in the agricultural sector.

Table 2.1 Household Investment in Chinese Agriculture

Year	Per Household (Yuan)	Share in Household Expenditures (%)	National aggregate (Billions of Yuan)
1979	N.A.	N.A.	N.A.
1980	N.A.	N.A.	N.A.
1981	34.49	2.6	6.21
1982	63.83	4.1	11.67
1983	100.13	5.7	18.55
1984	90.7	4.7	17.04
1985	95.74	3.8	18.26
1986	84.47	3.1	16.53
1987	102.81	3.4	20.74

As Table 2.1 shows, the investments of an individual household in agricultural productive assets increased dramatically between 1981 and 1983. In 1983, investment per household in agriculture was Yuan 100.13. This was almost triple its level two years ago. The second part of China's agriculture reform was to allow peasants to trade the surplus of their agricultural output in the open and free market. "In the second half of the 1980s, around 60 per cent of agricultural commodities were bought and sold on competitive markets, as compared to only 8 per cent in 1978... By 1990 the percentage of the free traded agriculture products and commodities increased to 80 per cent. By 2001 almost all agriculture prices were freed up" Guo, (2002), pp. 21.

[8] In page 3

The outcome of the reform was very similar to the results of the land reform in Taiwan in the early 1950s. A large reduction of land rent promoted the incentives of Taiwan peasants since they could enjoy the fruits of their labor. Peasants are now interested in lowering cost and in increasing productivity. As we show presently, thanks to this policy, the agriculture industry prospered.

The reform acted like a catalyst, the response of agriculture to the reforms was quick and strong. According to Guo (2002), "from 1978 to 1984 the growth rate for agricultural value added was five times what it had been over the previous two decades". The following table shows a steady increase of the average real income of people living in rural areas due to the increase in land productivity.

Table 2.2 Per Capita Income and Incidence of Poverty in Rural China

	Per Capita Income	Poverty Incidence
Year	Yuan Per Person (1990 Prices)	Official %
1978	220	32.9
1980	306	27.1
1981	349	24.3
1982	414	17.5
1983	467	15.2
1984	522	11.1
1985	593	11.9
1986	612	12.0
1987	644	11.1
1988	685	10.4
1989	674	12.4
1990	686	11.5
1991	700	11.1
1992	741	10.6
1993	765	9.4
1994	803	8.2
1995	846	7.6
1996	922	6.7
1997	964	5.8
1998	1122	4.8
1999	1147	3.9
2000	1169	3.7

Sources: Fan, Zhang and Zhang, (2004), pp. 398

Beginning in 1978 when agricultural reform started, the real income per capita of rural residents in China improved dramatically. In the first 7 years, from 1978 to 1986, the real income per capita increased 283% from 220 Yuan per person to 612 Yuan per person. Meanwhile, poverty incidence decreased from 32.9% in 1978 to 12% in 1986. The start of this improvement in rural people's standard of living coincided with the agricultural reform.

Table 2.3 Annual Growth Rate (%) of Grain Production, Area, and Yield In China, 1952-1984

Period	Production	Area	Yield
1952-57	4.0	1.7	2.3
1957-64	-2.0	-0.9	-0.9
1964-78	3.5	0.1	3.3
1978-84	4.7	-1.1	5.9

Source: Huang and Rozelle, (1995), pp. 854

As Table 2.3 shows, during the period 1952-57, grain production increased at an annual rate of 4.0%. Increase in cultivated land was 1.7% annually. The annual increase in land yield is 2.3%, accounting for 57% of total grain production growth. The decrease in grain production during the period of 1957-1964 was largely due to the disruptions caused by the Great Leap. Soon after, the agricultural sector started to recover. Table 2.3 shows that land yield increased at an annual rate of 3.3%. This increase was due to "Dissemination of new high-yielding varieties in the 1960s and the expansion of irrigation area in the early 1970s" Huang and Rozelle, (1995). The most significant increase in land yield started after the 1978 agricultural reform. Although the cultivated land decreased by 1.1% per year, the total grain production increased by 4.7% annually. The annual increase in land yield during the period of 1978-1984 was 5.9%, accounting for 126% the growth rate of total grain production.

Table 2.4 Sources of Agricultural Growth and Poverty Reduction

	1978-84 (%)	1985-2000 (%)
Agricultural production growth:		
Institutional Reforms	60.08	-0.84
Public investment[9]	12.43	63.25
Others	27.49	37.59
Poverty reduction:		
Institutional reforms	51.25	-0.43
Public investment	45.45	94.17
Others	3.3	6.26

NOTE.—The institutional reform affects reduction in rural poverty through increased agricultural productivity. The other channels, such as those through improved labor market, are not captured here.
Source: Fan, Zhang and Zhang, (2004), pp. 409

As Table 2.4 shows, the agricultural reforms account for the greatest proportion of the growth of agricultural production and reduction of poverty incidence from 1978 to 1984.

On the other hand, the reform of the financial and banking system[10] supported the agriculture reform. Learning from Taiwan and Japan, peasants realized that chemical fertilizers were helpful in improving productivity.

Table 2.5 Chemical Fertilizer Consumption in China (1978-84)

Year	Consumption of Chemical Fertilizer (in 10,0000 Tons)	Annual % increase
1978	884.0	N.A.
1979	1086.3	22.9%
1980	1269.4	16.9%
1981	1334.9	5.2%
1982	1513.4	13.4%
1983	1659.8	9.7%
1984	1739.8	4.8%

Source: Lin, (1988), pp. 215

[9] Government investment includes investment in research & development, roads, education, power, telecommunication, irrigation.
[10] See chapter 4 for a detailed discussion of the reform of the banking system.

As Table 2.5 shows, the consumption of chemical fertilizers increased at a quick pace. During the first year of agricultural reform, the rate of increase in consumption of fertilizer was 22.9% and in 1979, it was 16.9%.

Table 2.6 Fertilizer Use and Irrigation in China (1952-1984)

Year	Fertilizer Use (Kg/ha)	Proportion of Area Irrigated (%)
1952	0.55	18.49
1957	2.37	24.45
1962	4.49	29.68
1965	13.55	31.91
1970	24.48	35.60
1972	28.44	37.77
1974	32.68	41.31
1976	38.93	45.26
1978	58.89	45.24
1980	87.17	45.21
1982	104.60	44.80
1984	120.65	45.43

Source: Huang and Rozelle, (1995), pp. 855

As Table 2.6 shows, China's use of chemical fertilizers was improving at a fast pace, from essentially nothing in 1952 to 120.65 kg/ha. During 1978-1984, the use of fertilizer increased by 205%, with an annual rate of increase of 34.1%. On the other hand, the proportion of area irrigated did not change much since the 1978 agricultural reform. The improvement of water irrigation system of land from 1952 to 1976 (before the agricultural reform) was due to "the organization of China's rural area to collectives" Huang and Rozelle, (1995), pp. 855.

Of course, farmers needed funds to buy these chemical fertilizers. Besides using part of their growing income from better land cultivation to pay back their loan, they also received aid from the government. The Central Committee of the Chinese Communist Party called for reallocation of state funds in 1978. The communist party decided to increase its

state investment in agricultural sector from 11% to 18%. The newly created Agricultural Bank of China (1978) was responsible for advancing the funds to farmers and peasants to buy fertilizers and seeds and to invest in technological progress. But the result was unexpected. According to Lardy, (1986), state investment fell continuously since the reform. In 1984, the share of the state's resources in agricultural investment fell to 5% and non-investment outlays in agricultural sector was at the same level as pre-reform period. Obviously, the government did not contribute too much to the finance of Chinese agricultural investment. But rather, the rural households invested their own income to improve the agricultural technology (i.e. fertilizer).

The delegation of management decisions and the institution of free market for agricultural products were essential for the realization of the observed improvement of productivity in the agricultural industry. The success of Chinese agriculture in the early eighties was very similar to that of Taiwan in the early fifties. Instead of importing huge and expensive machinery from western countries, China and Taiwan based their reforms on policy change and on small but numerous technical improvements. Better management of farm land and use of chemical fertilizers were the main reasons for the improvement in China's agriculture.

The agricultural reform began after the failure of the experiment of the Great Leap and the Cultural Revolution. Some economists argued that had China started the reform earlier and avoided the setbacks of the two major disruptions, it could have developed thirty years earlier. In my view, this idea is too hypothetical. China could not have achieved the observed substantial improvement in the living standards of its people during its last twenty years without first going through an experience of learning-by-doing. The Great Leap taught

Chinese people that agricultural sector could not be neglected. The Cultural Revolution taught Chinese people that productivity could not improve naturally and that individual incentives and improvement in technology were especially important for productivity improvement. Without making mistakes in the past, Chinese people would not know whether reforms are needed and which policies should be implemented. So, the experience of thirty years previous to the reform was not necessarily a waste. They were probably a transitional period that helped the Chinese economy get ready for its takeoff.

Chapter 3

Structural Reform of China's Enterprises

3.1 Before the Enterprise Reform

As in agriculture, China's industrial sector also faced difficulties in the early years of the communist regime. At the beginning of the 1950s, when communists came into power, they nationalized all existing enterprises and created more so that all enterprises were state-owned enterprises (SOEs[11]). Chinese Communists learned their trade of creating a new political and economic system from the former Union of Soviet Socialist Republics (USSR). The new system was based on the Marxist-Leninist philosophy. Free trade markets were abolished since communists believed that a planned economy would create the greatest social welfare. They thought the planned economy would produce enough food to prevent starvation and everybody would have equal share of the social output. This Marxist-Leninist economic system severely set back China's economic development. Since people believed that they would get an equal share of output no matter how much effort they put into their work, they had no incentives to innovate or work hard.

Between 1950 and 1955, the government gained more control over resources through a purchase policy. The central government and local government units continued to take ownership away from private entrepreneurs. Private enterprises gradually disappeared and by the end of 1959, there were no private enterprises left in the country. During that period, China's economy was suffering from inefficient markets. State-owned enterprises did not need to worry about competition; they did not have incentives to lower their cost. The government planned the production capacity and output of manufacturing SOEs. There was

[11] SOEs are those enterprises owned by the state.

basically no innovation since managers didn't have much power and the government owned a high percentage of total shares. The government regulated the prices of all products and collected the profits. Its goal was to make China self-sufficient. According to this policy, the Chinese economy would produce everything, so the country would not participate in international specialization and trade. Total exports and imports were essentially nil. From 1955 to 1978, state-owned enterprises dominated the whole economy. According to Guo, (2002), they produced more than 90% of the country's output of industrial goods.

3.2 The Wake of Enterprise Reform

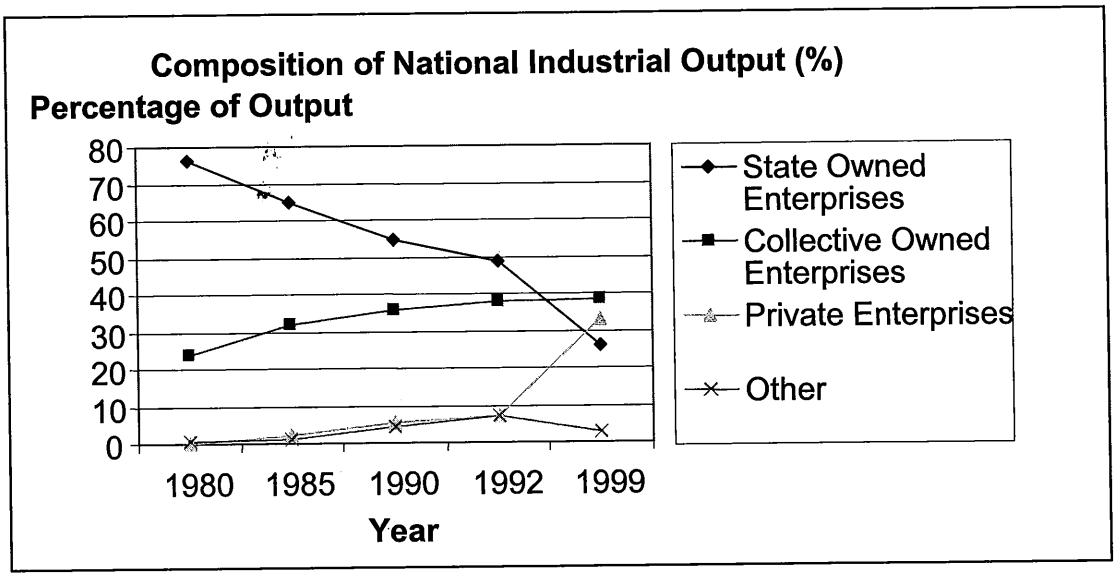
After Chinese people saw the successes of Western countries and their smaller neighbors, Japan, Singapore and Taiwan, they started to realize that structural reform was necessary. More and more people believed that the free market system would produce more benefit to the whole society because it would allow incentives for innovations to take place. Again, Chinese people learned and understood the new ideology from their previous struggle. Learning would not happen without trial and error. Chinese people did benefit from their previous experience of learning-by-doing. Although the Chinese people made mistakes, they figured out what was wrong with their self-sufficient policies and how they should amend and eventually replace them.

In the wake of the 1978 reform, the central government of China decided to privatize some state-owned enterprises. "The output of the collective enterprises was 38 per cent of the total industry output in 1992, compared with 23.6 per cent in 1980. Private and other enterprises produced 6.8 per cent and 7.3 percent of Chinese industrial output in 1992, respectively, compared with almost nothing in 1980" Guo,(2002). This change was crucial

and would not have happened without learning from past experience. Although the past 30 years' struggle was painful, it taught Chinese people the knowledge necessary to set up the foundation for China future economic development.

The figure below shows the structural change of China enterprises from 1978 to 1999.

Figure 3.1 Composition of National Industrial Output



Source: Guo, (2002), pp.18 and Wu, (2000)

Table 3.1 Average annual growth rate of real output (%) (1980-1992)

State-owned Enterprises (SOEs)	7.8
Collective Owned Enterprises (COEs)[12]	18.4
Private Enterprises[13]	64.9
Other Enterprises	37.2
Total	13.1

Source: Guo, (2002), pp.18, and Wu, (2000)

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[12] COEs are enterprises whose means of productions are owned collectively. According to Centre for the Study of Living Standard, "COEs include urban and rural enterprises invested in by collectives and enterprises which were formerly owned privately but have been registered in an industrial or commercial administrative agency as collective units through raising funds from the public".

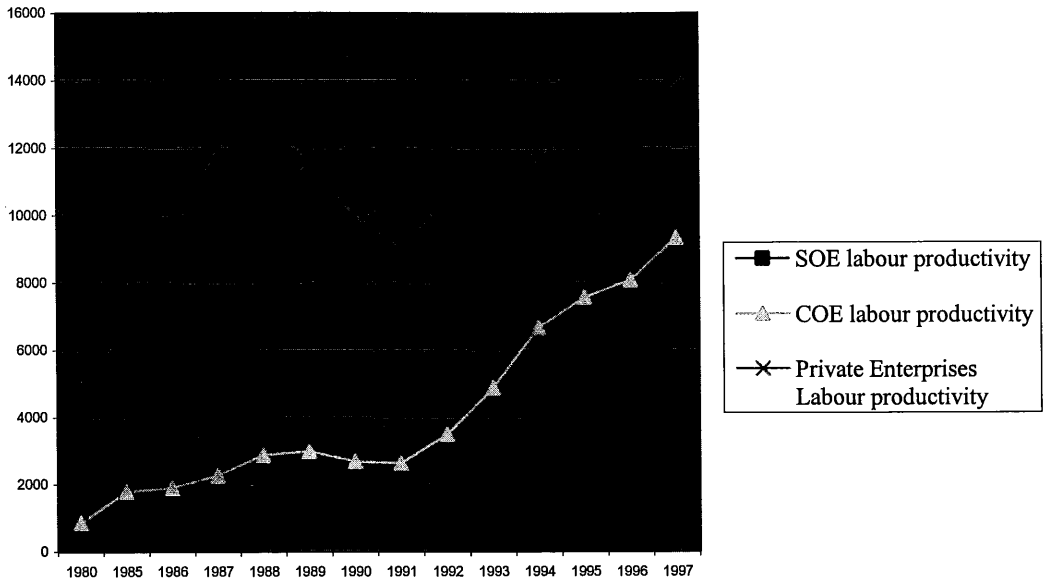
[13] According to Study of Living Standard report, private enterprises include limited liability corporations, private share-holding corporations, private partnership and sole investment enterprises.

Note: Other includes all enterprises that are not state owned, collective owned or private.

We can see from the table and chart above that the Chinese government did take significant steps, moving from state-owned to private enterprises. This movement was very healthy for the economy. Table 3.1 and Figure 3.1 show clearly that private and collective enterprises are much more efficient than state-owned enterprises. The average annual growth rate of real output from collective and private enterprises were 18.4% and 64.9%, while state-owned enterprises only had a growth rate of 7.8 per cent.

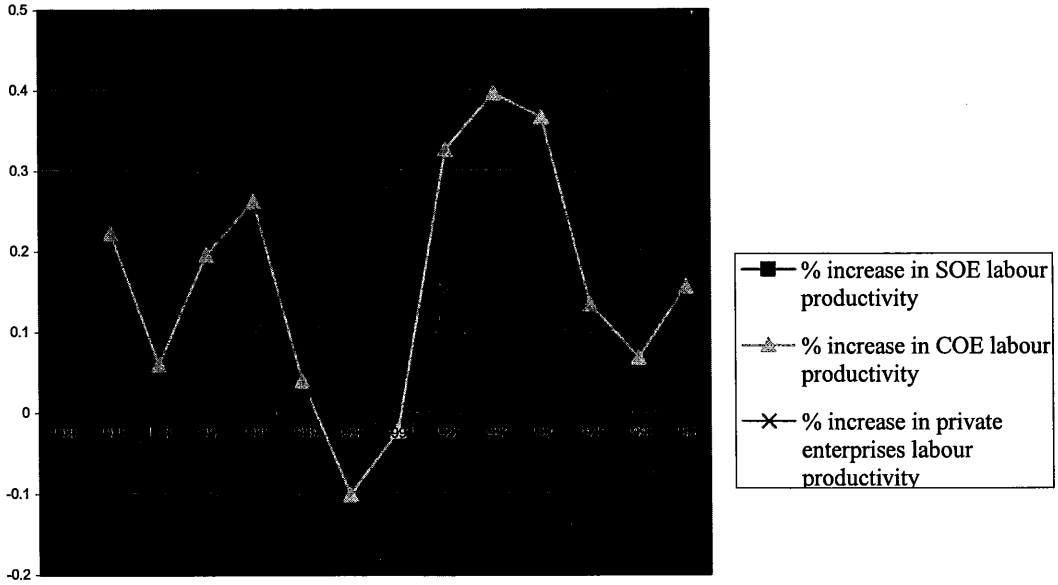
Since the1978's reform, the collective and private sectors had grown very rapidly. The total output from collective enterprises rose from 23.6% in 1980 to 38.5% in 1999 while the output from private enterprises grew from zero percent in 1980 to 30% in 1999. More and more private entrepreneurs took risks to invest for the purpose of making profits. Private enterprises had the incentives to increase the productivity of their workers. With higher productivity, enterprises are able to lower their unit average cost and earn greater leftovers. The eagerness to pursue high profit is the private entrepreneurs' motivation to improve productivity. As a result, the demand for skilled works increased dramatically and a lot of young people had been sent overseas to learn advanced management methods and new and high technologies. Not only did private enterprises hire more skilled laborers, they also imported more advanced manufacturing equipment from advanced countries.

Figure 3.2 Productivity Comparison (Yuan per worker)



Source: The Statistical Year Book of China 1996& 2000 table 13-2, table 13-3

Figure 3.3 Productivity Improvement (in percentage)



Source: may calculation based on Figure 3.2

Immediately after the 1978 reform was implemented, COEs had productivities[14] slightly higher than that of the state owned enterprises while the productivity from private owned enterprises is much higher. The average growth rate of their productivity is 4 to 5 times greater than the SOEs.

Besides entrepreneur profit incentive, a company's competitive environment played a major role in improving the efficiency of private enterprises. Private enterprise owners are free to operate their business. Managers have greater control on their company's research and development activity, market planning, and product innovation. A competitive environment further forces these private enterprises to cut unit costs and achieve an efficient allocation of resources. Competitors challenge each other in terms of quality and price. They have to work hard to make their products more competitive. State owned enterprises, on the other hand, are not subject to competition and have no control over their research and development activity. They are tightly controlled by government and under a high level of supervision. Managers don't have much control on their enterprise's business and they don't have to worry about competition. Collective enterprises have a little bit of flexibility and they are less tightly controlled by government bureaucracy than state owned enterprises. Thus, their productivity is a little bit higher than SOEs. By reducing the proportion of state owned enterprises and allowing that of private enterprises to increase, the Chinese government created an economic environment that helped to lift the total productivity level and people's standard of living.

3.3 Resistance to Enterprise Reform

[14] The labor productivity numbers are in constant 1980 Yuan.

Despite all the abovementioned positive aspects, China's structural reform is still facing some important obstacles. Although the output of state owned enterprises has greatly lost its importance in terms of proportion of total output since 1980, they are still major users of scarce resources. Government ensures some of its state owned enterprises priority access to economic resources over private enterprises. For example, China's four major banks are forced to finance lose of some state-owned enterprises.[15] This misallocation of economic resources impedes China's economic progress. Additionally, state owned enterprises didn't contribute much in recent years to labor absorption. Economic theory suggests that along a country's development path, labor shifts from low productivity industries to higher productivity industries. This is one source of increase in overall productivity and the growth rate of real GDP. Private enterprises in the industrial sector continue to employ more people from rural areas. However, the contribution of state owned enterprises in terms of labor absorption tends to be zero or negative. Furthermore, China is still under the control of a socialist government and this situation will not change in the next 10 to 15 years.

"The Fifteenth CCP National Congress clearly stipulated that the basic economic system at the initial stage of socialism is a core of public ownership complemented by other forms of ownership" Wu, (2000).

Resistance to further structural reform was inevitable during the last ten or fifteen years since the basic infrastructure of the old system remains intact. We saw a great reduction in the proportion of state-owned enterprises in the last 20 years. This trend will slow down to insure that the communist government maintains a certain "core of public ownership" alive, Wu, (2000). For this reason, the government shifted its focus to the reform of state owned enterprises. The strategy is to revitalize small size state owned enterprises and surround them

[15] Chapter 4 discusses this issue in details.

by some sort of competition. The goal is to bring up the productivity in state owned enterprises.

3.4 Summary

To sum up, the development of private and collective owned enterprises was a major move in China's economic development path. Not only did it create incentives and foster a competitive environment, but it also opened the door for the establishment of new types of enterprises (for example, joint venture) and allowed foreign investment into China. Foreign investment accompanied with new technologies and advanced business management, is an important factor in China's economic development. Mainly driven by higher productivity of private and collective owned enterprises, China's overall productivity improved. The improvement of technology and management science was hidden behind China's industrial reform and its effect should not be underestimated. I will have a more detailed discussion of the role of technology imports in chapter 5.

Chapter 4

The Transformation of the Banking System

4.1 Emergence of China's Four State-Owned Specialized Banks

China's structural transformation attracted investment from domestic savings and foreign capital[16]. A burst of investment after the reform played an important role in China's economic development. It helped to build more industrial infrastructure, factories, assembly lines etc. Most importantly, it also helped to import better technology from foreign countries. Since investment is an important factor that contributes to growth, the government of China did help to create and foster a reasonably efficient financial market, including a commercial banking system, in order to guide domestic savings and foreign capital flows.

Table 4.1 Total Lending by Financial Institutions in China (Yuan Billions)

	Four State-Owned Specialized Banks	Others	Total Lending
1980	241	8	249
1981	276	10	286
1982	286	12	298
1983	359	16	375
1984	477	35	512
1985	591	40	631
1986	759	81	840
1987	903	127	1,030
1988	1,055	167	1,222
1989	1,241	195	1,436
1990	1,517	251	1,768
1991	1,804	330	2,134
1992	2,162	470	2,632
1993	2,681	613	3,294
1994	3,305	776	4,081
1995	4,045	994	5,039

Source: Phillips, (2005)

[16] Later this chapter documents the data of domestic savings and chapter 5 documented the data of foreign capital.

Table 4.1 shows clearly that since 1980, total lending by financial institutions in China has increased rapidly. Four large state-owned specialized banks accounted for the bulk of the lending. They are the Bank of China, the People's Construction Bank of China, the Agricultural Bank of China and the Industrial and Commercial Bank of China. The four major newly formed state-owned banks quickly became major suppliers of credit and they expanded rapidly. From 1980 to 1998, their lending accounted more than four-fifth of total lending. Their lending and the total lending of all financial institution were nineteen times greater in 1998 than in 1980. Other private financial institutions also grew as vigorously as the four major banks and together, they gradually formed another major force in the Chinese new financial market.

As the above numbers indicate, China's financial reform had its positive contribution. The government started its reform of China's banking system in 1978. The central bank of China is People's Bank of China (PBC). PBC was the only bank in China between 1949 and 1978. In 1978, the government instructed PBC to start spinning off a certain number of its departments into commercial banks. Before the reform, the planned economy did not allow free trade between domestic enterprises and foreign countries. Thus, developments in the world's economy did not have any impact on China's domestic economy. During this period, the Chinese government followed an import substitution model. Its goal was to make China self-sufficient in every product including technical know-how. Accordingly, China had to produce everything to satisfy the corresponding domestic demand and did not participate much in foreign trade. Price changes in foreign markets did not have much impact on domestic prices and resource allocation. If domestic enterprises required imported raw

material or intermediate products, they must apply to PBC for an import license. Instead of allowing market forces to determine the exchange rate, the relevant authority in the PBC calculated it manually. China's economic reform in 1978 required the government to allow private and public enterprises to trade directly with foreign partners and created a need to reform the banking system as well and re-adjust the exchange rate. This fact convinced the government that PBC cannot continue to hold the monopoly over financial intermediation. The Chinese government realized that the original monobank system was too inefficient to handle the more complex financial needs of the economy after its transformation following the economic reform. The monobank system (PBC) had a highly hierarchical structure that slowed down the decision making process. Local branches had to report to PBC headquarters and then PBC headquarters had to report to the State Council. This process was time consuming and extremely inefficient. Thus, the Chinese government decided to decentralize the banking system by spinning off various department of the PBC into new banks.

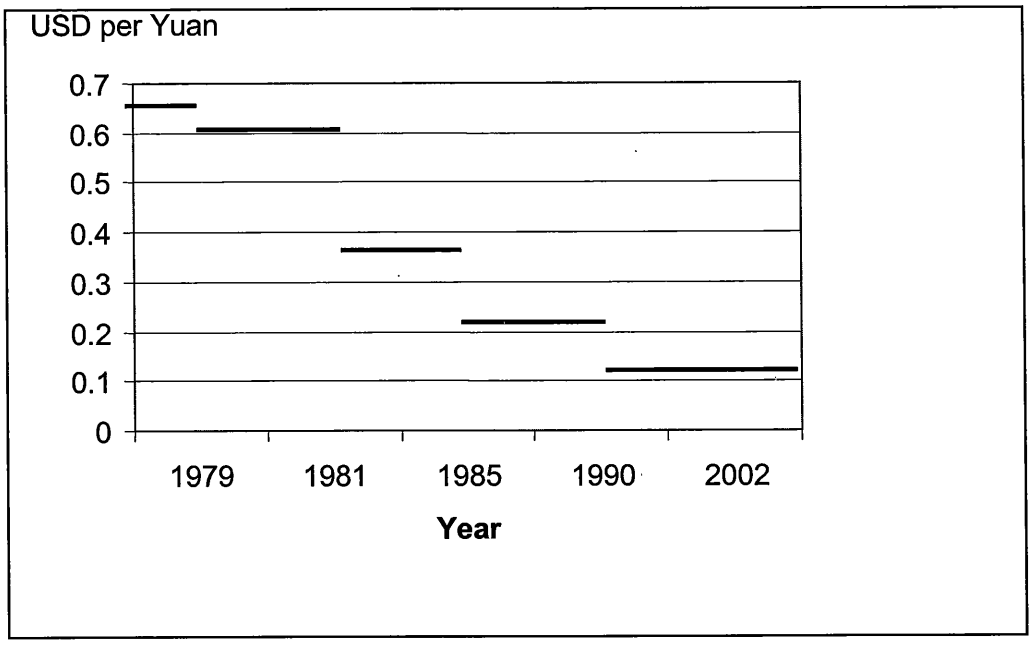
The department of foreign exchange operations was the first department that PBC spun off to create Bank of China (BOC). BOC became the first independent commercial bank in China and specialized in foreign exchange operations.

"BOC handles all aspects of the foreign exchange business, including: 1) foreign trade and non-trade settlements,2) international interbank deposits and loans, 3) Chinese and other international remittances from overseas, 4) foreign currency deposits and loans, domestic currency deposits and loans related to foreign exchange business, 5) foreign exchange transactions and international gold transactions, 6) trust business and consulting, 7) syndicated loans, 8) issuing of eurocurrency bonds and other securities authorized by the

government of China, 9) investment in Hong Kong, Macao, and foreign countries or jointly managing banks, financial companies" Phillips, (2005).

Following the reform of 1978, the government of China adopted an "open door policy" and China became more involved in international trade. Before the reform, the domestic currency Yuan was overvalued creating an excess demand for foreign exchange. To remove the excess demand for imports and encourage exports, the government of China implemented a series of devaluations of the Yuan.

Figure 4.1 The Exchange Rate of Yuan in Terms of US Dollar



Source: Guo, (2002), pp. 25

As Figure 4.1 shows, Bank of China (BOC) raised the price of the US dollar in terms of the Chinese currency Yuan from 1.7 Yuan in 1981, to 2.9 Yuan in 1985, to 4.8 Yuan in 1990, and to about 8.29 Yuan in 2002.There was no further increases in the price of the US

dollar since 2002. The Yuan's devaluations helped to improve gradually the competitiveness of China's exports.

More spin-offs followed on the heels of the BOC. In 1983, PBC spun off another department to create the People's Construction Bank of China. Instead of offering free-interest funds to state-owned enterprises, the new bank offered loans at a certain interest rate to them and to private enterprises. The bank is under the control and supervision of PBC, but it is no longer a government agency.

"Its role as fiscal agent or executor of the state's capital construction fund includes: 1) distribution of funds, supervision of projects implemented, settlements, and auditing, 2) management of financial accounts for capital construction, examining and approving annual financial plans and budgets, controlling financial outputs, and drafting financial management regulations for the state, 3) management of financial accounts of construction and installations and enterprises, 4) management of budgetary estimates, settlements of construction projects, settlements of accounts, examining the budgetary estimates of construction enterprises and projects, 5) management of financial accounts of geological-prospecting activities" Phillips, (2005).

Next, the government instructed PBC to spin off another department of PBC to create the Industrial and Commercial Bank of China (ICBC). ICBC specializes in urban development. It takes saving deposits from the public, offer loans to businesses to finance working capital and investment and issues short-term and median-term loans and so on. "It handles the following types of domestic business: 1) deposits of industrial and commercial enterprises, public agencies, and individual enterprises, 2) savings deposits of citizens, consumer loans, 3) loans the acquisition of working capital and fixed asset, and for

financing research and development of enterprises, 4) transfer settlement, cash settlement, commercial paper acceptance, and bill discounting, 5) entrusting, acting, leasing, investing, advisory businesses, 6) issuance of bonds and other securities " Phillips, (2005).

The Great Leap and The Cultural Revolution had greatly set back China's agriculture. China, with a population over 1.3 billion, needed to increase the productivity of its agricultural sector in order to have enough food to feed people and possibly increase the pool of savings. When Chairman Den Xiao Ping came into power, he emphasized agricultural reform. In1979, PBC spun off its department of agricultural affairs to create the Agricultural Bank of China. The main objective was to assist the government in the implementation of its agricultural reform. The responsibilities of the Agricultural Bank of China include the following: "1) handling deposits from rural government institutions, enterprises, individuals, and other organizations, 2) providing loans to state-owned agricultural enterprises, collective organizations, and farm households, 3) handling deposits and loans of rural credit cooperatives, 4) handling transfer and cash settlements and bill discounting, 5) providing trust, lease, and consulting services, 6) issuing bonds and trading in securities, 7) handling any business stipulated by the state or entrusted to it by the PBC" Phillips, (2005).

Before 1978, China was under a highly centralized monobank financial system. The financial market could not function appropriately to transfer savings from individual households to entrepreneurs and to government owned enterprises. Payments between parties were also awkward because of the bureaucratic nature of the monobank financial system. The spinning off of the four commercial banks by PBC produced favorable results. The transfer of savings from household units to entrepreneurs became more efficient and stimulated the growth of economic activities through a substantial increase in investment. According to

Yusuf (1994), until late 1970s, China's gross investment remained at 30% of its total GNP. After the reform, the gross investment rose to 35-37% and fixed investment rose to 30%. On the other hand, domestic saving increased at a fast pace as well. During 1978-1984, the ratio of gross national savings to real GDP was 0.33. During the following seven years period 1985-1992, it rose to 0.38, a 15% increase.

Table 4.2 Selected Banking Indicators for China 1986-1995 (%)

Year	Aggregate Lending Growth	Deposits Growth	Reserves/Deposits
1986	N.A	N.A	23.6
1987	17.3	22.1	19.9
1988	6.0	3.9	18.4
1989	8.7	12.3	21.1
1990	15.4	24.0	23.5
1991	12.8	20.0	25.0
1992	15.0	23.3	19.5
1993	20.9	25.1	21.5
1994	3.1	13.6	20.3
1995	9.1	17.5	20.0

Source: Ducosta and Foo, (2002), pp. 10

As table 4.2 shows, the growth in aggregate lending was strong throughout the decade, supported by a strong growth in deposits. Clearly, China's four specialized state-owned banks worked much more efficiently than the PBC, monobank.

In addition to the new four government owned banks, the government allowed the creation of a limited number of private banks organized as joint stock companies. Soon afterwards, four additional private banks, the Bank of Communication, Industrial Bank, Zhao Shang Bank and Shanghai Bank came into existence. To some extent, their risk-management is better than that of the state-owned banks, Guo, (2002). Of course, they are also under the supervision of PBC. It is hoped that this competitive environment would force state-owned banks to rise up to the challenge and to improve their performance.

4.2 Problems of China's Banking System

Although China's banking reform moved closer to a healthy financial system, serious problems still remain. First of all, non-performing loans are an issue left unsolved. Since China's major specialized banks are still state owned, they are required by the government to finance the losses of some state-owned enterprises through "policy loans", Phillips, (2005). Additionally, the banking reform allowed PBC limited control over local branches of China's four major specialized banks. The local branch managers have autonomy on loans to business enterprises, but their accountability for these loans is often limited. Local governments exercise considerable pressure on managers of local branches of banks to make loans to finance high risky state-owned projects and unprofitable SOEs that are near bankruptcy. A large proportion of the loans to SOEs are irrecoverable. It is estimated that twenty to thirty percent of loans to SOEs are non-performing loans. Although, on the surface, China's four major specialized banks continue to make profits over the years, their profitability is greatly undermined by these non-performing loans. The officials of China four specialized banks do not want to recognize these non-performing loans as bad loans. The government allows them to report those non-performing loans in the balance sheets and financial statements of their respective banks as normal loans. These non-performing loans include past due loans, doubtful loans and bad debts, Phillips, (2005).

Secondly, according to Ducosta and Foo (2002), financial system of China lacks the authority to implement an effective monetary policy. The government forced PBC to make loans to finance state-owned projects and unprofitable SOEs. PBC was forced to increase the money supply at a rate in excess of the growth rate of real GDP boosting the inflation rate to 14.6% by 1993.

Thirdly, China's credit system is still underdeveloped. China relies heavily on cash transactions in both household sector and business sector. China has very limited consumer credit services with very few people using credit cards. Checking accounts are also used infrequently because checks cannot be used in daily transactions, Phillips, (2005).

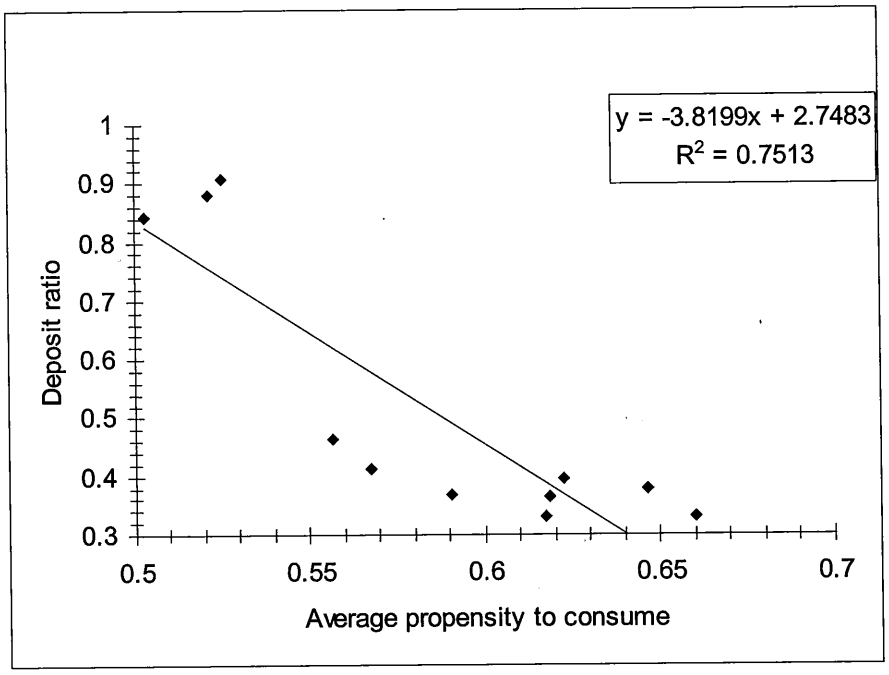
4.3 Positive aspects of China's Banking Reform

Although China's banking system is still not mature, we can discern a substantial improvement in its performance because of the substantial increase in total lending and deposits noted above. We can also discern the resulting beneficial effects on the whole economy. Before the reform, the government of China could obtain money directly from the central bank. After the reform, it had to issue government bonds through PBC to finance its budget deficit. This insures a healthy investment environment. The financial reform gave PBC the power to reject an investment project if it violates certain operating rules. Furthermore, the state-owned banks are required to produce profits. Interest-bearing loans account for the biggest positive effect on investment. "The commercial banks' lending for industry fixed capital investment increased to about eighty per cent in 1985 from only a very tiny share of the total capital investment in 1979" Nicholas, (1994). Many economists in China believe privatizing the four state-owned commercial banks could enable them to become more efficient. According to the recent 163 news (one of China's official news websites), the four major commercial banks will be able to issue and sell their common shares to the public in 2005. If this reform materializes, China's banking system will become more responsible and better managed.

The creation of appropriate financial institutions would encourage people to save more per dollar of income, which increase should translate in part into a corresponding increase in bank deposits per dollar of income. Thus we expect to see the development of banks in China to result in a positive (negative) correlation between average propensity to save (consume) and the ratio of deposits to gross deposable income. Let us call the latter ratio the deposit ratio. To check for the existence of this correlation, consider Figure 4.2

Figure 4.2 plots the deposit ratio against the average propensity to consume out of gross deposable income. Figure 4.2 shows a negative correlation, which seems to uphold the hypothesis.

Figure 4.2



Source: my calculation. Numbers are based on International Financial Statistics (IFS), 2001, p356-357[17]

[17] Consumption ratio is calculated by dividing private consumption by subtracting government revenue from gross national income. Deposit ratio is calculated by using the total deposit divided by subtracting government revenue from gross national income.

Table 4.3 gives the results of a regression of the deposit ratio on the average propensity to consume.

Table 4.3

Regression output
Dependent variable: deposit ratio.

					confidence interval	
variables	*coefficients*	*std. error*	*t (df=9)*	*p-value*	*95% lower*	*95% upper*
Intercept	2.7483	0.4298	6.395	.0001	1.7761	3.7205
Average propensity to consume	-3.8199	0.7326	-5.214	.0006	-5.4771	-2.1626
R square	0.7513					

The p-value for the coefficient of deposit ratio indicates that we can reject the null hypothesis that there is no relationship between the deposit ratio and the average propensity to consume with an extremely low risk (equal to the p-value of 0.0006) of being wrong.

Table 4.4

China's Average Propensity to consume and deposit ratio (1985-1995)

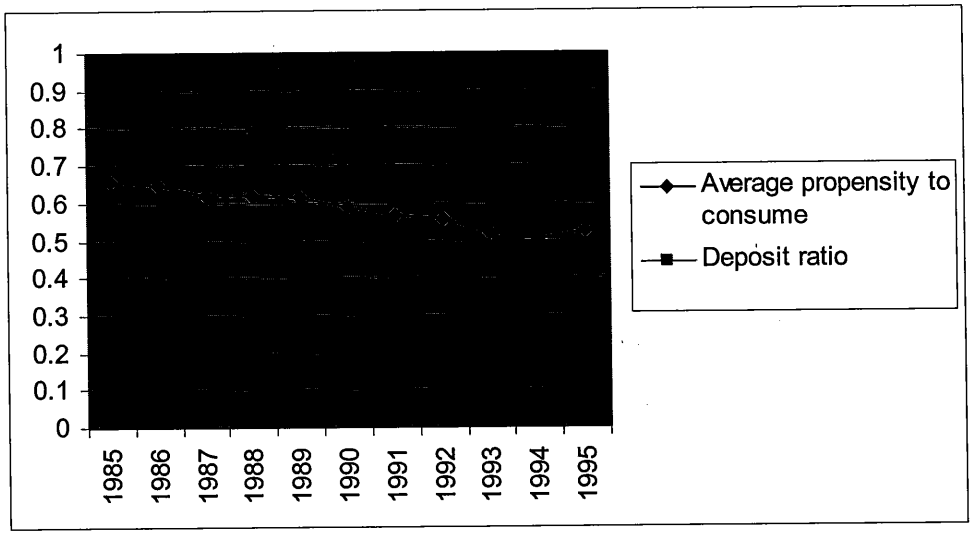
Year	Average Propensity to consume	Deposit ratio
1985	0.660	0.332
1986	0.646	0.378
1987	0.622	0.395
1988	0.619	0.365
1989	0.617	0.331
1990	0.590	0.367
1991	0.568	0.414
1992	0.556	0.464
1993	0.521	0.880
1994	0.503	0.842
1995	0.525	0.908

Source: my calculation. Numbers are based on International Financial Statistics (IFS), 2001, p356-357

As we can see from Table 4.4, China's deposit ratios were steadily increasing throughout the years (from 1985-1995). It started from 0.332 in 1985, and increased to 0.908 in 1995. The increase was over 173% in this eleven-year period. This phenomenon coincided with China's reform of its banking system. It may be construed as evidence that establishment of China's banking system helped China to increase its deposit ratio. Chinese people had reliable means to store their savings causing the average propensity to consume to fall from 0.66 in 1985 to 0.525 in 1995.

Figure 4.3 plots the behavior of the average propensity to consume and the deposit ratio against time.

Figure 4.3 Average Propensity to Consume Ratio and Deposit Ratio



The figure shows that there is a jump in 1993 in the deposit ratio. Before 1993, the inflation rate was high and the government controlled the interest rate and kept it lower than the inflation rate. In 1993, the government decided to adopt an anti-inflation monetary policy and used interest rates as instrument to control the inflation rate. Thus it removed its control over the interest rates. Suddenly, interest rate on time deposits jumped upwards. Savers

became more confident and deposit ratio shot upwards. To take this change in policy into account, I introduced a dummy variable that is equal to zero before 1993 and 1 from 1993 to 1995 into the regression equation between the deposit ratio and the average propensity to consume. Table 4.5 gives the regression results.

Table 4.5 Adjusted Regression Analysis

Regression output
Dependent Variable: deposit ratio

					confidence interval	
variables	*coefficients*	*std. error*	*t (df=8)*	*p-value*	*95% lower*	*95% upper*
Intercept	0.8757	0.2160	4.055	.0037	0.3777	1.3737
Dummy	0.4203	0.0404	10.41	6.28E-06	0.3272	0.5134
Average propensity to consume	-0.8117	0.3536	-2.296	.0508	-1.6271	0.0036
R squared	0.983					
Adjusted R squared	0.979					
Number of observations	11					

It shows that the coefficient of the dummy variable is significantly different from zero. It also shows that the coefficient of the average propensity to consume is negative and it is significantly different from zero with a p-value equals to 0.05. Again, we can reject the null hypothesis. It is clear that China's reform of banking system helped Chinese people to save more (calculated by 1 minus the consumption ratio). With more savings, China had more funds available for the business investment and industrial development.

4.4 Summary

The reform of the banking system improved the performance of the Chinese financial system. From a monobank system to the emergence of four large state owned commercial

banks and the relaxation of controls on the creation and operation of private and foreign banks, China's financial industry is becoming more and more decentralized.

The government of China is encouraging the development of the industry by a gradual change of policies. Chinese people gained valuable knowledge from the transformation process of the banking system through a learning-by-doing approach. For example, by recognizing the problem of non-performing loans, the government of China is trying to make local managers become more accountable for their lending decisions. Additionally, China has made an attempt to build a better credit system by encouraging people to use credit cards issued by BOC. BOC rewards credit card users who have accumulated a certain amount of points with gifts and cash. Now, credit cards are more widely used in people's daily transactions. So, the transformation of the banking system would not have happened without the increasing pressures of the demand for change from the economic reform of the rest of the economy.

Logically speaking, economic development should be a sequential process. Each stage requires a successful completion of the previous stage. However, China's economic reforms, including the rural, industrial, and banking reforms, took place at the same time. The reform of the banking system was for the purpose of developing the agricultural and industrial sectors and its beneficial effects on China's economic development are substantial.

Chapter 5

China's Open Door Policy

5.1 Introduction of China's Special Economic Zones (SEZs)

During the Great Leap and the Cultural Revolution period, the living standard of Chinese people did not improve, while neighboring Eastern Asia countries, South Korea, Malaysia, Singapore and Taiwan continuously improving standards of living thanks to active participating in foreign trade and they achieved high economic growth rates. This divergence in performance convinced the communist leaders of China that a policy of self-sufficiency was not a good long run strategy. Chairman Deng Xiao Ping realized that in order to increase domestic productivity and people's living standard, China had to adopt and learn advanced technologies from foreign countries. And the country had to gradually open its doors to trade with the rest of the world. The goal of China's open door policy is "to strive for the utilization of international capital and advanced technology to assist in our (China's) economic development" (Naughton)[18].

The Chinese government was cautious at the beginning since it could not foresee all the consequences of the open door policy. The Chinese government did not open up the entire coastline in 1979. Instead, it opened up some special economic zones (SEZs). If things went wrong, the government could easily close them and stop the damage. The special economic zones were originally an experiment.

The government of China chose Shenzhen, Zhuhai, Xiamen and Shantou as the original Special Economic Zones. "The location of the Zones, besides the convenience of all four being small harbors on the seacoast, indicates their political significance: Shenzhen, next

[18] As quoted by Naughton, (1996) from *Year Book of China's Special Economic Zones*,1985, p.106

to Hong Kong; Zhuhai, next to Macao; Xiamen, across from Taiwan; and Shantou with close trade ties to Southeast Asia" Kleinberg, (1990).

We can see from abovementioned Deng Xiaoping's quote, the main purpose of opening Special Economic Zones was to acquire knowledge and technology from foreign developed countries. Although there were only four cities opened up for foreign investments and imports, the government's aim was to use the special zones to stimulate development in the rest of the nation. People living in the other part of China could also learn imported foreign technologies from the special zones.

In order to import advanced technology and equipment from foreign countries, China had to have foreign exchange. China could not finance the imports of advanced technologies and equipment by selling products produced by domestic manufacturers because domestic products were not exportable and they did not have any comparative advantage in the world market. Thus, China had to attract foreign investment to obtain the advanced technologies to improve quality and reduce costs. In this way, China could export competitive products assisted by foreign advanced technology and earn enough foreign exchange to import more advanced technology and equipments.

As the government of China expected, the free trade special zones attracted fair amount of foreign investments. Foreign investors came to China to earn profits, by taking advantage of cheap skilled and unskilled labor and opening up new markets. Most of the foreign companies that invested in the SEZs brought in qualified management teams and advanced technologies. The government designed several types of model companies among which foreign investors can choose. In the first model (sole proprietorship), foreign investors own all of the company's equity; in the second model (joint ventures), foreign investors

partner with local firms; in third model (cooperative production), foreign investors contribute capital, equipments and technology while Chinese firm supply factory building, labor and land; in fourth model (compensation trade), foreign investors provide technology, equipments and parts needed by Chinese producers who pay the foreign investors for their investment; in fifth model (intermediate processing), Chinese firms undertake processing of exporting product and get paid by foreign investors, Wong, (1987). Table 5.1 shows the composition of the forms of foreign investments.

Table 5.1 Forms of direct foreign investment in China's SEZs, 1984

	Sole Proprietorship	Equity Joint Venture	Cooperative Production	Others	Total
Shenzhen SEZ	46.42	78.19	59.76	22.26	206.63
	22.50%	37.80%	28.90%	10.80%	100%
Zhuhai SEZ	0.08	9.07	100.85	0.54	110.54
	0.10%	8.20%	91.20%	0.50%	100%
Shantou SEZ	2.7	1.27	3.9	--	7.87%
	34.30%	16.10%	49.60%	--	100%
Xiamen SEZ	18.13	232.35	132.06	--	382.54
	4.75%	60.75%	34.50%	--	100%

Note: numbers are in million of US dollar
Source: Wong, (1987), pp. 30

As Table 5.1 shows, the composition of these enterprises investments varies across the Special Economic Zones. In ShenZhen SEZ, the investments were evenly contributed by sole proprietorship, equity joint venture and cooperative production. In the Zhuhai and Shantou SEZ, cooperative production enterprises accounted for 91.2% of total investment in Zhuhai and 49.6% in Shantou. In Xiamen SEZ, equity join ventures accounted for 60.75% of total investment in Xiamen.

The performance of free trade special zones was interesting. With the help of these foreign companies, the Chinese government built some industrialized infrastructure (energy, transportation, communications, factories and so on) in the special zones, which was nonexistent or underdeveloped before. Table 5.2 shows the amount of investment in infrastructure.

Table 5.2 ShenZhen SEZ Investment in Infrastructure (million yuan)

1979	1980	1981	1982	1983
49.88	124.87	270.39	632.65	885.93

Source: McKenny, (1993), pp. 21

Table 5.3 gives the distribution of foreign investment by economic sectors in 1984. ShenZhen SEZ attracted the largest amount of foreign investment. Investment in manufacturing industries and in commercial services accounted for 75.2% of total investment in ShenZhen. In Zhuhai SEZ , manufacturing industries accounted for 23.5% of total investment while transportation & communication sector accounted for 53.4%. In Shantou SEZ as well, manufacturing and transportation & communication sectors were the sectors that attracted the most of foreign investments.

Table 5.3 Direct foreign investment in China's SEZs by economic sectors, 1984 (in US $ million)

	Shenzhen SEZ	Zhuhai SEZ	Shantou SEZ
1. Manufacturing industries	102.85 49.80%	25.93 23.50%	3.2 41.80%
2. Construction & resource exploration	7.78 3.80%	1.03 0.90%	--
3. Agriculture, fisheries. Etc.	0.38 0.20%	0.22 0.20%	0.1 1.30%
4. Transportation & communication	8.81 4.20%	59.01 53.40%	4.16 52.90%
5. Commercial service	52.43 25.40%	2.84 2.60%	7.00% 0.90%
6. Tourism	16.65 8%	17.80 16.10%	--
7. Public utilities	1.25 0.60%	--	0.25 3.20%
8. Housing/property development	16.48 8.00%	3.71 3.30%	--
Total:	206.63	110.54	7.87

Note: Statistics about Xiamen SEZ is unavailable
Source: Wong, (1987), pp. 31

Foreign investment in SEZs not only forced China to develop infrastructures, but also it helped to create thousands of jobs in the local SEZs.

Table 5.4 Development of the Electronics Industry in Shenzhen

	1978	1982	1983
Establishments (No.)	1	12	60
Employment	300	4700	15000
Gross output value (million yuan)	700	n/a	320000

Source: McKenny, (1993), pp. 12

We can see from the data in Table 5.4 that the electronics industry in Shenzhen had grown dramatically, from one establishment in 1978 to 12 establishments in 1982 and 60 establishments in 1983. In one year between 1982 and 1983, foreign investment created over 10,000 more jobs. The gross output value was 700 million Yuan in 1978. Four years later, it increased to 320,000 million Yuan.

Since then, China was able to produce higher quality exportable products with the help of foreign investments and technologies. China used the foreign exchange earned from the sales of domestic products to purchase more and more advanced foreign technologies, equipment and knowledge. A pattern of international trade started to emerge thanks to China's special economic zones. Table 5.5 shows the value of imports and exports of special economic zones in 1987.

Table 5.5 SEZ Trade Performance in 1987 (million U.S. dollars)

	Shenzhen	Zhuhai	Shantou	Xiamen
Imports	2250	371	542	488
Exports	2035	319	279	304

Source: McKenny, (1993), pp. 22.

The opening of the special economic zones was a huge success. Chairman Deng Xiao Ping's philosophy, which emphasized the building of Chinese know-how by importing foreign advanced technology, was correct. Other cities, especially coastal cities, close to the special economic zones, grew interested in learning and adoption of the new technologies and know-how from the special zones. By the end of 1980s, the GuangDong province had grown more prosperous and transformed itself from a rural area to a metropolis. Soon, other provinces started imitating the success of the GuangDong province and the whole country benefited from opening the special economic zones.

Table 5.6 Gross Value of Industrial Output by Region (constant 1952 yuan in millions)

Region	1952	1983	% Growth Rate
Northeast	6814	97021	1324%
North	4838	95970	1884%
East	13901	228442	1543%
Central/South	4694	124598	2554%
Southwest	2251	49266	2088%
Northwest	1633	30144	1746%

Source: McKenny, (1993), pp. 15

Along with the reform in enterprise structure, the open policy brought Chinese people a huge increase in the gross value of industrial output. Table 5.6 compares 1952's industrial output and 1983's industrial output for several regions. Among those regions, the Central/South and the Southwest regions had the highest growth rates because of the opening of special economic zones. They are the GuangDong province and the provinces bordering it. THe Central/South (including GuangDong province) region had the highest growth rate because it directly benefited from foreign investments and imports of foreign technologies.

5.2 Pattern of China's Imports and Exports

Since the inauguration of the Chinese government's open-door policy and the establishment of SEZs (Specialized Economic Zones), China became more involved in the world trade activities. Table 5.7 shows the performance of Chinese foreign trade.

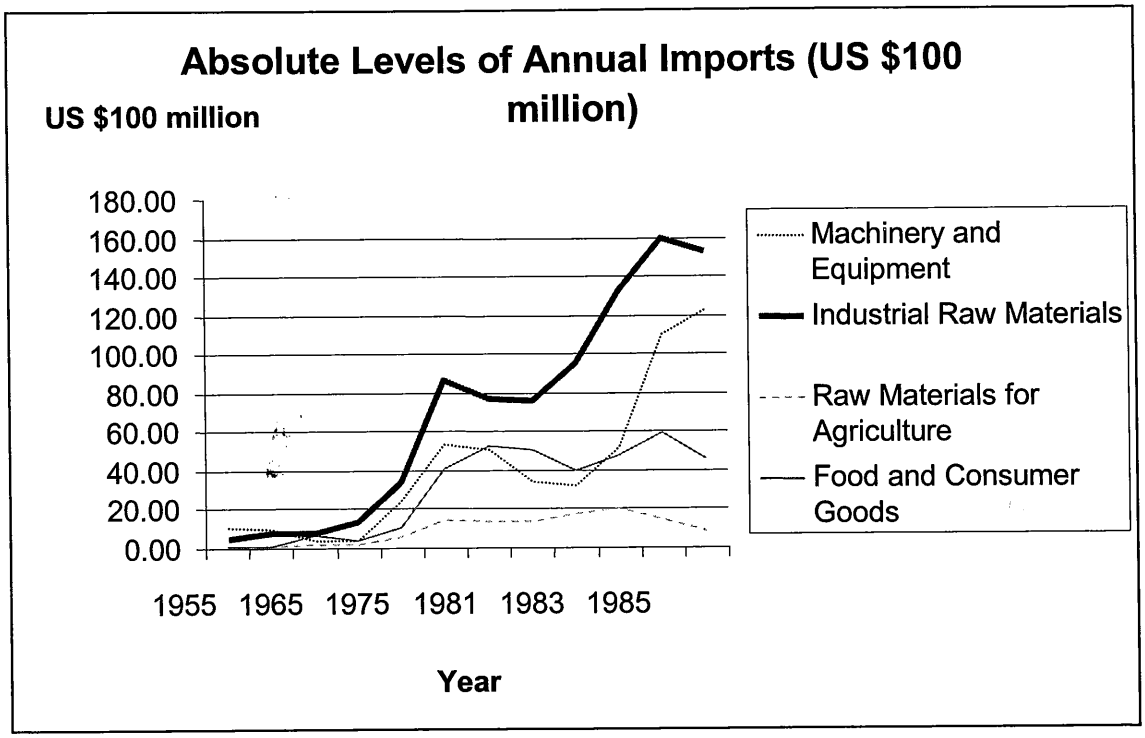
Table 5.7 Chinese Foreign Trade: Total Two-Way volume (in US $ billion)

Year	Total Volume
1950	1.13
1955	3.14
1960	3.81
1965	4.25
1970	4.59
1975	14.75
1978	20.64
1980	37.82
1981	44.02
1982	41.60
1983	43.62
1984	53.55
1985	69.60
1986	73.85
1987	83.65

Source: Kleinberg, (1990), pp 128

As the above table shows, the total two-way volume in foreign trade increased substantially. During the period of 1980-1987, the total increase in two-way volume was 121%. Additionally, the statistics also show that China was gradually changing its patterns of imports and exports.

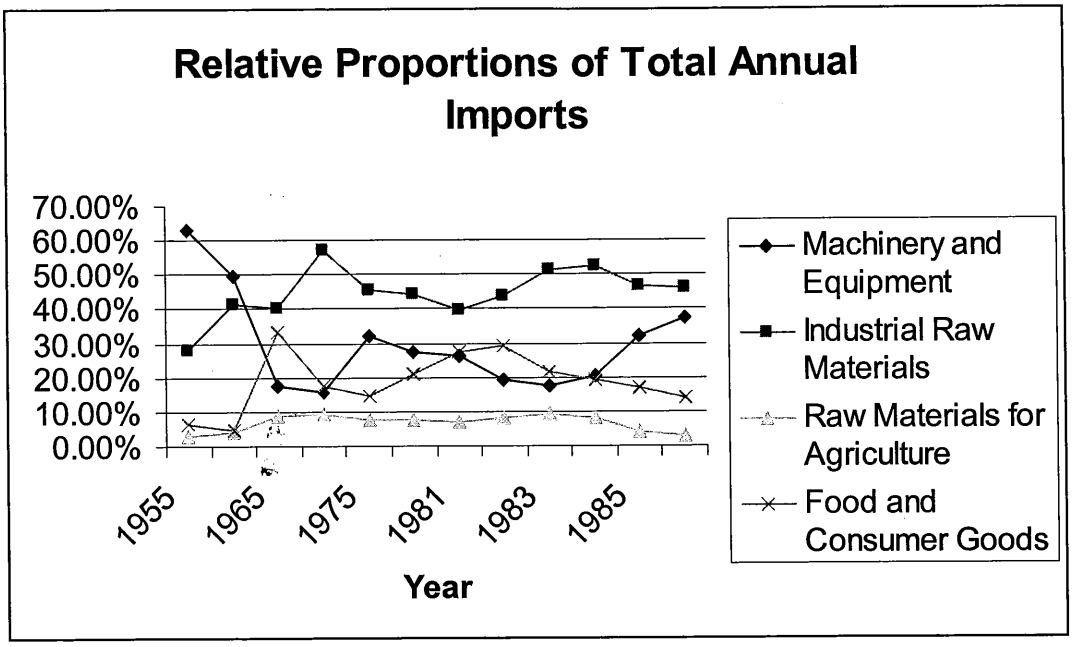
Figure 5.1 Absolute Levels of Annual Imports



Source: Kleinberg, (1990), pp. 133

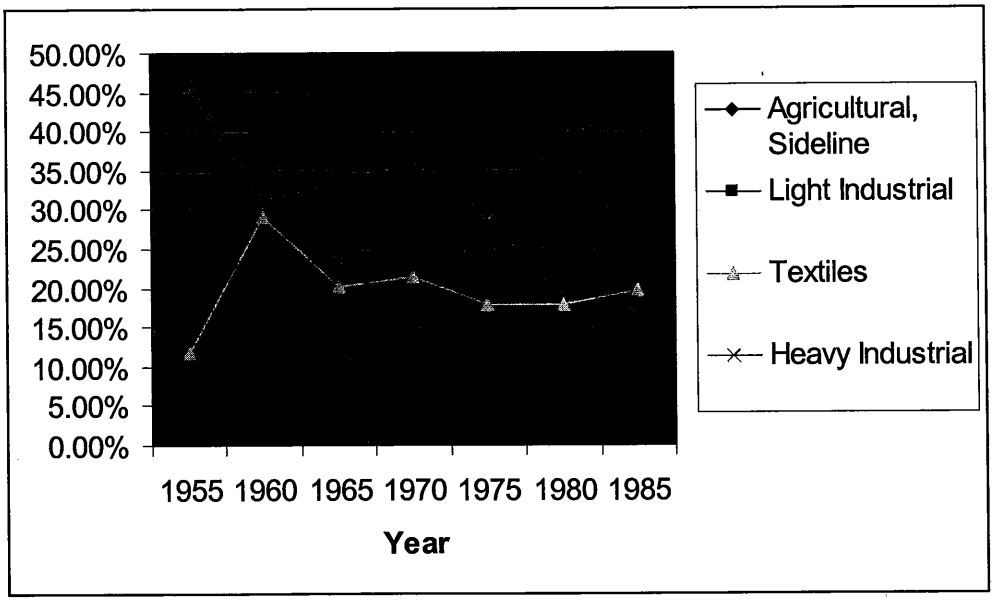
As Figure 5.1 and Figure 5.2 shows, China's imports of industrial raw materials and machinery and equipment were steadily climbing throughout the years, especially after China's open door policy was implemented. On the other hand, China's imports of raw materials for agriculture and food and consumer goods stagnated and started decline. The relative proportion of imports of agricultural raw materials and consumer goods fell sharply. In 1986, they only accounted for 16.6% of the total value of imports. In the same year, machinery and equipment accounted for 37.2% of the total value of imports and industrial raw materials accounted for 46.2%.

Figure 5.2 Relative Proportions of Total Annual Imports



Source: Kleinberg, (1990), p. 133

Figure 5.3 Composition of Export Products



Source: Kleinberg, (1990), p. 129

As Figure 5.2 shows, China's pattern of exports had changed as well. With the help of foreign investment and imports of technology and equipment, China was able to increase the proportion of heavy industrial products in its total exports. The increase started after 1970. The scale of increase was dramatic after 1975. Until 1985, the exports of heavy industrial products accounted for 42.8% of the total value of exports. On the other hand, the proportion of exports of agricultural sideline was shrinking steadily after 1970.

To sum up, in addition to China's agricultural reform, enterprise reform, and banking system reform, China's open-door policy is another important component of its economic development strategy. China opened up four cities and established Special Economic Zones to attract foreign investments. With the help of foreign capital, advanced technologies and management, and equipments, China was able to build basic infrastructures and produce competitive exportable products. China earned foreign exchange through exports to further acquire advanced technologies and equipments from more advanced countries. This open-door policy was another aspect of knowledge acquisition. And it was also a learning-by-doing process. At the very beginning, the Chinese government only opened four cities as special economic zones. In the mid 1980s, when SEZs established clear evidence of solid performance, the Chinese government decided to extend the open door policy to an additional fourteen cities. Although these fourteen cities were not given complete status of Special Economic Zones, "they did create a series of smaller Special Economic Zone like enclaves along the coast of China from Dalian in the North to Beihai in the South" Mckenney, (1993). Besides the newly designated fourteen coastline cities, the original Special Economic Zones were allowed to expand their geographical area. In this way, China gradually opened greater and greater land to the rest of the world for capital investment and world trade.

Table 5.8 Export Growth, by Province, 1984-93

Province	Total (in millions of dollars)	Percent by foreign-invested enterprises
Guangdong	34,909.2	41.2
Fujian	4,735.0	52.6
Zhejiang	3,586.0	27.3
Jiangsu	3,164.3	47.5
Shanghai	2,978.8	59.8
Shandong	1,913.2	46.5
Heilongjiang	1,347.4	6.7
Jilin	955.4	7.0
Sichuan		8.9

Source: Naughton, (1996), pp. 344

As Table 5.8 shows, besides the leading provinces in export growth, Guangdong and Fujian, the growth of exports of other provinces were also large. Of cause, foreign invested enterprises made significant contributions to the growth of exports. As the statistics suggest, foreign invested enterprises accounted for nearly half of the growth of exports in Guangdong and Fujian province. In Shanghai, the contribution of foreign enterprises was the largest (59.8%). So, the implementation of the open door policy was a learning-by-doing process and the success of China's open door policy would not have worked without help from foreign direct investment and transfer of capital and knowledge.

Chapter 6

Conclusions

During the last thirty years, the economic performance of China was impressive. Its income per capita increased more than 7 times. After twenty five years of experimentation with social, political and economic change and two major disastrous experiments, the communist government finally learned the role of economic incentives and the importance of creating appropriate institutions based on freedom of choice. In 1978, a change of leadership in the communist party brought about much needed reforms that involved nearly every major sector of economic activity starting with the agricultural sector.

The government introduced a major change in the management of land. Henceforth, farmers enter into a long term contract to lease the land where they used to work from the government and farm it for their own profit at their own risk with the assistance of credit from a newly created agricultural bank and technical advice from the government. Since 1978, productivity in the agricultural sector increased substantially. The second major reform allowed and encouraged the creation of private enterprises. The proportion of private enterprises has grown over the years and productivity of private enterprises has always been higher than that of state-owned enterprises (SOEs). In this way, overall productivity in the industrial sector increased substantially.

The third major reform was the decentralization of China's banking system. From a mono-bank (PBC) emerged four major specialized banks, one bank for each major sector, and the central bank. The increase in total lending and total deposits confirms the progress made thanks to the banking reform. With the help of regression analysis, I found that deposit

ratio is positively correlated with the average propensity to save. This result provides evidence of the positive contribution of the banking reform to China's industrialization.

The fourth major reform was the open-door policy. This policy began China's movement away from a self-sufficient model towards export-oriented model. The opening experiment of China's special economic zones (SEZs) was a learning approach. The main purpose was to adopt foreign advanced technologies and borrow foreign capitals. With help of better technologies and capital investment, China was able to build modern infrastructures and China's manufactures were able to make exportable products capable of competing in world markets. China earned foreign exchange through exports of domestically produced goods and used the foreign exchange to further acquire advanced technologies. The fundamental change in the patterns of China's imports and exports since the early 1980s shows unmistakenly that the main driving force behind the monumental change in the communist party policy was the quest for the acquisition of know-how in order to anchor China's economic development on a firm foundation. Improvement in China's pattern of foreign trade is a result of China's open-door policy and its adoption of foreign technologies.

China's high economic performance was not a coincidence. The key success factor is the quest by the Chinese people to acquire know-how and new technologies. Since 1949's Independence Day, China has gone through over 55 years of the experiment. Among the past 55 years, China experienced and struggled through the Great Leap and the Culture Revolution. Although Chinese people suffered during the period of chaos, they also acquired a valuable experience. In 1978, government of China started a series of reforms, which include agricultural reform, enterprise reform, banking system reform and open-door policy. These reforms focus on different sectors, but they all had a common trait, which was

knowledge acquisition and adoption of advanced technology. This study shows that China's current achievement on economic development is not only led by exports, but also it is led by Chinese people's learning-by-doing approach and the quest for better technology.

Today, China is still facing some economic issues, for example, large cities' high unemployment rate, uneven income distribution, unsatisfactory performance of government owned enterprises, imperfect financial systems and so on. I believe that these problems will be solved by Chinese people through the learning-by-doing approach. A country's economy has to go through a practicing stage in order for it to become highly developed.

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